Avaya Aura® Communication Manager Reports

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Chapter 1: Introduction

Purpose

This document provides methods to measure the traffic and to monitor the traffic reports. This document also provides information about the traffic data or usage data for trunk groups, hunt groups, attendants, and other groups.

Intended audience

The primary audience for this document is:

- System administrators
- Communications system managers
- Technicians who resolve usage-related customer complaints
- Technicians who plan system expansions and system upgrades
- Personnel involved in traffic engineering

Note:

You do not need a thorough knowledge of traffic theory to use the information in this document. However, such knowledge will help you analyze comprehensively the traffic data in various reports.

Document changes since last issue

The following change has been made to this document since the last issue:

- Updated the topic About processor occupancy reports on page 267 to include information about the static occupancy, call processing occupancy, and system management occupancy.

Related resources

Documentation

The following table lists the documents related to this product. Download the documents from the Avaya Support website at http://support.avaya.com.

Document number	Title	Description	Audience
Administration			
03-300509	*Administering Avaya Aura® Communication Manager*	This document describes how to plan, administer, and operate the non-maintenance functions of the Communication Manager solution.	Avaya field technicians, Avaya partners, Technical support personnel, Solution architects, Implementation engineers, Support personnel, Technical support representatives
03-602878	*Avaya Aura® Communication Manager Screen Reference*	This document provides detailed description of the fields of Communication Manager screens.	Avaya field technicians, Avaya partners, Technical support personnel, Solution architects, Implementation engineers, Support personnel, Technical support representatives

Document number	Title	Description	Audience
555-245-207	*Avaya Aura® Communication Manager Hardware Description and Reference*	This document provides information on hardware that can be used with Communications Manager. Use this book to find information on Avaya media servers and gateways, as well as circuit packs, media modules, telephones and other hardware used with Communication Manager software	Avaya field technicians, Avaya partners, Technical support personnel, Solution architects, Implementation engineers, Support personnel, Technical support representatives

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1A00234E	Avaya Aura® Fundamental Technology
AVA00383WEN	Avaya Aura® Communication Manager Overview
ATI01672VEN, AVA00832WEN, AVA00832VEN	Avaya Aura® Communication Manager Fundamentals
Docu00158	Whats New in Avaya Aura® Release 6.2 Feature Pack 2
5U00060E	Knowledge Access: ACSS - Avaya Aura® Communication Manager and CM Messaging Embedded Support (6 months)
Implementation and Upgrading	
4U00030E	Avaya Aura® Communication Manager and CM Messaging Implementation
ATC00838VEN	Avaya Media Servers and Implementation Workshop Labs
4U00115V	Avaya Aura® Communication Manager Implementation Upgrade (R5.X to 6.X)
4U00115I, 4U00115V	Avaya Aura® Communication Manager Implementation Upgrade (R5.X to 6.X)

Course code	Course title
AVA00838H00	Avaya Media Servers and Media Gateways Implementation Workshop
ATC00838VEN	Avaya Media Servers and Gateways Implementation Workshop Labs
Administration	
AVA00279WEN	Communication Manager - Configuring Basic Features
AVA00836H00	Communication Manager Basic Administration
AVA00835WEN	Avaya Communication Manager Trunk and Routing Administration
5U0041I	Avaya Aura® Communication Manager Administration
AVA00833WEN	Avaya Communication Manager - Call Permissions
AVA00834WEN	Avaya Communication Manager - System Features and Administration
5U00051E	Knowledge Access: Avaya Aura® Communication Manager Administration

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Chapter 2: About commands and displaying reports

Overview

You can use the traffic reports to:

- Monitor and evaluate system performance.
- Monitor security violations data, which identifies illegal attempts to gain access to the system.
- Observe usage trends and recommend possible corrective actions.
- Determine the source of performance degradations, for example, processor overload.
- Determine possible trunk problems, for example, high blocking level.
- Recommend system updates and system upgrades.

Commands and the command line format

You can display or print the traffic data as an organized report by using the appropriate command on System Access Terminal (SAT). SAT is the Communication Manager interface for performing administrative and maintenance tasks. After you log in to SAT, the system displays the command prompt.

The command line consists of three parts:

- The action
- The object for the specified action
- The qualifier for the specified object

Note:

Not all commands and reports are available with every system configuration or software version. To see the commands that you can run on SAT, type `list`, `monitor`, or `display` at the Command prompt, and press **Help**.

If you type a command incorrectly or if the qualifier is inapplicable or cannot be measured, the system displays a descriptive error message. The error messages provide details to determine

the problem. Press **Help**, if needed. If the report consists of more than one page, press **Next** to navigate to the subsequent pages, and press **Prev** to go to the previous pages. To exit the screen, press **Cancel**.

Related topics:

Traffic measurement commands on page 20

Types of commands

- **monitor** commands: To display real-time status reports. The system updates the status report every 30 seconds.

  Note:

  When you cancel some monitor commands, the system logs off.

- **list** commands: To get information about a list of all or a selected range of attendants, trunk groups, hunt groups, and other groups.
- **display** commands: To identify the parameters associated with an object or a qualifier.
- **change** commands: To change the parameters associated with an object or a qualifier.
- **clear** commands: To remove the measurement data that the system generates because of an alarm or an irregularity.

Traffic measurement commands

Commands		
Action	**Object**	**Qualifier**
change	meas-selection coverage	[schedule]
change	meas-selection principal	[schedule]
change	meas-selection route-pattern	[schedule]
change	meas-selection trunk-group	[schedule]
change	meas-selection wideband-trunk-group	[schedule]
change	meas-selection network-region	[schedule]
change	meas-selection	[schedule]

Commands		
Action	**Object**	**Qualifier**
	media-processor	
change	report-scheduler	<report number>
clear	measurements ds1	<CabCarSSF> [options]
clear	measurements ds1-facility	<CabCarSSF> [options] [schedule]
clear	measurements occupancy	busiest-intervals
clear	measurements security-violations	[schedule]
display	communications-interface links	[schedule]
display	meas-selection coverage	[schedule]
display	meas-selection principal	[schedule]
display	meas-selection route-pattern	[schedule]
display	meas-selection trunk-group	[schedule]
display	meas-selection wideband-trunk-group	[schedule]
list	aca-parameters	[options] [schedule]
list	emergency	[schedule]
list	hunt group	[option] [schedule]
list	logins	[schedule]
list	measurements aca	[schedule]
list	measurements attendant group	[schedule]
list	measurements attendant positions	[schedule]
list	measurements blockage pn	<required field> [schedule]
list	measurements blockage sn	[option] [schedule]
list	measurements call-rate	<required field> [schedule]
list	measurements call-summary	[schedule]
list	measurements cbc-trunk-group	<ISDN CBC tgn> last-hour [schedule]
list	measurements cell-traffic cell-addr	<CabCarSSF> [options] [schedule]
list	measurements cell-traffic summary	[option] [schedule]
list	measurements clan ethernet	<CabCarSSF> [schedule]
list	measurements clan ppp	<CabCarSSF> [schedule]
list	measurements clan sockets hourly	<CabCarSSF> [schedule]
list	measurements clan sockets summary	[options] [schedule]

Commands		
Action	**Object**	**Qualifier**
list	measurements clan sockets detail	<CabCarSSF> [options] [schedule]
list	measurements communications-links	<xx-yy> [schedule]
list	measurements coverage-path	<required field> [options] [schedule]
list	measurements ds1 summary	<CabCarSSF> [options] [schedule]
list	measurements ds1 log	<CabCarSSF> [options] [schedule]
list	measurements ds1-facility summary	<CabCarSSF> [options] [schedule]
list	measurements ds1-facility log	<CabCarSSF> [options] [schedule]
list	measurements expansion-services-mod hourly	[schedule]
list	measurements expansion-services-mod summary	[options] [schedule]
list	measurements hunt-group	<required field> [schedule]
list	measurements ip codec hourly	[options] [schedule]
list	measurements ip codec summary	<required field> [schedule]
list	measurements ip codec detail	<required field> [options] [schedule]
list	measurements ip dsp-resource hourly	<required field> [schedule]
list	measurements ip dsp-resource summary	[options] [schedule]
list	measurements ip dsp-resource detail	<required field> [options] [schedule]
list	measurements ip signaling group	[options] [schedule]
list	measurements lar-route-pattern	<required fields> [option] [schedule]
list	measurements lightly-used-trunk	<required field> [schedule]
list	measurements load-balance incoming	<required field> [schedule]
list	measurements load-balance intercom	<required field> [schedule]
list	measurements load-balance outgoing	<required field> [schedule]
list	measurements load-balance tandem	<required field> [schedule]
list	measurements load-balance total	<required field> [schedule]
list	measurements modem-pool	<required field> [schedule]
list	measurements multimedia-interface hourly	[schedule]
list	measurements multimedia-interface summary	[options] [schedule]

Commands		
Action	**Object**	**Qualifier**
list	measurements occupancy busiest-intervals	[schedule]
list	measurements occupancy last-hour	[schedule]
list	measurements occupancy summary	[schedule]
list	measurements outage-trunk	<required field> [schedule]
list	measurements principal	<required field>[options] [schedule]
list	measurements route-pattern	<pat_no><required field>[schedule]
list	measurements security-violations summary	[schedule]
list	measurements summary	[schedule]
list	measurements tone-receiver detail	<required field>[schedule]
list	measurements tone-receiver summary	<required field>[schedule]
list	measurements trunk-group hourly	<tgn> [schedule]
list	measurements trunk-group summary	<required field>[schedule]
list	measurements voice-conditioners hourly	[schedule]
list	measurements voice-conditioners summary	[options] [schedule]
list	measurements ip voice-stats hourly jitter	<network region number> [schedule]
list	measurements ip voice-stats hourly rtdelay	<network region number> [schedule]
list	measurements ip voice-stats hourly pktloss	<network region number> [schedule]
list	measurements ip voice-stats hourly data	<network region number> [schedule]
list	measurements ip voice-stats hourly jitter	<media processor board location> [schedule]
list	measurements ip voice-stats hourly rtdelay	<media processor board location> [schedule]
list	measurements ip voice-stats hourly pktloss	<media processor board location> [schedule]
list	measurements ip voice-stats hourly data	<media processor board location> [schedule]

Commands		
Action	**Object**	**Qualifier**
list	measurements ip voice-stats summary jitter today	[schedule]
list	measurements ip voice-stats summary rtdelay today	[schedule]
list	measurements ip voice-stats summary pktloss today	[schedule]
list	measurements ip voice-stats summary data today	[schedule]
list	measurements wideband-trunk-group hourly	<tgn>[schedule]
list	measurements wideband-trunk-group summary	<required field>[schedule]
list	performance attendant	<required field>[schedule]
list	performance hunt-group	<required field>[schedule]
list	performance summary	<required field>[schedule]
list	performance trunk-group	<required field>[schedule]
list	report-scheduler	[schedule]
monitor	system	<conn>, <scr>, <view1>, <view2>
monitor	traffic hunt-groups	<hgn> starting group number
monitor	traffic trunk-groups	<tgn> starting group number
monitor	trunk	<tgn>[member #]
remove	report-scheduler	<report number>

Printing reports

About this task

With each **monitor** and **list** command, the system displays a report on SAT. Use this procedure to print the report.

Procedure

Run a command with one of the following qualifiers:

- `print` qualifier: The system prints the report on a printer associated with SAT.

Comments? infodev@avaya.com

- `schedule` qualifier: The system sets the report as the default for printing immediately and generates a job ID.

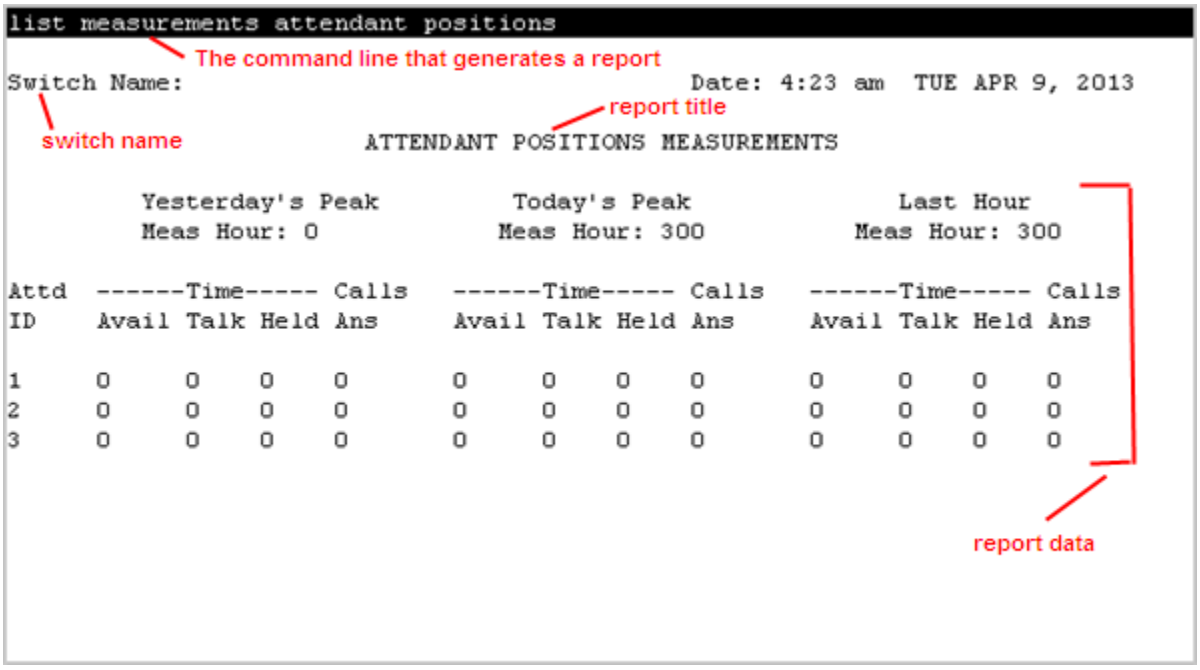
  To update or delete the schedule of reports, use the job ID with the Report Scheduler feature.

Note:

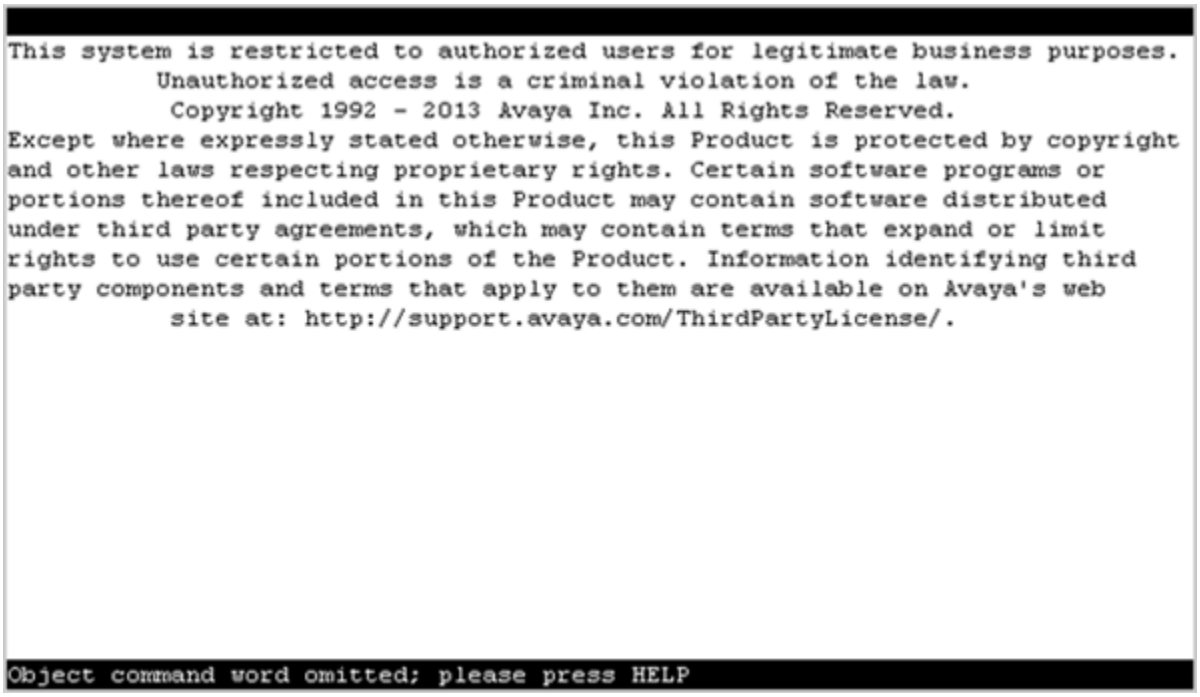
If you specify a date and time for printing, the system does not set the report as the default for immediate printing. To schedule the date and time for printing each report, use Report Scheduler.

Sample list measurements report screen

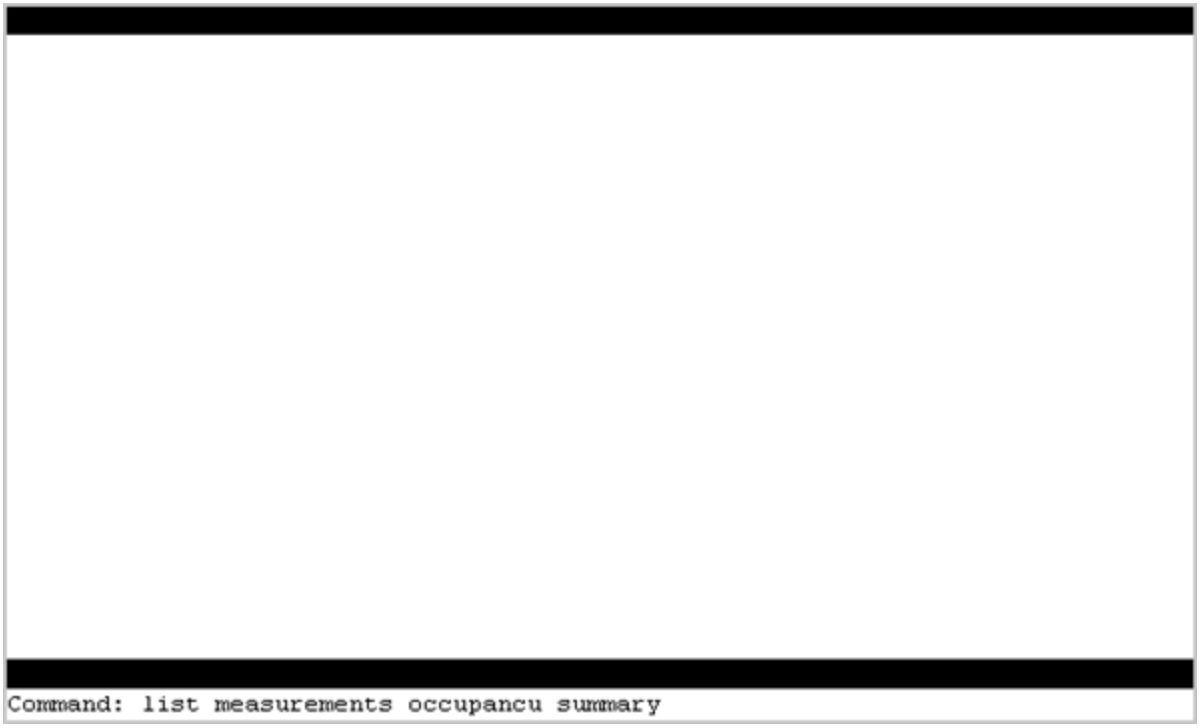
The following screen shot shows a sample report screen for the **`list measurements`** command. The red callouts identify standard report content.



The system displays the error messages above the command prompt.



The system displays the commands that you type on the command prompt.



Note:

Large, busy systems take more time to process list measurement reports. Therefore, data updates might be delayed by a few minutes.

Chapter 3: System printer and the reportscheduler feature

System printer

The system printer schedules reports to print. You can also use the system printer to print specific reports.

The **Report Scheduler** feature uses the system printer as the output device. You must administer the hardware parameters for the system printer on the Feature-related system parameters screen. To gain access to the Feature-related system parameters screen, use the **`change system-parameters features`** command.

Note:

The system printer must use the TCP/IP interface or the Electronic Industries Association (EIA) RS-232 asynchronous serial interface. Depending on the type or model of the printer, you might have to administer certain hardware options and switch settings during the installation.

Related topics:

[System printer parameters field descriptions](#) on page 27

System printer parameters field descriptions

Name	Description
System Printer Endpoint	You must enter one of the following values in this field: • The extension number, if the printer is connected to a switched port. • `SYS_PRNT`, if the printer is connected over a TCP/IP link. You must define the TCP/IP link as **SYS_PRNT** on the IP Services screen. • `EIA`, otherwise.

Name	Description
	Note: You must enter `EIA` only if your system is G3si or G3csi. Do not enter `EIA` for the Call Detail Record (CDR) collection.
Lines Per Page	The number of lines on the computer screen. You can type a value from `24` to `132`. The default value is `60`.
EIA Device Bit Rate	The system displays this field only if the **System Printer Extension** field shows `EIA`. You can type one of the following values: `1200`, `2400`, `4800`, or `9600`.

Operation and maintenance of the system printer data link

The operation and maintenance of the system printer data link is different from the Call Detail Recording (CDR) and journal printer data links. For example, the system maintains the CDR and journal printer data links in a constant link up state. The system activates the data link once every 15 minutes or when you want to print a report or when you schedule an immediate report.

The system printer data link has three states that identify the operational condition:

- Link up: The data link is in the link up state when the communication path functions correctly and exchanges data successfully. The communication path includes software processes, hardware cables, and printers.
- Link down: The data link in the link down state refers to all times, except when the system prints the reports or the maintenance personnel disables the link.
- Maintenance busy-out: The data link is in the maintenance busy-out state when you run the **`busyout sp-link`** command. The system disables the software processes and link retry operations.

For smooth functioning, monitor the operating status of the system printer and perform routine tasks. The routine tasks include refilling the paper bin, clearing paper jams, and verifying that the printer is plugged in and is functioning.

Note:

You cannot run the **`busyout sp-link`** command by using the Basic Call Management System (BCMS) login. You must run the **`busyout sp-link`** command only by using the

maintenance login. Therefore, as necessary, all nonmaintenance personnel must turn off the system printer to refill the paper bin and to remove the jammed paper.

If the system printer link generates a warning alarm or a minor alarm, contact the maintenance personnel.

Report Scheduler

You can use the Report Scheduler feature with the Communication Manager features. With this feature, you can run the **`list`**, **`display`**, and **`test`** commands with the *schedule* qualifier.

When you run a command with the *schedule* option , the system generates a Job Id. You can schedule a maximum of 50 reports for printing. The Report Scheduler feature specifies the day and time of the day for printing each report.

You can use the system administrator login, maintenance login, and other logins to schedule reports.

Related topics:

Print intervals on page 29
Adding a report to the report scheduler on page 30
Printing reports on the system printer on page 30
Listing scheduled reports on page 31
Changing the schedule of a report on page 31
Removing a report from the report scheduler on page 31
Report Scheduler field descriptions on page 32

Print intervals

You can print reports by using one of the following options:

- **Immediate**: To print the report immediately.
- **Scheduled**: To print the report every week on the specified day and time. You must administer the date, time, and day parameters for the report.
- **Deferred** : To print the report once on the specified day and time.

Adding a report to the report scheduler

Procedure

1. Type a command with the schedule qualifier, and press `Enter`.

   For example, **`list aca-parameters`** `schedule`.

   The system uses the default print settings.
2. Perform the following steps to change the print settings:
   a. In the **Print Interval** field, type `deferred` or `scheduled`.
   b. In the **Print Time** field, type the time at which you want to print the report.
   c. In the **Day of the week** field, type the day on which you want to print the report.
   d. Press `Enter`.

Printing reports on the system printer

Procedure

1. Type a command with the schedule qualifier, and press `Enter`.

   The system displays the Report Scheduler screen and sets the value of the **Print Interval** field to `immediate`.
2. Press `Enter` to print the report immediately, or perform the following steps to change the print settings:
   a. In the **Print Interval** field, type `scheduled` or `deferred`.
   b. In the **Print Time** field, type the time at which you want to print the report.
   c. In the **Day of the week** field, type the day on which you want to print the report.
   d. Press `Enter`.

Listing scheduled reports

About this task

Use this procedure to list the scheduled reports. The order of the list is according to the scheduled print time, and the system prints reports according to the list.

Procedure

Type **`list report-scheduler`** `[print/schedule]`, and press `Enter`.

All fields are display-only fields.

Changing the schedule of a report

Procedure

1. Type `change report-scheduler` *nn*, where *nn* is the job ID of the report.
2. Press `Enter`.

Removing a report from the report scheduler

Procedure

1. Type `remove report-scheduler` *nn*, where *nn* is the job ID of the report that you want to remove, and press `Enter`.

   The system displays the Remove Report Scheduler screen.
2. Press `Enter`.

Report Scheduler field descriptions

Name	Description
Job Id	This field displays the job ID of the report. When you run a command with the schedule qualifier, the system generates a unique job ID. Job ID is the lowest number from 1 to 50, which is not in use.
Job Status	This field displays the print status of the report.
Command	This field displays the action, object, and qualifier of the command that you run to schedule the report.
Print Interval	This field indicates when the system printer prints the report. The options are: immediate, deferred, and scheduled. The default option is immediate. If you change the value of the **Print Interval** field to deferred or scheduled, you must enter values for the **Print Time** and **Days of the week** fields. **Note:** To print the report only once, use the deferred option. The system removes the Job Id from the report scheduler. To print the report on a specific day every week, use the scheduled option.
Print Time	This field displays the time at which you want to print the report. You must schedule reports at 15-minute intervals in a specified hour. The system printer requires the switch processor resources to ensure that you schedule reports for off-peak hours. Do not schedule all reports in the same time interval. You must print a report in the 4-hour nonadministrable interval available for printing. If you do not print the report within 4 hours, the system prints the report only in the next scheduled interval. The system removes the immediate and deferred jobs from the report scheduler, and you must reenter the report for printing.

Name	Description
Days of Week	This field specifies the day on which you want to print the report. Type one of the following options: • y for the days of the week on which you want to print the report. • n for the days of the week on which you do not want to print the report.

Chapter 4: Traffic data analysis reports

Overview

In this section, the traffic measurement reports provide the following information:

- A description of the report.
- The command required to generate the report, including a description of any required fields and options.
- A table that defines all field labels in the report and, when appropriate, a suggested actions list.

Traffic measurement reports include the following reports:

- Abbreviated Dialing: Describes the Abbreviated Dialing group and Abbreviated Dialing personal reports.
- Attendant: Describes the traffic measurements and the performance reports for Attendant groups and Attendant positions and provides an analysis of the data provided in the reports.
- Automatic Circuit Assurance (ACA): Describes the parameters and the measurement reports for the ACA feature.
- Automatic Route Selection (ARS), Automatic Alternate Routing (AAR), and User Datagram Protocol (UDP) Route Pattern Measurements: Describes the routing pattern measurement reports for the ARS, AAR, and UDP features and provides an analysis of the data in the measurements reports.
- AAR and ARS Route Chosen: Describes the route chosen reports for the AAR and ARS features.
- Call Type Analysis Route Chosen: Provides an analysis of numbers that might be dialed from the call log of a deskphone.
- Call Rate: Describes the call rate measurements and the summary reports available with Communication Manager.
- Call Summary: Lists the number of calls completed in the last 24 hours.
- Call Traffic Measurements: Describes the wireless traffic data reports available with Communication Manager.

- Call Coverage Measurements: Describes the Principal Coverage and Coverage Path measurement reports available with Communication Manager.
- DS1 Link Performance Measurements: Describes performance measurements for DS1 links. The reports include the detailed log and the summary reports.
- DS1 Converter Link Performance Measurements: Describes performance measurements for DS1 Converter links. The reports include the detailed log and the summary reports.
- Emergency Access Call: Tracks emergency calls by extension, event, type of call, and time of day.
- Hunt Groups: Lists the hunt groups on your system. Describes the traffic measurements, performance reports, and status reports for Automatic Call Distribution (ACD), Uniform Call Distribution (UCD), or Direct Department Calling (DDC) Hunt Groups and provides an analysis of the data in the reports.
- IP Signaling Groups Latency and Loss: Describes the worst performing signaling groups for the last hour, the current hour or day, or the previous day.
- IP Media Processor Measurements: Lists the activity on IP media processors for specific regions and time periods.
- LAN Performance Measurements: Describes the performance measurements report for traffic over the Ethernet, CLAN, and PPP LAN connections.
- Look Ahead Routing (LAR) Route Pattern Measurements: Describes the route pattern measurements report for the LAR feature.
- Logins: Describes the login ID information for every system user.
- Modem Pool Groups: Describes the traffic measurements report for modem pool groups.
- Multimedia: Describes the traffic measurement reports used to determine multimedia traffic resources.
- Performance Summary: Describes the traffic measurements Performance Summary report.
- Port Network /Load Balance: Describes the Blockage Study report that provides information on loading and blocking for every port network and between switch node pairs. The report also describes the Load Balance report with information about load and balance for each port network.
- System Status: Describes the System Status reports that provide an overall view of the system performance.
- Tone Receiver: Describes the Tone Receiver Summary and Tone Receiver Detailed Measurements reports that display the traffic data for tone receivers.
- Traffic Summary: Describes the Traffic Measurements Summary report.

- Trunk Groups: Describes the traffic, outage, lightly used and measurements selection reports, call-by-call (CBC), performance and status reports for trunk groups. The report also provides the validation and analysis of the data provided in the reports.
- Voice/Network Statistics: Describes the voice and network statistics reports that display hourly and summary-level measurement data on packet loss, jitter, round trip delay, and data calls.
- Wideband Trunk Groups: Describes the Wideband Trunk Group Summary and Wideband Trunk Group Hourly reports.

Standard traffic data analysis report fields

The system displays the following standard fields on all traffic data analysis reports:

Related topics:

Switch name on page 37
Time and date on page 37
Measurement hour on page 38
About changing the time on page 38
Measurement data updates on page 38

Switch name

This field displays the 20-character string to uniquely identify the switch that you want to measure. The system displays this field in the upper-left corner of all traffic analysis screens.

Time and date

This field displays the time and date of the requested report in the upper-right side of the screen.

The system displays a question mark (?) for the following cases:

- Pressed **START** and immediately pressed **CANCEL** on the attendant.
- Calls timed out after 10 seconds.
- Calls placed with inadequate staffing.

Measurement hour

This field displays the starting time when the system records the data. This field displays the time in the 24-hour format.

About changing the time

If you change the time, the hour in which the time was changed is shown on the measurements reports as **hh****.

Measurement data updates

On large, busy systems , measurement data updates might be delayed at the Top Of The Hour for up to a few minutes due to required processing time for the list measurements reports.

Attendant group reports

You can use the attendant group reports to:

- Assess the quality of service provided to customers while making calls through the listed directory numbers.
- Manage the attendant group to ensure that the group has adequate staffing.

The system displays the attendant group measurements in the following reports:

- Attendant Group report: Provides hourly traffic measurements for the attendant group.
- Attendant Positions report: Provides peak measurements for specific attendant positions.

Both the reports are available as peak reports for the peak hour and the last hour of yesterday and today. A peak hour is the hour within a 24-hour clock with the greatest usage time.

To get the hourly data for the entire attendant group, poll the Attendant Group Report hourly.

Related topics:

Attendant Positions Measurements report on page 43
Attendant Speed of Answer report on page 44

Attendant Group Measurements report

Displaying the Attendant Group Measurements report

Procedure

1. Type `list measurements attendant group [schedule].`
2. Press `Enter`.

Attendant Group Measurements field descriptions

Name	Description
Grp Siz	Group Size. The number of attendants or consoles administered for the group.
Meas Hour	Measurement Hour. The following labels in the last column indicate the hours represented: • YEST PEAK: The peak activity hours of yesterday • TODAY PEAK: The peak activity hours of today • LAST HOUR: The activity in the last hour **Note:** A pair of asterisks indicates that the switch time was changed during the measurement interval. The system sets the measurement data for this interval to zero.
Calls Ans	Calls Answered. The number of calls that the active attendants answer during the measurement hour. However, the system does not include calls to specific attendant extensions or that route to an attendant through a hunt group. With the number of calls answered, you can determine the Average Work Time (AWT), which is the time the attendant takes to handle a call. For more information about AWT, see *Data analysis guidelines for attendant group reports*.
Calls Aband	Calls Abandoned. The number of calls that ring an attendant group and drop when the caller disconnects before an attendant answers. The system includes the calls abandoned from the attendant queue before the calls are answered. The system does not include calls abandoned

Name	Description
	after being put on hold because the system includes such call in the calls answered measurement. Suggested action: Observe the times in the day when the number of calls abandoned is higher than the optimum level. Schedule more attendants in the group for such times. For more information, see *Data analysis guidelines for attendant group reports*.
Calls Qued	Calls Queued. The total number of calls delayed or put in the attendant queue because attendants are unavailable. Calls remain in the queue until one of the following occurs: • An attendant becomes available, and the call is connected. • The caller, while waiting in the queue, abandons the call or disconnects before an attendant is available. To avoid this, you can follow the *Suggested action* section of the **Calls Aband** field. • The call covers to another point in a coverage path.
Calls H-Abd	Calls Held-Abandoned. The number of calls that are abandoned while the caller is on hold. The system includes the held calls that time out and realert in the held-abandoned call measurement. Suggested action: If you find this number is excessive, investigate to identify the reasons.
Calls Held	Calls Held. The number of calls answered by the attendant group and later put on hold by the attendant group.
Time Avail	Time Available. The time during which the position available lamp is lit on the attendant consoles, but are available to handle new calls. The system measures this time in Centum Call Seconds (CCS). **Note:** An attendant can have calls on hold and still be available. For example, if two attendants are available for 15 minutes each during the measurement hour, the total available time is 30 minutes or 18 CCS (0.5 hour*36 CCS per hour). You can administer consoles with unique extension numbers or without any extension number. For the consoles with extension number, the system allots traffic measurements for outgoing calls and incoming calls to the extension number and not to the attendant group. For consoles without the extension number, the system allots all traffic measurements to the attendant group. The system does not include the time during which the console is on outgoing calls in the attendant group time available measurement. Attendants are unavailable and do not accumulate the time available measurement when: • The position is in Night Service. • The position is busied-out.

Name	Description
	• The headset is unplugged. • The attendant is servicing a call. Suggested actions: • If the sum of the values of the **Time Avail** and **Time Talk** fields is less than 36 CCS*number of attendants, you must staff more positions during the busy hours. • If the sum of the values of the **Time Avail** and the **Time Talk** fields equals 36 CCS*number of attendants, the time available is idle or not spent on calls. A large value in the **Time Avail** field indicates low occupancy. In this case, you must reduce the number of attendant positions that are staffed. The staffed time is usually close to the sum of the values of the **Time Avai**l and **Time Talk** fields.
Time Talk	Talk time. The total time during the measurement interval when attendants are active or talking on a loop. The system measures this time in CCS. The Talk time does not start until the attendant answers the call. The system does not include the time between the call disconnecting at the attendant console either in available time or talk time. The system does not include the calls that are split by the attendant from the point when the attendant presses the **Start** button until the call is placed. The system treats the calls routed to an attendant through a hunt group as calls to the attendant extension and therefore, does include such calls in talk time. **Note:** An attendant can have up to six calls on hold at anytime. However, each attendant can only be active on only one loop at a time.
Time Held	Held time. The total time that the attendants have calls on hold. The system measures the time in seconds.
Time Abnd	Time to abandoned. The average time the calls spend in queue or ringing at the console before the caller disconnects. **Note:** Time to abandoned does not include the calls that overflow the attendant group queue. $$Time\ To\ Abandoned\ =$$ $$\frac{Total\ Delay\ For\ All\ Abandoned\ Calls\ (in\ seconds)}{Total\ Number\ of\ Calls\ Abandoned}$$ Suggested action: If the value of the **Time Abnd** field is less than the value of the **Speed Ans (sec)** field, you need more agents. If the value of the **Time Abnd** field is more than the value of the **Speed Ans (sec)**

Name	Description
	field, the attendant group must process the calls faster. The attendant group must be engineered so that the value of the **Time Abnd** field approximately equals the calculated average delay. $Total\ Delay\ =$ $(Time\ To\ Abandoned)\ \times\ (\#\ of\ Abandoned\ Calls)\ +$ $(SpeedofAnswer)\times(\#ofCallsAnswered)$ $Avg\ Delay\ =\ \frac{Total\ Delay}{Calls\ Answered\ +\ Calls\ Aband}$ **Note:** If the average time to abandon is equal to or exceeds 9999 seconds, the *Time Abnd* field displays `9999`.
Speed Ans (Sec)	Speed of Answer. The average time that elapses after a call from when a call ends at the attendant group to when the attendant answers the call. The system measures this time in seconds. The average time that the calls wait to ring an attendant. The queue usage is the total time that the calls are in the attendant queue. **Note:** Calls end either directly at an attendant console and later begin ringing or are put in the attendant queue when no attendant positions are available. $Speed\ of\ Answer\ =$ $\frac{Total\ Delay\ For\ All\ Answered\ Calls\ (in\ seconds)}{Total\ Number\ of\ Calls\ Answered}$ If the average time to abandon is equal to or exceeds 9999 seconds, the **Speed Ans (Sec)** field displays `9999`. Suggested action: If the value is too high and all attendants are working at the acceptable efficiency levels, you can conduct trainings that might help the attendants complete calls quickly. You can also observe the hours during which the speed of service becomes unacceptable and add consoles during those hours.

Attendant Positions Measurements report

The Attendant Positions Measurements report provides the attendant position measurements hourly. Use these measurements to assess personnel performance and to identify when the attendant requires more training.

Related topics:

Displaying the Attendant Positions Measurements report on page 43
Attendant Positions Measurements field descriptions on page 43

Displaying the Attendant Positions Measurements report

Procedure

Type `list measurements attendant positions [schedule]`, and press `Enter`.

Attendant Positions Measurements field descriptions

Name	Description
Attd ID	Attendant ID. A number between 1 and the maximum number of attendants that identifies the attendant whose data is being displayed. You choose the value number when you administer the attendant.
Time Talk	The time that the attendant is active on calls measured from the time the attendant activates an attendant loop till the time the attendant releases the loop. The system measures the time in CCS. If more than one loop is active on an attendant console at the same time, the system counts the usage only once. For example, the system cannot count one attendant as being busy more than once at a given time.
Time Held	The time that the attendant has calls on hold. The system measures the time in seconds.

Name	Description
Time Avail	Time Available. The total time that the attendant is available to receive calls during the polling interval. The system measures the time in CCS.
Calls Ans	Calls Answered. The total number of calls that the attendant answers. The system measures the time in CCS. The system does not include calls made to an attendant extension or routed to an attendant through a hunt group.

Attendant Speed of Answer report

The Attendant Speed of Answer report gives the average speed of answer of console attendant group for each hour of a 24-hour period, for yesterday or today.

Related topics:

Displaying the Attendant Speed of Answer report on page 44
Sample Attendant Speed of Answer screen on page 45
Data analysis guidelines for attendant group reports on page 46
How to analyze attendant group data on page 46

Displaying the Attendant Speed of Answer report

Procedure

1. Type `list performance attendant <yesterday/today> [schedule]`, where `[schedule]` is the time you specify to schedule the report to print at another time.
   - <yesterday/today> is the required parameter. Choose one of the following:
     - yesterday: lists the attendant group activity for yesterday.
     - today: lists the attendant group activity for today.
2. Press `Enter`.

Sample Attendant Speed of Answer screen

```
list performance attendant yesterday

Switch Name:                                  Date: 4:27 am  TUE APR 9, 2013

                          ATTENDANT SPEED OF ANSWER

Meas  ---------------Average Speed of Answer (sec) --------------   Speed
Hour  1  2  3  4  5  6  7  8  9  10  15  20  30  40  50  100  200   Ans(sec)
```

Related topics:

[Attendant Speed of Answer field descriptions](#) on page 45

Attendant Speed of Answer field descriptions

Name	Description
Meas Hour	Measurement Hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Average Speed of Answer (sec)	A graphic display of the average time that attendants take to answer calls.
Speed Ans (sec)	Speed of Answer (in seconds). The average speed of answer is also displayed numerically in seconds for each hour in the report interval. Suggested action: If this number is too high and all attendants are working at acceptable efficiency levels, consider additional training that might help the attendants complete calls more quickly. Alternatively, observe the hours during which speed of answer becomes unacceptable and consider adding

Name	Description
	consoles and scheduling more attendants during those hours.

Data analysis guidelines for attendant group reports

The following guidelines are an easy method to determine whether currently reported data is acceptable. These guidelines represent the minimum you must do to verify that recorded measurement values are consistent with expected and historic values. You must perform additional checks as necessary.

To check the acceptability of hourly attendant measurements reports, verify the following:

- The system clock or group size was not changed during the measurement hour. If the system clock was changed, the minutes field displays double asterisks, for example, 11**. All other fields for the indicated time interval display zero.
- The average work time (AWT) typically ranges between 10 and 30 seconds per call. Specific applications might accept different values.

Note:

- The sum of Time Talk (in CCS) and Time Avail (in CCS) should not exceed 36 multiplied by the group size. For example, with two attendant positions, this should not exceed 2 X 36 = 72 CCS for data collection.
- The attendant can have up to six calls on hold at one time.

How to analyze attendant group data

To use the attendant measurements reports to estimate the number of attendant positions for the application, you need additional data. You can calculate the additional data using data from the reports which you subsequently recorded on Worksheet 1 (see Blank worksheets on page 301). The following topics describe how to use data from the completed Worksheet 1 to evaluate average work time, staffed time, attendant offered load, percent occupancy, and percent of calls in queue.

Note:

The attendant data worksheet backs up the data from the reports and provides an easy means for identifying the peak hour. The data from the identified peak hour should be used in subsequent calculations.

Related topics:

Average work time on page 47
Staffed time on page 47
Attendant offered load on page 48
Percent occupancy on page 48
Percent of calls queued on page 49
About customer-supplied (theoretical) data for measurement reports on page 49

Average work time

The Average Work Time (AWT) is the average number of seconds attendants take to process calls. The number of calls answered and the total time the attendants are busy handling these calls (talk to me) to determine the AWT.

To determine AWT, use the figures for Time Talk, Time Held, provided that time held is a part of the agent's normal work time, and Calls Ans in the following equation:

$$AWT = \left[\frac{Talk\ Time + Time\ Held\ CCS}{Calls\ Answered} \right] \times \left[\frac{100\ Seconds}{CCS} \right]$$

This typical report screen lists the following data for the peak hour of the previous day:

- Time Talk: 43 CCS or 4300 seconds
- Time Held: 4 CCS or 400 seconds
- Calls Ans: 170

Using these figures as an example, the average work time is:

$$AWT = \left[\frac{43\ CCS + 4\ CCS}{170\ calls} \right] \times 100\ Seconds = 27.6\ Seconds\ per\ call$$

Staffed time

Staffed time is the time the attendant positions are active (ready for calls). If staffed time (per agent) equals 36 CCS, then all agents were active for the full hour. Using the following figure as an example, staffed time per agent is calculated as:

$$Staffed\ Time\ (per\ Agent) = \frac{Time\ Available + Talk\ Time}{\#\ of\ Agents}$$

$$Staffed\ Time\ (per\ Agent) = \frac{29\ CCS + 43\ CCS}{2} = 36\ CCS$$

Attendant offered load

The attendant offered load (AOL) is the sum of the **Calls Ans** and **Calls Abnd** multiplied by the AWT . You can determine the AOL using the following equation:

$$AOL\ (in\ seconds)\ =\ (Calls\ Ans\ +\ Calls\ Aband)\ \times\ AWT\ in\ seconds$$

$$AOL\ (in\ CCS)\ =\ \frac{AOL\ in\ seconds}{100}$$

The typical report screen lists the following data for the peak hour of the previous day:

- Calls Ans: 170
- Calls Abnd: 3

From the calculations in the previous example:

- AWT: 27.6 seconds

Percent occupancy

The occupancy level is expressed as a function of the total time of the measurement hour or a function of the time the positions were active and attended. Generally, the assumption is that all positions are staffed 100 percent of the time during the peak busy hour. Therefore, the measurement percent occupancy (total time) is sufficient in most instances.

Assuming attendant positions are staffed 100 percent of the time, then each position can handle 36 CCS of load during the peak hour. Therefore, based upon the calculated AOL of 47.75 CCS, you require two attendant positions.

To display the status of the attendant console positions, use the two status reports **`monitor system view1`** and **`monitor system view2`** . Specifically, you can use these two reports to determine in real time the number of attendant positions activated and the number of attendant positions deactivated.

Note:

The **`monitor system view1`** and **`monitor system view2`** commands display the status of the attendant consoles, maintenance, and traffic. For the commands, seeAttendant and Maintenance Status report on page 180.

For this example, the percent occupancy is calculated as follows:

$$Maximum\ Possible\ Usage\ =\ 36\ CCS\ \times\ Total\ \#\ of\ Members$$

Suggested actions:

You should staff a sufficient number of positions so the attendants are neither underworked nor overworked. If the percent occupancy is high and the time available (from the worksheet) is low, you can staff another attendant position. If the percent occupancy is low and the time available (from the worksheet) is high, you can staff fewer attendant positions.

Note:

The percent occupancy should not exceed 92% even on large systems with several attendant consoles. 92% is a human factor limitation and does not apply to hardware servers.

Percent occupancy (attended) is defined as follows:

$$Percent\ Occupancy\ (attended) = \frac{AOL}{Time\ Avail + Time\ Talk} \times 100$$

When all positions of the attendant group are staffed, the equation for percent occupancy (attended) yields the same results as the equation for percent occupancy (total time).

Percent of calls queued

As the percent of calls in queue increases, the value in the **Speed of Ans** field also increases. Callers are more likely to become frustrated as they are delayed and more likely to abandon their calls. Therefore, the level of service has decreased.

Percent of calls in queue (or delayed) is defined as:

$$\%\ Queued = \frac{Calls\ Queued}{Calls\ Ans + Calls\ Aband}$$

$$\%\ Queued = \frac{78\ calls}{170\ calls + 3\ calls} = \frac{78\ calls}{173\ calls} = 45\%$$

About customer-supplied (theoretical) data for measurement reports

For an installed system, the measurement reports are always preferred over theoretical data derived from traffic tables. However, the use of traffic tables might be necessary and desirable at times. For example, as a part of responding to a request for proposal (RFP), a potential customer can supply certain traffic data obtained independent of the switch, and request that the RFP include calculations indicating how well the switch accommodates the specified traffic. You might also use traffic tables during the system engineering and planning stage.

Note:

Traffic engineering capacity tables, such as the Erlang-C Infinite Queue, Erlang-C Finite Queue, and Retrial Capacity, are used for data analysis when necessary. Traffic engineering capacity tables are based on mathematical models in which certain assumptions are made about call arrivals, the serving process, and the disposition of blocked calls.

Speed of answer: Given the appropriate variables, you can estimate the speed of answer. You need the following:

- Erlang-C Infinite Queue capacity tables (found in Basic Traffic Analysis)
- AWT (average work time)

- Number of attendant positions staffed (working servers)
- AOL, where: AOL = (Calls Ans + Calls Aband) X AWT

Example:

Given the following data, estimate the speed of answer:

- Time Talk: 43 CCS
- Time Held: 4 CCS
- Calls Answered: 170
- Using Time Talk, Time Held, and Calls Answered, the calculations indicate AWT: 27.6 seconds.
- Number of Attendant Positions Staffed: 2
- Calls Abandoned: 3
- Using Calls Answered, Calls Abandoned, and AWT, the calculations indicate that AOL:= 47.83 CCS.

a. In the table shown in Estimating the speed of answer on page 51, locate the row that corresponds to two attendant positions, that is the working servers.

b. Read across to find the offered load closest to 47.83 CCS. (The closest is 46.2 CCS, when rounding up.)

c. Read up to find the Average Delay in Multiples of Average Holding Time that corresponds to 46.2 CCS (for this example, the Average Delay in Multiples of Average Holding Time is 700).

d. Estimate the theoretical Speed of Answer by multiplying the Average Delay in Multiples of Average Holding Time by AWT (that is, Speed of Answer =.7 X 27.6 seconds = 19.3 seconds).

Note:

This example implies all calls have an average of 19.3 seconds delay. Some of the calls are answered immediately, while the remaining calls are delayed. To find the portion of calls that experience a delay before service can be estimated, use the table shown in Estimating the percentage of delayed calls on page 51. The average delay of these calls can be estimated using the table shown in Estimating the average delay of delayed calls on page 52.

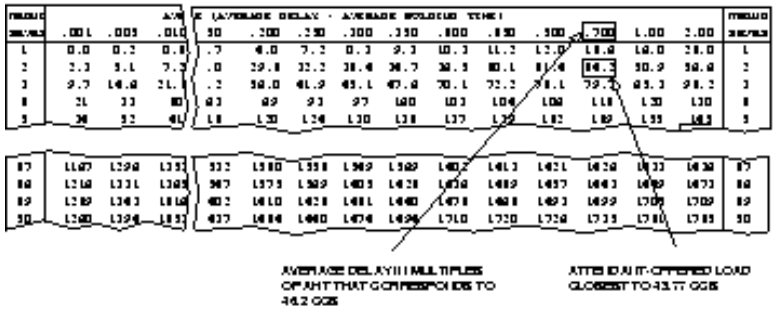


Figure 1: Estimating the speed of answer

e. To determine the percentage of calls that experience a delay, use the Average Delay in Multiples of Average Holding Time that is closest to the expected AOL.

   i. In the Erlang-C Infinite Queue Capacity table shown in Estimating the speed of answer on page 51, locate the row that corresponds to two working servers.

   ii. Read across until you find the value closest to the expected AOL (the value closest to 47.83 CCS is 46.2 CCS).

   iii. Read up to find the Average Delay in Multiples of Average Holding Time that corresponds to 46.2 CCS (the Average Delay in Multiples of AHT is .700).

   iv. In the Erlang-C Probability of Delay table shown in Estimating the percentage of delayed calls on page 51, find the .700 column.

   v. Read down this column until it intersects the row with two servers. The value at the intersection is .502, which represents the probability of delay. This value shows that 50.2 percent of the calls experience some delay before being answered.

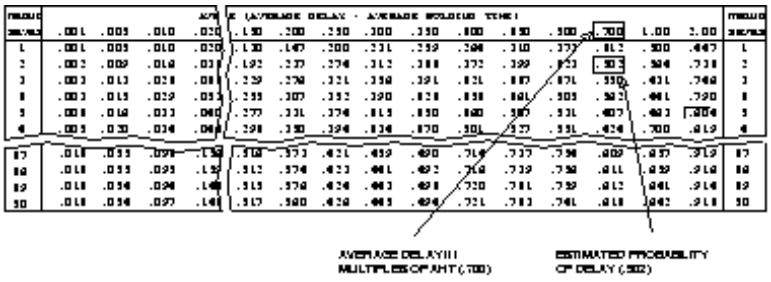


Figure 2: Estimating the percentage of delayed calls

f. To determine the Average Delay of the Delayed Calls, proceed as follows:

   i. In Estimating the average delay of delayed calls on page 52, locate the .700 column.

ii. Read down this column until it intersects the row with two servers. (The value at the intersection is 1.40. This value is the Average Delay of Delayed Calls in Multiples of Average Holding Time).

iii. To obtain the Average Delay of Delayed Calls in seconds, multiply the Average Holding Time by 1.40 (1.40 X 27.6 seconds = 38.6 seconds).

In summary, when two attendant positions are provided to accommodate 173 calls during the busy hour, the speed of answer for all calls is 19.3 seconds. While 49.8 percent of the calls are answered immediately, the remaining 50.2 percent have an average delay of 38.6 seconds.

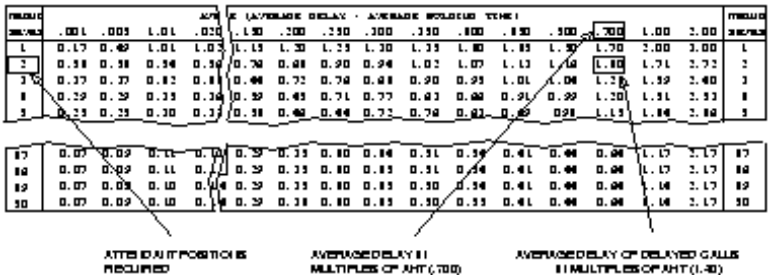


Figure 3: Estimating the average delay of delayed calls

Estimating the number of attendant positions required:

Given the appropriate variables, you can estimate the number of attendant positions required to achieve the Speed of Answer. You need the following:

- Erlang-C CCS Capacity Tables
- AWT
- AOL
- Speed of Answer you want

Example:

Take the data of the previous example:

- AWT = 27.6 seconds
- AOL = 47.83 CCS
- Assuming that the Speed of Answer = 13 seconds

To determine the Average Delay in Multiples of AWT:

$$Average\ Delay\ in\ Multiples\ of\ AWT\ = \frac{Desired\ Speed\ of\ Answer}{AWT} = \frac{13\ seconds}{27.6\ seconds} = .4710$$

Figure 4: Estimating the average delay of delayed calls

1. In the table shown in Total Usage on page 112, Erlang-C Infinite Queue Capacity, locate the column that most closely corresponds to the objective delay of .4710, most likely between .450 and .500, so use the .500 column.
2. Read down the column until you find the offered load closest to 47.83 CCS, most likely between 41.6 and 74.3, so use the 41.6 row.
3. Read horizontally to the left or right margin to find the number of servers required (number of servers required = 2).

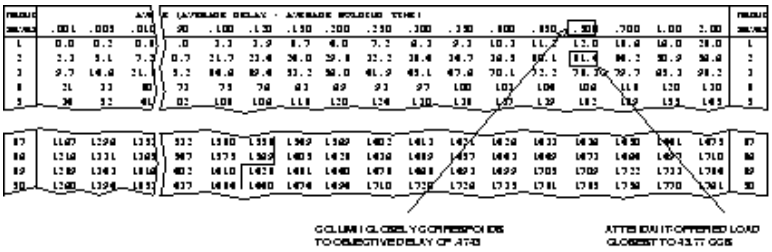


Figure 5: Estimating attendant position requirements

Estimating percent occupancy:

To determine the percent occupancy or total time, you need

- Number of attendant positions staffed
- AOL

Example:

For this example we continue with the previous example's data; that is:

- AOL = 47.83 CCS
- # of positions staffed = 2

If the attendant positions are staffed 100 percent of the time, each position can handle 36 CCS of load during the peak hour.

$$\%\ Occupancy\ (total\ time) = \frac{AOL}{\#\ positions\ x\ 36\ CCS} \times 100 =$$

$$\frac{47.83\ CCS}{2\ x\ 36\ CCS} \times 100 = 66\%$$

Figure 6: Estimating attendant position requirements

Automatic circuit assurance reports

To identify possible malfunctioning trunks, use the automatic circuit assurance (ACA) feature that provides an alerting mechanism to monitor the occurrence of the following:

- an excessive number of short holding time calls
- calls that have an abnormally long holding time

When the number of short holding time calls exceeds the threshold administered for a trunk group, or the duration of a call exceeds the administrated long holding time limit for the trunk group, the system:

1. Makes an entry on the ACA measurement report.
2. Places a referral call to a designated attendant console or display-equipped voice terminal.

Note:

For a complete description of the ACA feature, see *Administering Avaya Aura® Communication Manager*.

You can generate ACA Parameters report and ACA Measurements report for the automatic circuit assurance (ACA) feature.

- To determine if the ACA feature is enabled, use the **`display system-parameters feature`** command.
- Use the ACA feature either on a single system or in a Distributed Communications System (DCS) network. Administration of the **ACA Referral Calls** field (also displayed on the System Parameters screen) determines where referral calls terminate. For DCS networks, one switch (the primary) is administered to receive ACA referral calls from remote nodes in the network for all switches within the network. Additionally, administer the **ACA Remote PBX Identification** field with the PBX ID of the node that is designated as primary.

  For non-DCS arrangements, the switch is administered as local.
- The switch that displays the ACA measurements must have a valid number administered in the **ACA Referral Destination** field.

  A valid ACA referral destination can be any of the following:

  - An individual attendant
  - The attendant group

- A designated station that is equipped with an alphanumeric display

- The systems equipped with a speech synthesizer circuit pack also provides a voice-synthesized audio report of the referral calls.

Related topics:

ACA Parameters report on page 55
Automatic Circuit Assurance Measurements report on page 58

ACA Parameters report

The ACA Parameters report lists all trunk groups in the system and displays the current definitions (parameters) for long and short holding times.

Note:

The parameters are administered on the trunk group screens.

Related topics:

Displaying the ACA Parameters report on page 55
ACA Parameters field descriptions on page 56

Displaying the ACA Parameters report

Procedure

Type `list aca-parameters [number x] [to number x] [name x] [aca-onx] [count n] [schedule]` and press `Enter`.

list aca-parameters command provides the following options:

- number n: Beginning trunk group number
- to-number n: Ending trunk group number
- name n: Trunk group name
- aca-onr n: Enter **y** to indicate that the trunk group is monitored by ACA.
- count n: Number of trunk groups to list.
- schedule: Set another time for the report to print .

ACA Parameters field descriptions

Name	Description
Group Number	A unique number (assigned during administration) that identifies each trunk group. The group number can be any number within the range of one to the maximum number of trunk groups supported by the system.
TAC	Trunk Access Code. The TAC (assigned during administration) for the trunk group.
Group Type	The type of trunk. The following trunk types exists: • Access (access) • Advanced Private Line Termination (aplt) • Central Office (co) or Public Network Service • Customer Provided Equipment (cpe) • Digital Multiplexed Interface-Bit Oriented Signaling (dmi-bos) • Direct Inward Dialing (did) • Direct Inward/Outward Dialing (diod) • Foreign Exchange (fx) • Integrated Services Digital Network (isdn-pri) • Release Link Trunk (rlt) • Session Initiated Protocol (sip) • Tandem (tandem) • Tie Trunk (tie) • Wide Area Telecommunications Service (wats) **Note:** For a complete description of these trunk group types, see the *Administering Avaya Aura® Communication Manager*.
Group Name	The trunk group identification administered on the Trunk Group screen.

Name	Description
ACA On	A feature that Indicates whether ACA monitors the trunk group. Suggested actions: The decision to monitor a trunk group (field entry y) might depend on a complaint from a user, historical problems, or suspicious data from another report. You can use ACA measurements with the following measurement reports for confirmation purposes: • The list performance trunk-group • The list performance summary • The list measurements outage-trunk • The list measurements trunk-group summary or hourly
Short Hold Time	The maximum number of seconds a call is considered a short holding time call. A holding time longer than this value is considered as a normal call up until the long holding time is exceeded. The Trunk Group screen specifies the short holding time value when the trunk group is administered. The field range is from 0 to 160 seconds with 10 seconds being the default.
Short Thresh	Short Threshold. The system maintains a running count of each call with a duration less than or equal to the administered short holding time. The count is increased by one for each call that meets the short holding time criteria. When the count reaches the designated threshold, the system makes an entry in the ACA Measurements Report and places a referral call. The Trunk Group screen specifies the threshold value when the trunk group is administered. The field range is from 0 to 30 with 15 seconds being the default.
Long Hold Time	The minimum time of seizure, in hours, the system considers a call as having a long holding time. This number is specified on the Trunk Group screen when the trunk group is administered. The number has a range of zero to 10 hours. The default is one hour. The system places a referral call as soon as the system detects a single long holding call .

Automatic Circuit Assurance Measurements report

The Automatic Circuit Assurance Measurements report displays the audit trail list of referral calls placed that have short and long holding time.

Related topics:

Displaying the Automatic Circuit Assurance Measurements report on page 58
Automatic Circuit Assurance Measurements field descriptions on page 58

Displaying the Automatic Circuit Assurance Measurements report

Procedure

Type `list measurements aca [schedule]` and press `Enter`.

`schedule` is an option and can be used to schedule the report to print at a later time.

Automatic Circuit Assurance Measurements field descriptions

Name	Description
Day & Time of Referral	The day and time at which the threshold value either exceeded the short holding time calls or reached long holding time call and placed a referral call. This field is expressed as: day of the current month/hour:minute The report lists referral calls beginning with the most recent and continuing back in time until either all referrals are listed or the most recent 64 are listed. A referral call is completed if the call is answered. A call that is unanswered is attempted again at the top of the next hour and each subsequent hour until it is answered or when a new ACA call is received.
Trunk Group No.	Trunk Group Number. The number of the trunk group over which the referral call was placed.
Trunk Access Code	Trunk Access Code for the trunk group.

Name	Description
Trunk Member	The specific trunk in the group that experienced the short or long holding time infraction. This information can be used, with other maintenance tests, to identify the equipment location (circuit pack) of the trunk group member. For wideband trunk groups, the number shown is the lowest numbered trunk used in the wideband call.
Type of Referral	The referral as the result of too many *short* holding time calls or an excessively *long* holding time call. Suggested action: Generally, a referral call should serve as a warning of potential trunk failures. In addition, an excessively long holding call might indicate a security breach. Depending upon local arrangements, you must alert maintenance personnel or the agency responsible for problem resolution, if the system has not already sent an alert.
Wideband Flag	If the call was a wideband call, the system displays a “W” next to the entry. In addition, for any wideband calls on the report, the system displays the tag “W = Wideband Support” in the report heading.

Note:

For wideband calls that consume more than 64 kbps of bandwidth, the Automatic Circuit Assurance Measurements report only shows the B-channel with the lowest number. In addition, on the report, entries that pertain to referral calls associated with wideband facilities are designated by a “W” in the far right position of the report entry. If the Automatic Circuit Assurance Measurements report contains entries for referral calls pertaining to wideband facilities, the subtitle (w = Wideband Support) will append to the report title.

ARS, AAR or UDP route pattern reports

Automatic Route Selection (ARS), Automatic Alternate Routing (AAR), and the Uniform Dial Plan (UDP) are features that route calls over public and private networks. To route the calls, ARS, AAR, and UDP select a routing pattern. A routing pattern is a list of trunk groups and a set of parameters that define the conditions under which you must select each trunk group to route calls.

There are two measurement screens related to routing patterns.

Related topics:

Route Pattern Measurement Selection screen on page 60
Route Pattern Measurements report on page 61

Route Pattern Measurement Selection screen

The Route Pattern Measurements Selection screen displays the list of patterns to be measured. The Route Pattern Measurements report displays traffic data for the specified pattern (as a whole) and the distribution of traffic on the trunk groups in the pattern.

Related topics:

Displaying the list of route patterns to be measured on page 60
Changing the list of route patterns to be measured on page 60
Route Pattern Measurement Selection field descriptions on page 61

Displaying the list of route patterns to be measured

About this task

To display the list of route patterns to be measured:

Procedure

Type **`display meas-selection route-pattern [schedule]`** and press **Enter**.

The **`schedule`** option is available for the **`display`** command only.

Note:

Routing pattern numbers are administered as a part of the system implementation process, and specifically, as a part of administering the ARS, AAR, or UDP feature. The procedure to administer ARS, AAR, or UDP is described in the *Administering Avaya Aura® Communication Manager*.

Changing the list of route patterns to be measured

About this task

To change the list of routing patterns to be measured:

Procedure

1. Type **change meas-selection route-pattern** and press **Enter**.
2. Enter the route pattern number to be measured and press **Enter**.

   Pattern numbers do not have to be in numerical order. If the pattern number you want is not in the list:

   a. Add the number if there is space available, or replace an existing pattern number you no longer need.
   b. Press **Enter** until the cursor is placed on the unwanted pattern number and enter the new number, or press **CLEAR FIELD** and enter the new number.

Route Pattern Measurement Selection field descriptions

Name	Description
Pattern No	Pattern number. The system lists the patterns selected for measurement.

Route Pattern Measurements report

The Route Pattern Measurements report contains usage measurements for each of the 25 selected routing patterns. This report displays traffic data for the specified pattern (all trunk groups within the pattern, as a whole) and the distribution of traffic on each trunk group in the pattern.

Related topics:

Displaying the Route Pattern Measurements report on page 61
Route Pattern Measurement field descriptions on page 62
Data analysis guidelines for route pattern reports on page 65
Route pattern data analysis on page 65

Displaying the Route Pattern Measurements report

Procedure

Type `list measurements route-pattern <assigned pattern number (1-254)> <yesterday/today/last-hour> [schedule]` and press `Enter`.

- Assigned pattern number is the pattern number you want to display. This number must previously have been assigned to one of the numbers on the Route Pattern Measurement Selection screen. To obtain data for the pattern, it must previously have been administered on the ARS/AAR/UDP screens. assigned pattern number is a required field for this command.
- yesterday/today/last-hour lists the route pattern activity for the specific day or time. yesterday/today/last-hour is a required field.
  - yesterday: lists the route pattern activity for yesterday.
  - today lists the route pattern activity for today.
  - last-hour lists the route pattern activity of the most recently completed hour.
- schedule: enables you to schedule the report to print at another time. This is an optional field.

Example

To display the previous day's measurements for route pattern 27, type **`list measurements route-pattern 27 yesterday`**.

Route Pattern Measurement field descriptions

Name	Description
Pat. No.	Pattern number. The number of the route pattern measured.
Queue Size	The size (length) of the queue for the first trunk group in the route pattern. This is commonly referred to as the route pattern queue size. A queue is an ordered sequence of calls waiting to be processed. For this example, a maximum of five calls may be in queue at any one time.
Calls Offered[1]	The total number of calls offered to the route pattern.

[1] See Specifying trunks to monitor for Trunk Group Hourly report on page 203 for this measurement.

Name	Description
	$Calls\ Offered\ (With\ Queue) = \#\ of\ Calls\ Carried + \#ofQueueOverflowCalls + \#ofQueueAbandonCalls$ $Calls\ Offered\ (Without\ Queue) = \#\ of\ Calls\ Carried + \#ofCallsBlocked$
Calls Carried	The total number of seizures (for all trunk groups) in the routing pattern.
Calls Blocked	The number of offered outgoing calls that found all trunk groups in the pattern busy. If the queue overflows, then the call is still blocked. Specifically, a blocked call: • Arrives when there are no available resources • Arrives and gets queued • Arrives when the queue is full • Arrives and cannot queue because the queue length is set to zero • Cannot queue because the Automatic Callback (ACB) button is busy • Cannot queue because there is no ACB button
Calls Queued	The number of offered calls that found all trunk groups in the pattern busy and were placed in queue for the first trunk group (first-choice trunk group) in the pattern. These calls also increases the number of blocked calls.
Queue Ovflo.	Queue Overflow. The number of calls that find the queue on the first trunk group full. Calls attempted while the queue is in overflow receive a reorder signal. These calls also increment the blocked calls counter.
Grp No.	Group Number. The number, assigned through the Trunk Group screen, that identifies each trunk group associated with the displayed data. Trunk groups are listed in the same order as they are assigned on the Route Pattern screen. The first trunk group listed is the first selected (preference 1); the second listed is the second selected (preference 2), and so on.
Grp Type	Group Type. The type of trunk in the group. You can access the following types of trunk groups through the route pattern: • Access (access) • Advanced Private Line Termination (aplt) • Local Central Office (co)

Name	Description
	• Direct Inward/Outward Dialing (diod) • Foreign Exchange (fx) • Integrated Services Digital Network-Primary Rate Interface (isdn-pri) • Session Initiated Protocol (sip) • Tandem (tandem) • Tie Trunk (tie) • Wide Area Telecommunications Service (wats)
Grp Size	Group Size. The number of trunks in the group.
Grp Dir	Group Direction. Identifies whether the assigned trunk groups are: • outgoing (out) • 2-way (two) Incoming trunks are not included in route patterns.
% Calls Carried	Percentage of Calls Carried. A graphic display showing the percentage of total calls carried over the route pattern by the trunk groups.
% Calls	Percentage of Calls. The percentage of the total calls carried over the route pattern by the trunk group. Suggested action: The first trunk group listed in the report is the first choice trunk group. This trunk group should always carry a significantly larger percentage of the calls than any of the other trunk groups. If not, you should add more members so the first choice trunk group has significantly more members than any other group in the pattern.
Total Calls	The total number of calls carried by the route pattern by the trunk group. For the **today** report, this field indicates the number of calls carried since the previous midnight. For the **yesterday** report, this field indicates the number of calls carried all day (24 hours) yesterday. **Note:** This column displays a cumulative number and there are no peak data measurements for the route pattern reports. However, you can use the trunk group reports to display “peak” as well as other data for the trunk groups.
Wideband Flag	If a trunk group is administered to support wideband switching, the system displays a “W” next to the trunk group entry. In addition, if any of the trunk groups on the report support wideband switching, the system displays the tag “W = Wideband Support” in the report heading.

Specifically the number of offered calls includes:

- The number of calls carried on all trunks in the route pattern.
- The number of calls that could not queue because queue slots were unavailable.

- The number of calls that queued, but abandoned the queue before seizing a trunk.
- The number of calls that could not be queued because the queue length was zero.

Data analysis guidelines for route pattern reports

The following guidelines show an easy and fast method of determining whether the collected data is invalid or questionable. The guidelines represent the least that you must do to validate the report. You must perform additional validation steps as necessary.

To validate the Route Pattern Measurements report, verify the following data :

- Total Calls Offered to a pattern must always be equal to the sum of the columns **Calls Carried**, **Queue Overflow** , and **Queue Abandoned** if there is a queue on the first preference.
- Total percent of all calls carried in a pattern (sum of the **% Calls** column for each trunk group) must not exceed 100.

Route pattern data analysis

The Routing Pattern Data worksheet backs up the data from the reports and provides an easy means to view overall performance of the specified route pattern. For more information about Route Pattern data worksheet, see *ARS/AAR Routing Pattern Data worksheet*. The routing pattern reports or worksheet do not identify a peak hour but do total the data for the identified time period.

The Routing Pattern Measurements report summarizes data for the specified routing pattern. Using this report, you can determine:

- How traffic is distributed over the trunk groups in the pattern.
- Whether the Facility Restriction Levels (FRL) are administered properly.
- The proper number of trunk members and trunk groups.

Routing patterns are administered as a part of ARS, AAR, or UDP administration. After you analyze the data presented with this report, you might want to change the routing pattern. For example, you want to increase the number of trunk members or trunk groups. To make a change, go to the Routing Pattern screen.

For example, to change the FRL for the routing pattern, go to the ARS/AAR/UDP Routing Pattern screen.A user attempting to originate calls over the routing pattern might be blocked because the number assigned to the user FRL is lower than the number assigned to the trunk group. Ensure that the user number is the same as the FRL number or lower than the FRL number. A user cannot gain access to trunk groups with numbers tha are higher than the user FRL.

A pattern may have enough trunks but may not have a proper FRL to work with FRLs assigned to users, attempting to originate calls with the pattern. If the report indicates a high number for

the Calls Queued column or the Queue Overflow column, but the usage on trunks in the groups following the first choice trunk group is low, consider identifying the group of users who are attempting to originate calls but are blocked. Then raise the FRL of this group by accessing the Class of Restriction screen and increasing the FRL number for the identified group or groups of users.

If the report indicates a high Queue Overflow rate and a high usage rate for all trunk groups in the pattern, then this probably indicates there are not enough trunks. Generally, the simplest solution is to increase the number of first choice trunks. Another consideration is to add more trunk groups to the pattern. Perhaps the most drastic change is to reorganize the ARS/AAR/UDP routing patterns.

You must keep the number in the Calls Blocked column to the minimum.

Additional and related information is available on the Performance Summary report. For example, the Performance Summary report lists the five trunk groups with the highest percent of blocking during their peak hour. Furthermore, the report lists the trunk group members out of service. Also listed are the trunk members, by trunk group, that were not used during the reporting period.

The Trunk Groups and Wideband Trunk Groups reports provide measurement data that relates to the Routing Pattern Measurements report. For example, the total number of calls that overflow from the first choice trunk group is listed in the **Grp Ovfl** field. Depending on how the trunk group is administered, these overflow calls are rerouted to the other (second, third, and so on) trunk groups.

Call Type Analysis Route Chosen report

Use the Call Type Analysis Route Chosen Report **`(list calltype route-chosen)`** to see what happens if the telephone number you enter into your administration terminal is dialed from call log of a telephone.

Related topics:

Displaying the Call Type Analysis Route Chosen report on page 66
Sample Call Type Analysis Route Chosen report on page 67

Displaying the Call Type Analysis Route Chosen report

Procedure

Type `list calltype route-chosen n [location n] [partition n] [schedule]` and press `Enter`.

`schedule` is an option and can be used to schedule the report to print at a later time.

Sample Call Type Analysis Route Chosen report

```
list calltype route-chosen 50

                    CALL TYPE ANALYSIS ROUTE CHOSEN REPORT

    Location:  1                        Partitioned Group Number:  1

 Match: 50
Length: Min 0  Max 0
Selected Location: all

   After Delete and Insert          Type  Result
1:                                       No Matching LDAC Entry
2:
3:
4:
```

Call Type Analysis Route Chosen field descriptions

Name	Description
Location	Location from the command line. Use this field to see what would happen if the telephone number you enter into your administration terminal was dialed from the call log of a telephone in this location. If the system: • finds the matching entries, Communication Manager uses those entries. • does not find a matching entry, Communication Manager searches for matching entries in location all.
Partitioned Group Number	Partitioned Group Number as entered on the command line. The default is 1.

Name	Description
Selected Location	The location Communication Manager uses to route the entered digit string, 1 to 250, or all. If the system: • finds the matching entries, it uses those entries. • does not find a matching entry, Communication Manager searches for the entries in location all.
Match	numeric: the entry in the Call Type Digit Analysis Table that was selected for the dialed string. Blank: no matching entries are available for this dialed string in the Call Type Digit Analysis Table.
Length	numeric: the entry in the Call Type Digit Analysis Table that was selected for the dialed string. Blank: no matching entries are available for this dialed string in the Call Type Digit Analysis Table
After Delete and Insert	The digit string that the system displays after call type digit manipulation for that pattern is complete. The system allows up to four manipulations.
Type	The call type used by the call type algorithm to test the modified string. Call types correspond to the equivalent entries on the Call Type Digit Analysis Table (**`display calltype analysis`**). Valid entries are: • ext • aar • ars • udp
Result	Results of the analysis on the dialed string. If the system finds a successful match and completes the call, the system displays modifications to the dialed string. Results stop at the first successful match and valid route. Use this information to view the call type's specific routing analysis form, like the AAR

Name	Description
	Routing Table, ARS Routing Table, dial plan analysis tables and the uniform-dial plan tables for more information about the routing of the call.

AAR or ARS Route Chosen reports

The administrator can use the ARS/AAR Route Chosen report to find out how a CM server will route a set of digits dialed from a specified endpoint. The administrator should not include ARS or AAR FAC in the digits entered. The result is a Route Pattern or a local endpoint if digit conversion happens. As a Route Pattern can have up to 16 preferences, the lower half of the Route Chosen report shows the digits that would be outpulsed (over a traditional trunk), or sent in an ISDN SETUP or SIP INVITE, if that preference is selected.

Related topics:

Displaying an AAR Route Chosen report on page 69
Sample AAR Route Chosen report on page 70
Displaying an ARS Route Chosen report on page 70
Sample ARS Route Chosen report on page 71

Displaying an AAR Route Chosen report

Procedure

Type `list aar route-chosen [location n] [partition n] [schedule]` and press **Enter**.

`schedule` is an option and can be used to schedule the report to print at a later time.

Sample AAR Route Chosen report

```
list aar route-chosen 30

                        AAR ROUTE CHOSEN REPORT

    Location:  all                    Partitioned Group Number:  1

     Dialed             Total        Route    Call      Node     ANI
     String           Min    Max    Pattern   Type      Number    Location

30                    5      5        1        aar                  all

  Actual Outpulsed Digits by Preference (leading 35 of maximum 42 digit)

1: 30                                  9:
2:                                     10:
3:                                     11:
4:                                     12:
5:                                     13:
6:                                     14:
7:                                     15:
8:                                     16:
```

Displaying an ARS Route Chosen report

Procedure

Type `list ars route-chosen [location n] [partition n] [schedule]` and press **Enter**.

`schedule` is an option and can be used to schedule the report to print at a later time.

Sample ARS Route Chosen report

```
list ars route-chosen 222

                          ARS ROUTE CHOSEN REPORT

    Location:  1                        Partitioned Group Number:  1

     Dialed             Total          Route    Call      Node     ANI
     String           Min     Max     Pattern   Type      Number    Location

2                     7      7         2        hnpa                  all

  Actual Outpulsed Digits by Preference (leading 35 of maximum 42 digit)

1: 222                                  9:
2: 222                                 10:
3:                                     11:
4:                                     12:
5:                                     13:
6:                                     14:
7:                                     15:
8:                                     16:
```

ARS Route Chosen Report field descriptions

Name	Description
Location	Indicates Location from the command line. Use this field to see what would happen if the telephone number you enter into your administration terminal was dialed from the telephone in this location. If the system: • finds the matching entries, it uses those entries. • does not find a matching entry, Communication Manager searches for the matching entries in location all.
Partitioned Group Number	Indicates Partitioned Group Number as entered on the command line. The default is 1.
Dialed String	The matched entry in the **ARS Digit Analysis** table.
Total Min/Max	Minimum and maximum length of the string matched in the **ARS Digit Analysis** table.

Name	Description
Route pattern	The number that indicates the pattern of routing.
Call Type	The call type as matched on the ARS Digit Analysis table. For more information about ARS Digit Analysis, see *Avaya Aura® Communication Manager Screen Reference* for full explanation of this field.
Node Number	Node number as matched on the **ARS Digit Analysis Table**.
Actual Outpulsed Digits by Preference	Digits outpulsed when you choose each of the preferences in the chosen route pattern.

Call Rate Measurements report

The Call Rate Measurements report provides traffic data for all calls (incoming, outgoing, and intercom) completed on the system during defined time intervals:

- Last hour
- Peak hour of the current day
- Peak hour of the previous day

The peak hours are the hours with the greatest number of calls and the hours with the busiest 36-second intervals. A 36-second interval (1 one-hundredth of an hour) is used so the product of number of busy intervals and 100 gives the peak call rate for the listed hour.

Example

If in normal traffic, the peak 36-second interval of the last hour logs 31 calls, the peak calling rate is considered as 3100 calls for an equivalent hour.

Related topics:

Displaying a Call Rate Measurements report on page 72
Call Rate Measurements field descriptions on page 73

Displaying a Call Rate Measurements report

Procedure

Type `list measurements call-rate [total | service-link | multimedia | data | voice] [schedule]` and press `Enter`.

`schedule` is an option and can be used to schedule the report to print at another time.

total/service-link/multimedia/data/voice is a required field. Choose one of the following:

- `total`: Lists the traffic data for all calls (incoming, outgoing, and intercom).
- `voice`: Llists the traffic data for voice calls (incoming, outgoing, and intercom).
- `data`: Lists the traffic data for data calls (incoming, outgoing, and intercom).
- `multimedia`: Lists the traffic data for multimedia calls (incoming, outgoing, and intercom).
- `service-link`: Llists the traffic data for service link calls (incoming, outgoing, and intercom).

Note:

`multimedia` and `service-link` parameters are available only if **MMCH (Basic)** is enabled.

Call Rate Measurements field descriptions

The primary purpose of these reports is to identify system-level peak calling activity and the hour the activity occurred. Typically, the busiest hour for peak calling activity is the same as the peak hour for all trunk groups, which is identified on the Trunk Group Measurements Report. However, conditions could be such that the two reports indicate different hours.

Note:

The Call Summary report lists the number of completed calls for the last 24 hours. Therefore, if you compare the Call Rate Measurement reports with the Call Summary report, you should see some of the same information.

Name	Description
Hour	Measurement hour. The starting time of the hour in a 24-hour clock during which the data is recorded. **Note:** A pair of asterisks in the minute portion of the measurement hour indicates that the switch time was changed during the measurements interval. For example, 10**.

Name	Description
# Compl	Number of calls completed. The number of calls completed or answered during the listed hour. The calls include incoming, outgoing, and intercom calls.
Busy Int. (36 sec.)	Busy interval (36 seconds). The 36-second interval within the listed hour that had the most calls completed. A 1-hour period has a hundred 36-second intervals.
# Busy Int. Calls Compl	Number of busy interval calls completed. The number of calls completed in the listed busy interval. **Note:** The system counts all originated calls except those directed to an announcement or those generated by maintenance. For example, a facility access test call is not counted as a completed call. The system counts wideband calls as a single call.
Busiest Hour	The busiest hour for today and yesterday. This hour has the largest number of completed calls.
Busiest Interval	The hour with the busiest 36-second interval for today and yesterday. The hour containing the busiest 36-second interval is not necessarily the same hour as the one reported as the busiest complete hour of the 24-hour period.

Call Summary Measurements report

The Call Summary Measurements report provides an hourly summary of the traffic data for the last 24 hours. The system counts all call completions, except those generated by maintenance. For example, a Facility Test Call is not counted as a call completion.

Note:

The system counts calls on initial completion and does not count conference calls and transfer calls.

Related topics:

Displaying the Call Summary Measurements report on page 75
Call Summary Measurements field descriptions on page 75

Displaying the Call Summary Measurements report

Procedure

Type `list measurements call-summary [schedule]` and press `Enter`.

schedule option lets you schedule the report to print at a later time.

Call Summary Measurements field descriptions

The system displays the data beginning with the most recently completed hour and going back for 24 consecutive hours. For example, since the report is displayed during the 1500-hour time interval, the last completed hour is 1400. Therefore, the left hour column begins with 1400 and lists the 12 preceding hours.

Name	Description
Hour	Measurement hour. The starting time of the hour in 24–hour format during which the data is recorded. **Note:** A pair of asterisks in the minute portion of the measurement hour indicates that the switch time was changed during the measurements interval. For example, 10**.
# of Calls Completed	Number of calls completed. This field contains the following subfields: • **Voice**: The number of voice calls completed during the listed hour. • **Data**: The number of data calls completed during the listed hour. A data call carries digital signals between two endpoints, enabling end terminals to communicate directly. • **Multi Media**: The number of multimedia calls completed during the listed hour. A

Name	Description
	multimedia call involves one or more media calls, for example, voice, video, and data, between a multimedia user and other users. This subfield only applies to the users using MMCH (Basic). • **Service Link**: The number of service links established during the listed hour. A service link provides voice, video, and data connectivity to a multimedia user. This subfield only applies to the users using MMCH (Basic). • **Total**: The total number of calls completed during the listed hour. Calls are counted in the hour the calls are answered and not in the hour the calls are dropped. Therefore, a call that starts in one hour and ends in another hour is counted only in the hour the call originates. To determine the types of calls during the measurement hour, use the List Measurements Occupancy Summary report.

Cell Traffic report

The Cell Traffic report provides hourly and daily summaries of the wireless traffic data. These reports study the wireless traffic patterns and perform trouble analysis when used in conjunction with maintenance tests and other tools. For example, excessive load on a cell of Wireless Fixed Base (WFB) or too many handovers might indicate deficiencies or potential problem areas in the system.

Related topics:

Displaying the Cell Traffic report for an individual cell on page 77
Displaying the Cell Traffic summary report on page 77
Cell Traffic Summary field descriptions on page 77

Displaying the Cell Traffic report for an individual cell

Procedure

Type `list measurements call-traffic <cell-addr> [wfb-address] [cell-number] <yesterday-peak/today-peak/last-hour> [schedule]` and press `Enter`.

Note:

The qualifier cell-addr identifies cabinet (1-64), carrier (A-E), and slot (00-20).

The wfb-address, cell-number, print, and schedule options are available for this command.

Displaying the Cell Traffic summary report

About this task

To display the Cell Traffic Summary report:

Procedure

Type **`list measurements cell-traffic summary <today-peak/yesterday-peak/last-hour> [schedule]`** and press **Enter**.

The **`[schedule]`** option lets you schedule the report to print at another time.

Cell Traffic Summary field descriptions

Name	Description
Total wireless call connectivity for the hour	A count of the actual number of calls originated and calls offered as a whole. The value of this field represents call attempts that include both complete and incomplete calls.
Total wireless call connectivity for the day	A count of the actual number of calls originated and calls offered as a whole. The

Name	Description
	value of this field represents call attempts that include both completed and incomplete calls. The measurements are for the interval between midnight and the last hour of the current day.
Cell Address	Location and number in terms of port network number and the port ID.
Meas Hour	Measurement hour. The starting time of the hour in the 24-hour format during which the data is recorded.
%Time In-Sys	Percent of time in-system. The percentage of time during the polling interval that a WFB was administered.
Usage (CCS)	The total time in Centum Call Seconds (CCS) or hundred call seconds that bearer channels are allocated for the Wireless Terminals (WT) at a cell.
TotBch Seized	Total bearer channels seized. The number of times the bearer channels were seized by this cell for call or mobility related activities during the polling interval.
PeakBch In-Use	Peak bearer channel in-use. Peak number of traffic bearer channels that are simultaneously in use at a WFB.
%Time ACB	Percent of time all channels busy. The percentage of time that All Channels Busy (ACB) traffic bearer channels are simultaneously in use at a WFB during the measurement interval.
%Time OutServ	Percent of time out-of-service. The percentage of time during the polling interval that a WFB was made busy by maintenance and was not available for call related activities.
Hand Overs	The number of handovers handled by the cell during the measuring period.

Call coverage measurements reports

The following two reports provide measurement information about call coverage.

- The Coverage Path Measurement report describes coverage activity related to the coverage paths.
- The Principal Coverage Measurement report describes coverage activity as it relates to principal extensions and Personal Central Office Line (PCOL) groups.

Each report contains a selection screen that lists the specific coverage paths or principal extensions to be measured.

These reports provide information about what happens to the calls that go to coverage. You can use the reports to refine and improve call coverage patterns and to manage the system principals. You must use these reports in conjunction with the **`list coverage path`** and **`display coverage sender-group [number]`** commands.

Related topics:

Call coverage measurements terms on page 79
Call coverage measurements reports feature interactions on page 79
Data analysis guidelines for call coverage measurements on page 80
Selecting coverage paths to be measured on page 81
Coverage Path Measurements report on page 82
Selecting principal extensions to be measured on page 84
Principal Measurements report on page 86

Call coverage measurements terms

Typically, a principal is the party or group for which a call is originally intended. A principal can be a station user, a hunt group, a terminating extension group, or a PCOL.

Call coverage measurements reports feature interactions

Bridged Call: A call answered by a bridge of a coverage point extension is considered answered by the coverage point. A call answered by the bridge of a principal is considered answered by the principal.

Call Pick-Up: If the principal is a member of a pickup group, a call ringing at the principal and picked up by a member of the pickup group is considered answered by the principal. If the coverage point extension is a member of a pickup group, a call ringing at the coverage point

and picked up by a member of the pickup group is considered answered by the coverage point.

Leave Word Calling and Automatic Callback: A call for which the calling party activates Leave Word Calling (LWC) or Automatic Callback (ACB) before redirecting and answering the call is considered a call back for the principal. If LWC or ACB is activated after the call is redirected, it is considered a call back for the coverage path.

Trunks: Central office (CO) trunks and other trunks that have ring-back provided by the CO repeatedly attempts to complete the call to the principal. Each attempt is considered a new offered call and is counted for principal or coverage as appropriate.

Data analysis guidelines for call coverage measurements

Principals do not have a column for answered calls.

$$Answered\ Calls = Calls\ Offered - [Calls\ Redirected + Calls\ Abandoned + Callback]$$

However, this case might not always apply. A number of interactions affect the totals on the measurement reports so that the column totals do not add up to the total calls offered.

Call Forwarding: A forwarded call from the principal is counted as offered or abandoned to the principal. If the call abandons, the call is counted as abandoned at the principal. If the forwarded-to extension is a measured principal, the call is counted as an offered call to the forwarded-to extension, but if the call does not have an abandon or a redirection associated with it. The system displays the call as answered.

Bridging and Pickup Groups: The principal, the principal bridge and members of their pickup group all have access to a call even if the call goes to coverage.

If one of these parties answers the call, the count shows the call was offered to the coverage path without a corresponding count of answered or abandoned. The count is thrown off and the columns do not add up.

Distributed Communications System (DCS): Call Forwarding abandon interactions are different than those described above if forwarding is done off-switch. In that case, each extension is treated as a principal and calls are counted as abandoned if the caller drops the call.

When a call is forwarded across **DCS**, the call goes to coverage based on the forwarded-to principal path criteria rather than the principal unless the principal is using cover-all.

Because the one-switch appearance of **DCS** is achieved using more than one trunk, **ACB** and **LWC** calls are counted as abandoned.

Selecting coverage paths to be measured

You can select up to 100 coverage paths for measurement.

Related topics:

Displaying the list of coverage paths to be measured on page 81
Coverage Path Measurements field descriptions on page 81

Displaying the list of coverage paths to be measured

Procedure

1. To display the list of all the coverage paths on the system, type **`display meas-selection coverage [schedule]`** or **`list coverage path [schedule]`**, and press Enter.

   Note:

   The schedule option is available for the display and list commands only.

2. To change the list of coverage paths to be measured, type **`change meas-selection coverage`**, and press Enter.
3. Enter the coverage path number to be measured, and press Enter.

   Coverage path numbers do not have to be in numerical order. If the coverage path you want is not listed, add the coverage path number (if there is space available), or replace an existing coverage path number you no longer need. Press Enter until the cursor is placed on the unwanted coverage path and enter the new coverage path number, or press **CLEAR FIELD** and enter the new coverage path number.

Coverage Path Measurements field descriptions

Name	Description
Path No.	Path Number. The system displays up to 100 coverage paths selected for measurement.

Coverage Path Measurements report

The Coverage Path Measurements report contains measurements for each of the 100 selected coverage paths from the Measured Coverage Paths screen.

Related topics:

Displaying the Coverage Path Measurements report on page 82
Coverage Path Measurements field descriptions on page 83

Displaying the Coverage Path Measurements report

Procedure

Type `list measurements coverage-path [starting path] [count (1-100)] <yesterday-peak/today-peak/last-hour> [external] [schedule]`, and press Enter.

- yesterday-peak/today-peak/last-hour is a required field. You can choose one of the following options:
  - yesterday-peak: Lists the activity for yesterday's peak hour.
  - today-peak: Lists the activity for today's peak hour.
  - last-hour: Lists the activity of the most recently completed hour.
  - starting path: Use this field to enter the number of the coverage path you want to display. Ensure that this is the same number that was previously assigned to one of the available numbers on the Coverage Path Measurement Selection screen. If you do not enter a number, the system displays all measured coverage paths.
  - count (1-100): Use this field to enter a number between 1 and 100.
  - external: Use this field to produces a version of the report showing incoming trunk calls only. Attendant extended calls are considered external.
  - schedule: Use this field to schedule the report to print at another time.

Coverage Path Measurements field descriptions

Name	Description
Path No.	Path Number. The number that identifies the measurement coverage path.
Meas Hour	Measurement Hour. The starting time (using a 24-hour clock) of the last hour or the hour during which the greatest number of calls are offered to the coverage path. **Note:** A pair of asterisks in the minutes portion of the measurement hour indicates that the switch time was changed during the measurements interval (for example, 10**).
Calls Offrd	Calls Offered. The total number of calls offered to the path. If this number is large, review the principal report and investigate why calls are not being answered. To find the principal for this coverage path, use the **`display coverage sender-group [number]`** command.
Act Criteria	Active Criteria. The number of calls offered to this path due to the principal being active. If this number is large compared to the **Calls Offrd** field, you should investigate. A possible reason is the path is administered for active only.
Bsy Criteria	Busy Criteria. The number of calls offered to this path due to the principal being busy.
DA Criteria	Don’t Answer Criteria. The number of calls offered to this path because the principal did not answer the call after the administered number of rings. To find the administered number of rings, use the **`display coverage path [number]`** command. If this number is large compared to the **Calls Offrd** field, investigate the reason these calls are leaving the principal. A possible reason

Name	Description
	is, the path is only administered for don't answer.
All Criteria	The number of calls offered to this path due to the use of Cover All.
SAC Criteria	Send-All-Calls Criteria. The number of calls offered to this path due to the principal's use of Send-All-Calls, or the calling party using Go To Coverage. If this number, or the **All Criteria** field, are unusually large, you should investigate why calls are still offered to this principal.
Cback	Call Back. The number of calls offered to this path where the calling party used LWC or ACB before a coverage point answered the call. These cases are separated out because they are usually considered abandons but counting them as such would be misleading. If this number is high, verify why calls are not being answered.
Point Ans	Point Answered. The total number of calls answered by the specified point.
Point Abd	Point Abandoned. The total number of calls abandoned by the caller while ringing at the specified point. If this number is high, re-engineer the coverage paths so that less traffic is offered to this point.

Selecting principal extensions to be measured

You can select up to 100 principal extensions or PCOL TACs for measurement.

For definitions of principal extensions and TACs, refer to Call coverage measurements terms on page 79.

Related topics:

Displaying the list of principal extensions to be measured on page 85
Changing the list of principal extensions to be measured on page 85
Measured Principals selection field descriptions on page 85

Displaying the list of principal extensions to be measured

Procedure

Type `display meas-selection principal [schedule]` and press **Enter**.

`schedule` is an option and can be used to schedule the report to print at another time.

Changing the list of principal extensions to be measured

Procedure

1. Type `change meas-selection principal` and press `Enter`.
2. Enter the extension number you want to measure and press `Enter`.
   Extension numbers do not have to be in numerical order.
3. If the extension number you want is not in the list:
   a. Add the extension number (if there is space available), or replace an existing extension number you no longer need.
   b. Press `Enter` until the cursor is placed on the unwanted extension number and enter the new extension number, or press `CLEAR FIELD` and enter the new extension number.

Measured Principals selection field descriptions

Name	Description
Ext/TAC	External or Trunk Access Code (TAC). The system lists the extension or PCOL TAC numbers of up to 100 principals whose coverage is selected for measurement.

Principal Measurements report

The Principal Measurements report contains measurements for each of the 100 selected principal extensions or **TAC**s from the Measured Principals Coverage Measurements Selection screen.

Related topics:

Displaying the Principal Measurements report on page 86
Principal Measurements field descriptions on page 87

Displaying the Principal Measurements report

Procedure

Type `list measurements principal [starting extension/tac] [count(1-100)] <yesterday-peak/today-peak/last-hour> [schedule]` and press `Enter`.

- yesterday-peak/today-peak/last-hour is a required field. Choose one of the following:

  Note:

  The peak hour is the hour (within a 24-hour period) with the greatest usage.

  - yesterday-peak: Lists the activity for yesterday's peak hour.
  - today-peak: Lists the activity for today's peak hour.
  - last-hour: Lists the activity of the most recently completed hour.

- list measurements principal command has four optional fields:
  - starting extension/tac: Use this field to enter the number of the extension or PCOL TAC you want to display. This number must have been previously assigned to one of the 100 available numbers on the Principal Coverage Measurement Selection screen. If you don't enter a number, all the measured principals are displayed.
  - count (1-100): Use this field to enter a number between 1 and 100.
  - schedule: Use this field to schedule the report to print at another time.

Example

To display yesterday's peak measurements for extension 76068 and the next two principals, in order, type `list measurements principal 76068 count 3 yesterday-peak` and press `Enter`.

Principal Measurements field descriptions

Name	Description
Ext/TAC	Extension or Trunk Access Code (TAC). The principal extension or PCOL group or TAC being reported.
Meas Hour	Measurement hour. The starting time of the hour in 24-hour clock during which the data is recorded.
Calls Offrd	Calls offered. The total number of calls offered to the principal.
Aband	Abandoned calls. The total number of abandoned calls, where the calling party disconnected before the call was answered or sent to coverage. If this number is high at the principal, redirect the traffic. $$The\ number\ of\ calls\ answered\ by\ principal\ =$$ $$Calls\ Offered\ -\ Calls\ Abandoned\ -\ Calls\ Redirected$$
Redir	Redirected calls. The total number of calls not answered by the principal and subsequently sent to coverage. If this value is large compared to the value of the **Calls Offrd** field, investigate the reasons.
Act Criteria	Active criteria. The number of calls sent to coverage by this principal due to the principal being active.
Bsy Criteria	Busy criteria. The number of calls sent to coverage by this principal due to the principal being busy.
DA Criteria	Don't answer criteria. The number of calls sent to coverage by this principal because the principal did not answer the call after the administered number of rings. To find the administered number of rings, use the **`display coverage-path [number]`** command.
All Criteria	The number of calls sent to coverage by this principal due to the principal's use of Cover All.
SAC Criteria	Send All Calls (SAC) criteria. The number of calls sent to coverage by this principal due to the principal's use of SAC, or because the calling party used the Go To Cover feature.
Cback	Call back. The number of calls offered to this principal where the calling party used LWC or ACB before the principal answered the call and before it went to coverage. These cases are separated out because they look like abandons and counting them as such would be misleading.
Coverage-Paths	The coverage paths used by the principal. To find the associated extensions, use the **`display coverage sender-group`** command.

Name	Description
	Note: The **display coverage sender-group** command displays other principals using some coverage paths.

DS1 link performance measurements

Performance measurements for DS1 links include the DS1 Link Performance Measurements Summary report and the DS1 Link Performance Measurements Detailed Log report.

Many conventional error measurements rely on the parameter Bit Error Rate to describe the quality of digital transmission facilities. However, with DS1 links, when errors occur, they tend to be as error bursts rather than single bit errors. Therefore, the Errored Seconds, Bursty-Errored Seconds, Severely-Errored Seconds, and Failed Seconds measurements more accurately describe the operational characteristics of DS1 links.

DS1 link performance is based on the number of error events counted per second. You can define an error event as one of the following:

- Misframe. An error detected as an erroneous bit pattern in the bits used to frame on the DS1 signal.
- Slip. An error detected as the deletion or repetition of a single frame. The error is caused by clock differences between systems due to improper synchronization.
- Extended Superframe Format (ESF) CRC-6 Error. A data communications error over a DS1 link using the ESF format that is detected as a mismatch between the calculated CRC-6 (6-bit cyclic redundancy check) character appended to the transmitted data and the CRC-6 character recalculated by the receiver.

DS1 link performance is measured by the following error event counts:

- Errored Second. Any second that contains one or more error events.

  The percent of Error Free Seconds (%EFS) is defined as:

$$\%EFS = \left[1 - \frac{Errored\ Seconds}{Total\ Seconds}\right] \times 100$$

- Bursty-Errored Second. Any second that contains between 2 to 319 error events.
- Severely-Errored Second. Any second that contains 320 or more error events.

- Failed Second. A state that exists when ten or more consecutive severely-errored seconds are detected. A Failed Second state is cleared when no severely-errored seconds are detected for a period of 10 consecutive seconds.
- Controlled Slip Second. Any second with one or more controlled slips (a replication or deletion of a DS1 frame by the receiver).
- Loss of Frame Count. The number of times a loss of frame is declared. A loss of frame is declared when there is a continuous loss of signal or out of frame condition for greater than 2.5 seconds.

Note:

Events such as a Failed Second or Severely-Errored Second typically result in a serious impact on the customers' applications.

If the misframe or slip errors become too severe, an alarm is raised. The actual rate at which the errors occur determines whether the alarm is minor or major. Maintenance for Avaya MultiVantage identify the recommended procedures maintenance personnel should perform to resolve these alarms.

The error event data, collected by the DS1 Interface circuit pack, is available for up to 24 hours in 15-minute increments. Measurement data older than 24 hours is overwritten by the current measurement data.

A system reboot from tape clears the error event counters. To clear the DS1 error event counters, use the **`clear measurements ds1 log CabCarSSF`** command.

This command uses the following qualifiers:

- Cab: Port network number
- Car: Carrier
- SSF: Slot

If a TN767 or TN464 circuit pack is removed or taken out of service, data for that circuit pack is not available for the time the pack is removed. Additionally, if a TN767E or TN464F or later suffix circuit pack administered for ESF framing is removed or taken out of service, data for the entire 24-hour collection period is lost since ESF measurements are stored on the board rather than in switch memory.

Related topics:

DS-1 Link Performance Measurements Summary report on page 89
DS-1 Link Performance Measurements Detailed Log report on page 93

DS-1 Link Performance Measurements Summary report

The DS-1 Link Performance Measurements Summary report provides an indication of the quality of a DS1 link that connects to a DS1 Interface circuit pack.

Note:

The error message **Measurements command has timed out. See Traffic Reports manual (555-230-511)**. indicates no response was received from the DS1 circuit pack. Try the command again (maximum of two more times). However, this error message might also returned from a **`list measurements ds1`** or **`clear measurements ds1`** command that uses the remote option, for example, `list measurements ds1 summary 1c19 remote`, if Interface Unit (IU) equipment in the network is deliberately configured not to respond to ESF performance measurements message inquiries. This is a common network setup and should be considered normal. In this case, the command will never succeed. If, however, this error message is displayed when the network or far-end PBX should be responding to the remote ESF performance measurements inquiries, then the IU itself could have problems or there could be problems on the Facility Data Link span. If the command times out three times, and the configuration is one where a reply to the request should be returned, the problem should be escalated to Tier III.

Related topics:

Displaying the DS-1 Link Performance Measurements Summary report on page 90
DS-1 Link Performance Measurements Summary Report field descriptions on page 91

Displaying the DS-1 Link Performance Measurements Summary report

Procedure

Type `list measurements ds1 summary <CabCarSSF> [local/carrier-local/remote] [schedule]` and press `Enter`.

- <CabCarSSF> is a required field. You must enter the port network number, the carrier number, and the slot number
- list measurements ds1 summary command has four optional fields:
  - local: Displays your (local) measurements. These are your copies of the local (near-end) performance measurements and can be cleared by you. These measurements cannot be cleared by the carrier.
  - carrier-local: Displays carrier (network) measurements. These are the carrier copies of the local (near-end) performance measurements. They can only be cleared by the carrier.
  - remote: Displays remote CSU measurements. These measurements are available from the CSU at the far end of the link. You can clear them from the near end of the link.
  - schedule: Lets you to schedule the report to print at another time.

DS-1 Link Performance Measurements Summary Report field descriptions

Name	Description
Counted Since	The date and time at which the counters were last cleared and restarted. The counters are set to 0 and start accumulating data when the system is administered or reinitialized. The system displays the current system time in this field after the system clock is set. The value of the **Counted Since** field is calculated based on the current time. Therefore, an error message results if the system clock is not set following a system reinitialization.
Valid 15-Minute Intervals in Last 24 Hours	The total number of 15-minute intervals in the past 24-hour period with valid values. This field displays a value from 0 to 96. An invalid interval is a 15-minute interval during which the system clock was changed, a system reinitialization occurred, or the specified TN767 or TN464 circuit pack was removed from the carrier. For more information, see the DS1 log report.
Seconds Elapsed In Current Interval	The number of seconds counted in the current 15-minute interval. This field displays a value from 0 to 899.
ESF Error Events	The number of ESF errors, for example, CRC-6 errors or out-of-frame errors, counted with a maximum cumulative value of 65535.
Test	The type of DS1 loopback or span test currently active. None indicates no test is active.
Pattern	The type of bit pattern generated during an extended duration DS1 loopback or span test. None indicates that no pattern is being sent.
Synchronized	Indicates whether the test pattern generated by the DS1 board is synchronized and detected properly by the receiving DS1 circuit pack. N/A indicated that no pattern is generated.

Name	Description
Loopback/ SpanTest Bit-Error Count	The number of bit-errors detected in the received signal when an extended duration loopback test is performed.
Test Duration	The duration in seconds the extended loopback test has run. The maximum value is 99:59:59.
Errored Seconds	The number of errored seconds for the specified interval (maximum of 900). An errored second is a second in which one or more data transmission errors occurred. N/A indicates that the count for that interval is unavailable because the circuit pack was not inserted during the interval.
Bursty Errored Seconds	The number of bursty errored seconds for the specified interval (maximum of 900). A bursty errored second is a second in which 2 to 319 data transmission errors occurred. N/A indicates that the count for that interval is unavailable. An error count of this severity results in a minor alarm. Usually, resolution of the alarm is the function of maintenance personnel. Depending on local arrangements, alert the maintenance personnel, if not alerted.
Severely Errored Seconds	The number of severely errored seconds for the specified interval (maximum of 900). A severely errored second is a second in which 320 or more data transmission errors occurred. N/A indicates that the count for that interval is unavailable. Usually, resolution of the alarm is the function of maintenance personnel. Depending on local arrangements, alert the maintenance personnel, if not alerted.
Unavailable/ Failed Seconds	A count of one-second intervals during which service is unavailable (0 to 900).
Controlled Slip Seconds	The number of seconds (0 to 255 counts greater than 255 are still displayed as 255) with one or more controlled slips (a replication or deletion of a DS1 frame by the receiver).
Loss of Frame Count	The accumulation of the number of times a loss of frame is declared (0 to 255 — counts greater than 255 are still displayed as 255). A loss of frame is declared when there is a

Name	Description
	continuous loss of signal or out of frame condition for greater than 2.5 seconds. The condition is cleared after 15 seconds without a loss of signal or out-of-frame condition.
Worst 15-Minute Interval	The date, ending time, and count for the 15-minute period that contained the maximum count in each error category. If no errors, the field displays 0 with the most recent interval.
24-Hour Count	The total count in each error category for the last 24-hour period (0 to 65535 counts greater than 65535 are displayed as 65535). See the screen to view the last 96 intervals.
Current Interval Count	The count in each error category for the 15-minute interval in progress when the report is requested. If no errors have occurred yet in any of the categories during the current 15-minute interval, the respective field contains the number 0. If the system is busy performing call processing functions and cannot respond within 8 seconds, then the field displays N/A.

Note:

ESF Error Events, Test, Pattern, Synchronized, Loopback/Span Test Bit-Error Count, Test Duration, Controlled Slip Seconds, and Loss Of Frame Count apply only to the TN767E and TN464F or later suffix circuit packs.

DS-1 Link Performance Measurements Detailed Log report

The DS-1 Link Performance Measurements Detailed Log report lists errored event records for the past 24 hours. The errored event records are listed for each 15-minute interval. This shows the 96 records (the number of 15-minute intervals in 24 hours) from the current 15-minute interval back to 24 hours before the current interval.

Related topics:

Displaying the DS-1 Link Performance Measurements Detailed Log report on page 94
DS-1 Link Performance Measurements Detailed Log field descriptions on page 94

Displaying the DS-1 Link Performance Measurements Detailed Log report

Procedure

Type `list measurements ds1 log <CabCarSS> [local/carrier-local/remote] [schedule]` and press `Enter`.

- <CabCarSSF> is a required field. You must enter the port network number, the carrier number, and the slot number
- list measurements ds1 log command has four optional fields:
  - local: Displays your (local) measurements. These are your copies of the local (near-end) performance measurements and can be cleared by you. These measurements cannot be cleared by the carrier.
  - carrier-local: Displays carrier (network) measurements. These are the carrier copies of the local (near-end) performance measurements. They can only be cleared by the carrier.
  - remote: Displays remote CSU measurements. These measurements are available from the CSU at the far end of the link. You can clear them from the near end of the link.
  - schedule: Lets you schedule the report to print at another time.

Result

The system displays the errored event records for TN767E and TN464F or later suffix circuit packs administered for ESF framing starting from the most recent interval. The system displays measurements for previous suffix TN767 and TN464 boards and for later suffix boards administered for D4 framing from oldest to newest interval.

DS-1 Link Performance Measurements Detailed Log field descriptions

Name	Description
Date	The date of the 15-minute interval.
Time	The ending time for the 15-minute interval.
ES	Errored Second. The number of errored seconds for the specified interval (maximum of 900). An errored second is any second in which one or more data transmission errors occurred. `N/A` indicates the count for that interval is not available, typically because the circuit pack was not inserted during the interval.

Name	Description
BES	Bursty Errored Seconds. The number of bursty errored seconds for the specified interval (maximum of 900). A bursty errored second is any second in which 2 to 319 data transmission errors occurred. N/A indicates the count for that interval is not available. An error count of this severity results in a minor alarm. Suggested action: Resolution of the alarm should, in most cases, be the function of maintenance personnel. Depending upon local arrangements, it might be appropriate to alert maintenance personnel if they have not already been alerted.
SES	Severely Errored Seconds. The number of severely errored seconds for the specified interval (maximum of 900). A severely errored second is any second in which 320 or more data transmission errors occurred. N/A indicates the count for that interval is not available. An error count of this severity results in a major alarm. Suggested action: Resolution of the alarm should, in most cases, be the function of maintenance personnel. Depending upon local arrangements it might be appropriate to alert maintenance personnel if they have not already been alerted.
UAS/FS	Unavailable/Failed Seconds. The number of seconds the link is in the failed seconds state for the specified interval (maximum of 900). A failed second state exists any time 10 or more consecutive severely-errored seconds occur. N/A indicates the count for that interval is not available. An error count of this severity results in a major alarm. Suggested action: Resolution of the alarm should, in most cases, be the function of maintenance personnel. Depending upon local arrangements, it might be appropriate to alert maintenance personnel, if they have not already been alerted.
CSS	Controlled Slip Seconds. The number of seconds (maximum of 255) with one or more controlled slips (a replication or deletion of a DS1 frame by the receiver).
LOFC	Loss of Frame Count. The accumulation of the number of times a loss of frame is declared (maximum of 255). A loss of frame is declared when there is a continuous loss of signal or out of frame condition for greater than 2.5 seconds. The condition is cleared after 15 seconds without a loss of signal or out-of-frame condition.

DS1 Converter reports

This section describes performance measurements for the four facilities associated with a DS1 Converter board. It includes the DS1 Facility Link Performance Measurements Summary report and the DS1 Facility Link Performance Measurements Detailed Log report. These reports are available only on the G3r server.

The DS1 Converter board is part of the DS1 Converter Complex which consists of two DS1 Converter boards connected by between one and four facilities (DS1 Facility).

Errors on DS1 facilities tend to occur in error bursts rather than single bit errors. Therefore, the Errored Seconds, Bursty Errored Secs, Severely Errored Secs and Failed Seconds measurements more accurately describe the operational characteristics of DS1 facilities.

There are two DS1 converter reports:

- The DS-1 Facility Link Performance Measurements Summary report provides information about the worst 15 minutes, the last 24 hours, and the current 15 minutes for each measurement type.
- The DS-1 Facility Link Performance Measurements Detailed Log report displays a detailed log for the last ninety-six 15-minute intervals for each type of data measured.

DS1 facility performance is based on the number of error events counted per second. An error event is defined as any one of the following:

- Misframe. An error detected as an erroneous bit pattern in any single frame.
- Slip. An error detected as the deletion or repetition of a single frame.
- Extended Superframe Format (ESF) CRC-6 Error A data communications error over a DS1 facility using the ESF format detected as a mismatch between the calculated CRC-6 (6-bit cyclic redundancy check) character appended to the transmitted data and the CRC-6 character recalculated by the receiver.

DS1 link performance is measured by the following error event counts:

- Errored Second. Any second that contains one or more error events.

  The percent of Error Free Seconds (%EFS) is defined as shown in the figure on page 96.

$$\%EFS = \left(1 - \frac{Errored\ Seconds}{Total\ Seconds}\right) \times 100$$

Figure 7: Estimating Attendant Position Requirements

- Bursty-Errored Second: Any second that contains from 2 to 319 error events.
- Severely-Errored Second: Any second that contains 320 or more error events.
- Failed Second: A state that exists when ten or more consecutive severely-errored seconds are detected. A Failed Second state is cleared when no severely-errored seconds are detected for a period of 10 consecutive seconds.

Note:

Such events as a Failed Second or Severely-Errored Second typically result in a serious impact on the customers' applications.

If the errors become too severe, an alarm is raised. The actual rate the errors occurred at determines whether the alarm is minor or major.

The error event counters, located on each DS1 Converter board for each administered facility, are polled every 900 seconds (15 minutes). The data is available for up to 24 hours. Measurement data older than 24 hours is overwritten by current measurement data.

A system re-boot from tape clears the error event counters. To clear the DS1 error event, use the **clear measurements ds1-facility log | esf-error-events | loopback/spantest CabCarSSF** command.

If a DS1 Converter circuit pack is removed, or taken out of service, data for that circuit pack is not available for the time periods it is removed.

Related topics:

Clearing the DS1 Converter measurements on page 97

Typical DS-1 Facility Link Performance Measurements Summary and Detailed Log reports on page 98

Clearing the DS1 Converter measurements

Procedure

1. Type **clear measurements ds1-facility log | esf-error-events | loopback/spantest CabCarSSF [local/remote] [schedule]** and press Enter.

   You can use the following qualifiers with this command:

   - Cab: Cabinet Number
   - Car: Carrier
   - SS: Slot
   - F: Facility

   This command is only available on the G3r model. You can reset all software counters associated with the specified DS1 Converter circuit pack facility. The **Counted Since** time is also reset and the **Number of Valid Intervals** count is set to zero.

2. To display the DS-1 Facility Link Performance Measurements Summary report, type **list measurements ds1-facility summary CabCarSSF [local/carrier-local/remote] [schedule]**, and press Enter.

3. To display the DS-1 Facility Link Performance Measurements Detailed Log report, type **list measurements ds1-facility log CabCarSSF [schedule]**, and press Enter.

This command uses the same qualifiers as the **clear measurements** command. The schedule option is available for this command.

Typical DS-1 Facility Link Performance Measurements Summary and Detailed Log reports

The following table describes the data fields presented in that report.

Name	Description
Counted Since	The date and time when the associated measurement counters are cleared or the DS1 Converter facility is administered. The counters are set to 0 and start accumulating data when the system is administered or re-initialized. The system displays the current system time in this field after the system clock is set. Since the **Counted Since** field is calculated based on the current time, an error message is prompted back to you if the system clock is not set following a system re-initialization.
Valid 15-Minute Intervals in Last 24 Hours	The total number of 15-minute intervals (0 to 96) in the past 24-hour period that contain valid data. The **Valid Interval** field indicates whether or not a valid count is provided by the DS1 interface circuit pack. A value of y indicates that all counts are valid for the interval. A value of n indicates that the interval is invalid. An invalid interval is any 15-minute time interval during which the system clock is changed, a system re-initialization occurred, or the specified circuit pack is pulled from the carrier.
Seconds Elapsed In Current Interval	The number of seconds (0 to 899) counted in the current 15-minute interval.
ESF Error Events	The number of ESF errors (CRC-6 errors or out-of-frame errors) counted with a maximum cumulative value of 65535.
Test	The type of DS1 loopback/span test currently active. None indicates no test is currently active.

Name	Description
Pattern	The type of bit pattern generated during an extended duration DS1 loopback/span test. None indicates that no pattern is being sent.
Synchronized	Indicates whether the test pattern being generated by the DS1 board is synchronized (detected properly by the receiving DS1 circuit pack). N/A is displayed if no pattern is generated.
Loopback/ SpanTest Bit-Error Count	The number of bit-errors detected in the received signal when an extended duration loopback test is performed.
Test Duration	The duration in seconds the extended loopback test runs. The maximum value is 99:59:59 (99 hours, 59 minutes, and 59 seconds).
Category	The type of error to which the count applies (errored seconds, bursty errored seconds, severely errored seconds, unavailable/failed seconds, controlled slip seconds, and loss of frame count).
Worst 15-Min Interval	The date, ending time, and count for the 15-minute period that contains the maximum value for each error category. If there are no errors, the field displays `0` with the most recent interval, or N/A if no data is collected.
24-Hour Count	The total count in each error category for the last 24-hour period (0 to 65535 — counts greater than 65535 are still displayed as 65535).
Current Interval Count	The count so far in each category for the 15-minute interval in progress when the report is requested. If no errors have occurred yet in any of the categories during the current 15-minute interval, the respective field contains the number `0`. If the system is busy performing call processing functions and cannot respond within 8 seconds, then the field displays `N/A`.

Name	Description
Date	The time and date of the current report.

Name	Description
Counted Since	The start time and date when the associated measurement counters are cleared or the DS1 Converter facility is administered.
Date and Time	The date and end time of the 15-minute interval.
ES	Errored Seconds.The number of the errored seconds for the specified 15-minute interval (maximum of 900). An errored second is any second in which one or more data transmission errors occurred. N/A indicates the count for that interval is not available, typically because the circuit pack was not inserted during that interval.
BES	Bursty Errored Seconds.The number of bursty errored seconds for the specified interval (maximum of 900). A bursty errored second is any second in which 2 to 319 data transmission errors occurred. N/A indicates the count for that interval is not available. An error count of this severity results in a minor alarm. Suggested action: Resolution of the alarm should, in most cases, be the function of maintenance personnel. Depending upon local arrangements, it might be appropriate to alert maintenance personnel if they have not already been alerted.
SES	Severely Errored Seconds.The number of the severely errored seconds counter for the specified interval (maximum of 900). A severely errored second is any second in which 320 or more data transmission errors occur. N/A indicates the count for that interval is not available. An error count of this severity results in a major alarm. Suggested action: Resolution of the alarm should, in most cases, be the function of maintenance personnel. Depending upon local arrangements it might be appropriate to alert maintenance personnel, if they have not already been alerted.
UAS/FS	The value of the unavailable or failed seconds counter for the specified interval (maximum of 900). A failed second state exists any time that 10 or more consecutive severely errored seconds occur. An error

Name	Description
	count of this severity results in a major alarm. N/A indicates the count for that interval is not available. Suggested action: Resolution of the alarm should, in most cases, be the function of maintenance personnel. Depending upon local arrangements, it might be appropriate to alert maintenance personnel, if they have not already been alerted.
CSS	Controlled Slip Second. Any second with one or more controlled slips (a replication or deletion of a DS1 frame by the receiver).
LOFC	Loss of Frame Count. The number of times a loss of frame is declared. A loss of frame is declared when there is a continuous loss of signal or out of frame condition for greater than 2.5 seconds.

Emergency Access Calls report

The Emergency Access Calls report tracks emergency calls by extension, event, type of call, and time of day. This report prints in the system journal printer with name, time and event code (attendant crisis alert).

Related topics:

Displaying the Emergency Access Calls report on page 101
Emergency Access Calls field descriptions on page 102

Displaying the Emergency Access Calls report

About this task

Type **`list emergency [schedule]`** and press `Enter`.

Options: The schedule option is available with this command.

Emergency Access Calls field descriptions

Name	Description
Extension	The telephone number where the crisis alert originated.
Event	The event code for the emergency access call: • crisis alert—crisis alert sent • crisis alert ack'd—crisis alert acknowledged • crisis pager pass—crisis alert sent to a pager • crisis pager fail—crisis alert sent to a pager and the page failed
Type of Call	The type of call that is being logged: • ars alrt call type • feature access code • off hook alert
Time	The time (A–AM or P–PM) the crisis alert originated (for example, 11:21 A).

Hunt group reports

This section describes the traffic measurements, performance, and status reports for ACD/UCD/DDC Hunt Groups.

For more detailed ACD measurements, the BCMS or CMS option is recommended. Go to the Avaya Support website at http://support.avaya.com/ for current documentation, product notices, knowledge articles related to the topic, or to open a service request.

Related topics:

Hunt Groups report on page 103
Hunt Group Members report on page 105
Hunt Group Measurements report on page 108
Hunt Group Performance report on page 113
Hunt Group Status report on page 115

Hunt Groups report

The Hunt Groups report lists the hunt groups defined on your system.

Related topics:

Displaying the Hunt Groups report on page 103
Hunt Groups field descriptions on page 104

Displaying the Hunt Groups report

About this task

Type **list hunt group [number] [to-number x] [name x] [type x] [ext x] [to-ext x] [count n] [schedule]** and press Enter.

Options: There are eight options for this command:

Procedure

1. **number x**
   Enter the beginning hunt group number.
2. **to-number x**
   Enter the ending hunt group number.
3. **name x**
   Enter the hunt group name.
4. **type x**
   Enter the hunt group type.
5. **ext x**
   Enter the beginning hunt group extension.
6. **to-ext x**
   Enter the ending hunt group extension.
7. **count n**
   Enter the number of hunt groups to list.
8. **schedule**
   Schedule another time for the report to print.

Hunt Groups field descriptions

Name	Description
Grp No.	Group Number. The system displays the hunt group number.
Grp Name/Ext	Group Name/Extension. The system displays the name and the extension of the hunt group.
Grp Typ	Group Type. administered for the hunt group type of the hunt group. For more information, see the description of the **Group Type** field on page 1.
ACD/MEAS	Automatic Call Distribution (ACD) and Measured. ACD indicates whether the Automatic Call Distribution feature is used. Measured provides the measurement data for the ACD split or skill collected, internal to the switch, for VuStats or BCMS. The field has the following values: • y or n: Indicates whether the hunt group functions as an ACD split or skill • I (Internal), E (External), B (both), or N (None): Indicates how the hunt group is measured.
Vec	Vector. This field indicates whether the hunt group is controlled by a vector. For more information, see the description of the **Vector** field on page 1.
MCH	Multiple Call Handling. This field indicates the MCH type assigned to the hunt group and can have the following values: • none • req: On-request • one: One-forced • per: One-per-skill • many: Many-forced
Que Siz	Queue Size. This field displays the maximum number of calls that can be in queue for the hunt group.

Name	Description
No. Mem	Number of Members. This field displays the number of hunt group members.
Cov Path	Coverage Path. This field displays the number of the coverage path for the hunt group.
Notif/Ctg Adj	Notifying or Controlling adjunct. • Notification. Contains the extension of the ASAI link that has the notification. You can have up to three ASAI applications monitoring a single hunt group. • Controlling adjunct. Displays the extension of the controlling adjunct. You can have one controlling adjunct for each hunt group.
Dom Ctrl	Domain Control. This field displays the extension of the ASAI link over which the domain split is set up.
Message Center	This field displays the type of message used. For more information, see the description of the **Messaging Center** field on page 2.

Hunt Group Members report

The Hunt Group Members report helps you administer a split or skill to verify that all agents are logged out and to identify any agents logged in. This report lists all logged in agents for a split or skill, or limits the list to a range of login IDs or physical extensions.

Note:

You can use the **`list members hunt-group`** command to list the agents administered in non-ACD hunt groups. However, since non-ACD hunt groups do not use agent logins, the report will display all administered agents.

Related topics:

Displaying the Hunt Group Members report on page 106
Hunt Group Members field descriptions on page 106

Displaying the Hunt Group Members report

Procedure

Type `list members hunt-group` *`hunt group number`* `[ext` *`x`* `] [to-ext` *`x`* `] [name` *`x`* `] [loginid ] [to-loginid ] [logname` *`x`* `] [count` *`x`* `] [schedule ]`

Hunt Group Members field descriptions

Name	Description
Group Number	The number of the hunt group.
Group Name	The name administered for the hunt group.
Group Extension	The extension administered for the hunt group.
Group Type	Indicates the type of the hunt group. For more information about the **Group Type** field, see *Avaya Aura® Communication Manager Screen Reference*.
ACD	Automatic Call Distribution. Indicates whether Automatic Call Distribution is used.
Skill	Indicates whether the hunt group functions as an ACD skill.
Members	The number of hunt group members.
Phys Ext	Physical Extension (ACD, non-ACD, or EAS). The physical station extension of the hunt group member.
Phys Name	Physical Name (ACD, non-ACD, or EAS). The physical station name of the hunt group member.
Login Ext	Login ID Extension (EAS only). The login ID extension of the hunt group member.
Login Name	Login ID Name (EAS only). The login ID extension name of the hunt group member.
Agt Prf	Call Handling Preference (EAS only). The call handling preference routes calls based

Name	Description
	on agent skill level, greatest need, or percent allocation. • lvl: skill level • grt: greatest need • pal: percent allocation
Lv	Skill Level or Reserve Level (EAS only). The skill level routes incoming calls to an available agent with the skill assigned. The skill levels are as follows: • 01 - 02 (Skill Level): without EAS PHD • 01 - 16 (Skill Level): with EAS PHD • R1 - R2 (Reserve Level); with EAS and CentreVu Advocate
Per All	Percent Allocation (EAS and Centrevu Advocate only). Indicates percentage of this agents time devoted to this skill (0 - 100). Displays only if Call Handling Preference (Agt Prf) is percent allocation.
SO	Service Objective (EAS and Centrevu Advocate only). Indicates whether Service Objective is active for this agent. Displays only if Call Handling Preference (Agt Prf) is skill level or greatest need.
DF	Direct Agent Calls First (EAS and Centrevu Advocate only). Indicates whether Direct Agent Calls delivered first to this agent. Displays only if Call Handling Preference (Agt Prf) is percent allocation.
Wrk Tim	Work Time (EAS and Centrevu Advocate only). The ratio of agent work time in this skill and agent staffed time.
Occ	Occupancy (EAS and Centrevu Advocate only). The ratio of agent work time in all skills and agent staffed time.
AR	Auto Reserve Agent. Identifies this station as belonging to an auto reserve agent. Valid values are y, n, and blank.

Hunt Group Measurements report

The Hunt Group Measurements report assists you in monitoring and managing the DDC and UCD hunt groups and ACD splits. These features permit incoming calls to be terminated directly to a prearranged group of answering positions.

This report shows hunt group measurements for yesterday's peak hour, today's peak hour (as of the time of day that this report is run), and the last hour. A peak hour is the hour within a 24-hour period with the greatest usage for the specified day.

Related topics:

Displaying the Hunt Group Measurements report on page 108
Hunt Group Measurements field descriptions on page 109
Data analysis guidelines for hunt group reports on page 110
Hunt group measurement data analysis on page 111
Total usage on page 112
Average holding time on page 113

Displaying the Hunt Group Measurements report

About this task

Type **list measurements hunt-group <yesterday-peak/today-peak/ last-hour> [schedule]** and press Enter.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list the hunt group activity for yesterday's peak hour.
2. Enter **today-peak** to list the hunt group activity for today's peak hour.
3. Enter **last-hour** to list the hunt group activity of the most recently completed hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Hunt Group Measurements field descriptions

On a Hunt Group Measurements report screen, using the last-hour option, the time and date the report requested displays at the top right.

Name	Description
Grp No.	Group Number. A number that identifies each hunt group.
Grp Name	Group Name. Name assigned, during administration, to the hunt group.
Grp Siz/Typ.	Group Size. The number of extensions assigned to the hunt group (not necessarily staffed). Group Type. Identifies one of the following type of hunt group: • **ddc**: direct department calling • **ucd**: uniform call distribution • **ead**: expert agent distribution
Meas Hour	Measurement Hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Total Usage	The sum of all times (in CCS) that the members of a hunt group are busy on hunt group calls. Total Usage is the most important parameter for this report. The maximum possible usage is: $Maximum\ Possible\ Usage = 36\ CCS \times Total\ \#\ of\ Members$ Suggested action: If the Total Usage number approaches the total CCS, add another extension to the hunt group but only staffing it during the peak hours. If the hunt group has several extensions and the Total Usage is low, this might be acceptable if the personnel perform other duties. **Note:** ACD hunt groups administered to support Multiple Call Handing displays a series of 5 asterisks (*****) in the **Total Usage** field. This measurement is not collected for ACD hunt groups that support Multiple Call Handling.
Calls Ans/ Aban.	Calls Answered/Abandoned. The total number of calls which attempt to reach the hunt group but abandon the attempt before being answered. Calls might abandon either while in the hunt group queue or while ringing a hunt group extension. This total does not include calls answered by Call Pick Up, other hunt groups, or calls abandoned while listening to a forced first announcement. **Note:** ACD calls redirected to other splits within the system through the intraflow feature are not counted as abandoned calls. ACD calls redirected to another switch (interflow feature) are not counted as abandoned calls.

Name	Description
	Suggested actions: Observe times during which the Calls Abandoned number might be higher than required. Subsequently, consider adding one or more agents to the hunt group and staffing these additional positions during the problem times. Also, see *Suggested action* in the Total usage on page 112 description.
Que Size	Queue Size. The length of the queue assigned to the hunt group during administration. Recommendations: There are no specific guidelines for setting queue size. However, the following general recommendations apply. The queue size should be larger than the group size; but, typically not more than three times as large as the group size. An indication the queue size is too large is the observance of a higher than expected number for the Calls Aban field. An indication the queue size is too small is that a larger than expected number of Queue Ovfls occurred.
Calls Que.	Calls Queued. Total number of calls that arrive to find all members of the hunt group busy and are placed in the hunt group queue. Calls Queued includes all calls that go to coverage.
Que Ovfl	Queue Overflow. The number of calls that arrive when all slots in the hunt group queue are occupied.
Time Avail	Time Available. The total time (in CCS) the hunt group extensions are not in use but are available to receive hunt group calls during the measurement hour. Time Available is calculated only when an agent (extension) is ready to receive calls from the specified hunt group. For example, if the hunt group had four extensions and each was available for 15 minutes during the measurement hour, the total time available would be 60 minutes or 36 CCS. **Note:** ACD hunt groups administered to support Multiple Call Handing displays a series of 5 asterisks (*****) in the total usage field. This measurement is not collected for ACD hunt groups that support Multiple Call Handling.
Speed Answer (sec)	Speed of Answer (seconds). The average time interval (in seconds) from when the call first enters the hunt group or hunt group queue until the call is answered by a hunt group member. This does not include the time taken by a forced first announcement.

Data analysis guidelines for hunt group reports

The following guidelines are intended to show an easy method for determining whether currently reported data is acceptable. These guidelines represent the minimum you should do to verify the recorded measurement values are consistent with expected and historic values. You should perform additional checks as necessary.

Verifying the following informs the acceptability of hourly Hunt Group Measurements:

- The system clock or group size has not been changed during the measurement hour.
- The average time agents spend working on calls is typically between 60 and 300 seconds. The actual application and specific types of work being performed may permit you to arrive at a more precise number. If your calculated average call length is out of this range, it should be investigated.

Note:

Total Usage plus Total Avail (both in CCS) should not exceed 36 X the group size. For example, with a hunt group containing two extensions, total usage measured should not exceed 2 X 36 = 72 CCS for data collection.

Hunt group measurement data analysis

The Hunt Group Data Worksheet (see Worksheet 3 on page 304) serves to back up the data from the reports and to provide an easy means for identifying the peak hour. The data from the identified peak hour should be used in subsequent calculations.

Before analyzing data obtained from the hunt group reports, several additional considerations relating to both ACD hunt groups and non-ACD hunt groups need mentioning. This information includes their similarities and differences.

Note:

Note that data collected in a real-time environment virtually always deviates from the theoretically predicted data because of the asynchronous nature of processes and interactions with other events such as maintenance.

Related topics:

Important considerations for both ACD and non-ACD hunt groups on page 111
Differences between non-ACD and ACD hunt groups on page 112

Important considerations for both ACD and non-ACD hunt groups

- Total Usage: If the extension is a member of more than one hunt group, then Total Usage is only accumulated for the group that answers the call. But, Time Avail is decremented for all groups. For example, extension x3000 belongs to hunt groups 1, 2, and 3, and a call terminates on hunt group 2 and x3000 answers the call. The end result is that usage time is accumulated for hunt group 2. Therefore, Total Usage for group 2 has increased and Time Avail for groups 1, 2, and 3 had decreased.

  Time (Total Usage) is not accumulated when a hunt group member is on an incoming or outgoing personal call.
- Time Avail: If an extension is a member of more than one hunt group, then Time Avail is accumulated for each group. For example, extension x3000 belongs to hunt groups 1, 2,

and 3, and extension x3000 is available for the full measurement hour. The end result is that 36 CCS is added to Time Avail for hunt groups 1, 2, and 3.

Time (Time Available) is not accumulated when a hunt group member is on an incoming or outgoing personal call.

Differences between non-ACD and ACD hunt groups

For non-ACD hunt groups:

- Calls Ans: Incoming calls that route to call coverage (or don't answer criteria) accumulate time (Total Usage and Time Avail) as if they are answered within the hunt group. Furthermore, calls to a hunt group picked up by a member of a pickup group are counted as answered within the hunt group.
- Calls Aband: Incoming calls that route to call coverage (or don't answer criteria) are counted as abandoned, for the hunt group, if the caller hangs up when the call is at the ringing coverage point.
- Speed of Answer: Speed of Answer includes any and all times spent in covering to other stations, but does not include the time spent for forced first announcements.

For ACD hunt groups

- Calls Aband: If the caller hangs-up when the call is in queue or while ringing at the agent's position, the call is counted as abandoned. If all members of an ACD split are logged out or in Aux-work mode, incoming ACD calls are not queued for the split and, therefore, are never counted as abandoned.
- Speed of Answer: The Speed of Answer count is set to zero every time a call reaches a new coverage point.

Note:

Because of this difference, the Speed of Answer values for ACD hunt groups tend to be less (smaller) than for non-ACD type hunt groups.

- Calls Ans: Calls that go to call coverage (or don't answer criteria) and are answered at the coverage point are not included in the number displayed for this report. Unlike non-ACD hunt groups, the ACD hunt group member who initially received the call is available to answer other ACD calls while the coverage point is answering the covered call.
- Time Avail: Not accumulated for ACD calls that go to coverage.
- Total Usage: Not accumulated for ACD calls that go to coverage.

Total usage

Total Usage is the sum of all times the members of a hunt group are busy on incoming group calls.

$$Total\ Holding\ Time\ (in\ seconds) = \sum of\ the\ individual\ Holding\ Time\ (in\ sec)$$

$$Total\ Usage\ (in\ seconds) = Total\ Holding\ Time\ (in\ seconds)$$

Figure 8: Estimating attendant position requirements

For example, a hunt group with three calls and the call durations are: 480, 300, and 220 seconds.

$$Total\ Usage\ (in\ seconds) = 480 + 300 + 220\ seconds$$

$$Total\ Usage\ (CCS) = \frac{1000\ seconds}{100\ seconds\ per\ CCS}$$

$$Total\ Usage\ (CCS) = 10\ CCS$$

Figure 9: Estimating attendant position requirements

Average holding time

With the number of Calls Answered and the number for Total Usage, the average length of time the hunt group members spend answering the calls (Average Holding Time) can be calculated. The calculation is as follows:

$$Average\ Holding\ Time = \left(\frac{Total\ Usage\ CCS}{Calls\ Answered}\right) \times \frac{100\ Seconds}{CCS}$$

Figure 10: Estimating attendant position requirements

For demonstration purposes, we consider the following calculations.

$$Average\ Holding\ Time = \left(\frac{10\ CCS}{3\ calls}\right) \times \frac{100\ seconds}{CCS}$$

$$Average\ Holding\ Time = 333\ seconds\ (or\ 5\ minutes\ \text{and}\ 33\ seconds\ per\ call)$$

Figure 11: Estimating attendant position requirements

Hunt Group Performance report

The Hunt Group Performance report gives the slowest hourly average speed of answer for each hunt group for either the previous day or the current day (yesterday or today) along with

the hour the measurement occurred. The report displays the information both graphically and numerically.

Related topics:

Displaying the Hunt Group Performance report on page 114
Hunt Group Performance field descriptions on page 114

Displaying the Hunt Group Performance report

About this task

Type **`list performance hunt-group <yesterday/today> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday/today`**.

Procedure

1. Enter **`yesterday`** to list the hunt group performance activity for yesterday.
2. Enter **`today`** to list the hunt group performance activity for today.

Result

Options: The schedule option is available for this command.

Hunt Group Performance field descriptions

Name	Description
No.	Number. A number that identifies each hunt group.
Size	The number of extensions assigned to the hunt group (not necessarily staffed).
Type	Identifies one of the following types of hunt group: • ddc: direct department calling • ucd: uniform call distribution • ead: expert agent distribution
1 2 3 4 5 6 7 8 9 10 20 40 60 80 100 200	Slowest Speed of Answer (seconds). A bar graph representation of the slowest hourly average speed of answer for the report interval, either yesterday or today.
Ans (sec)	Answer in seconds. The number of seconds corresponding to the slowest hourly average speed of answer (longest amount of time to answer) for

Name	Description
	the report interval. This time includes queue time and ring time, but does not include the time spent on a forced first announcement.
Hour	The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Avg.	Average. The number corresponding to the 24-hour daily “average speed of answer” for each hunt group. $Daily\ Average\ = \frac{\sum\ of\ the\ Delays\ For\ Each\ Answered\ Call}{Total\ \#\ of\ Answered\ Calls\ (so\ far\ today)}$

Hunt Group Status report

The Hunt Group Status report gives an instantaneous indication of the load pending (number of calls waiting to be serviced) for various hunt groups. The report also indicates the length of time the oldest call in the queue has been waiting for service.

Note:

The information on this report is updated every 60 seconds.

Related topics:

Displaying the Hunt Group Status report on page 115
Hunt Group Status field descriptions on page 115

Displaying the Hunt Group Status report

About this task

Type **monitor traffic hunt-groups [starting group number]** and press Enter.

Options: Enter the number of the hunt group that you want to begin the list. This is referred to as the starting group number. The report displays a list of 32 consecutively numbered hunt groups. The default is to begin the report with hunt group 1.

Because the command is constantly updating, you must press cancel key to end the report.

Hunt Group Status field descriptions

The Hunt Group Status screen displays 32 hunt group fields, even though they might not all be administered. If the hunt group is not administered, then its corresponding fields are blank.

For each administered hunt group, the report displays the time the first call in the queue has been waiting for service, the LCIQ field. The data on the screen is updated every 60 seconds.

The following table describes the data fields presented in this report. The abbreviated labels are also identified in a key at the bottom of the screen.

Name	Description
#	Group Number. The number that identifies the hunt groups.
S	Group Size. The number of extensions assigned to the hunt group (not necessarily staffed).
A	Active Hunt Group Members. The number of members in a group currently active (only) on incoming hunt group calls. **Note:** This measurement does not include individual extension type calls.
Q	Maximum Queue Length. The number of calls to wait for an agent.
W	Waiting Calls. The number of calls currently waiting in the hunt group queue to be serviced by an agent.
LCIQ	Longest Call In Queue. The time in seconds the oldest call in the hunt group queue has been waiting to be serviced. Suggested actions: If the number of calls waiting (W) is too high (for example, the queue is full or approaching its maximum) increase the number of active members (A). If the **LCIQ** field indicates calls are having to wait in queue too long, determine if the calls can be processed faster. Alternately, increase the number of active members (A).

IP Signaling Groups Latency and Loss report

The IP Signaling Groups Latency and Loss report provides information on the 10 worst-performing signaling groups for the last hour, current hour, today, or yesterday.

Related topics:

Displaying the IP Signaling Groups Latency and Loss report on page 117
IP Signaling Groups Latency and Loss Report field descriptions on page 117

Displaying the IP Signaling Groups Latency and Loss report

About this task

Type **`list measurements ip signaling-groups <yesterday/today/current-hour/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday/today/current-hour/last-hour`**.

Procedure

1. Type `yesterday` to list the 10 worst signaling groups for the previous day's 24 hours.

   This report will take 24 pages, one for each hour. The groups for each hour will be rank ordered from worst to least worst based on the Hour Average Latency.

2. Type `today` to list the 10 worst signaling groups for each hour of the current day, starting with the most recent whole hour.

   This report will take 24 pages, one for each hour. The groups for each hour will be rank ordered from worst to least worst based on the Hour Average Latency.

3. Type `current-hour` to list the 10 worst signaling groups for the current hour.

4. Type `last-hour` to list the 10 worst signaling groups for the last full hour.

   The region number is assigned on the Ip-interfaces screen during switch administration.

IP Signaling Groups Latency and Loss Report field descriptions

Name	Description
Sig Grp No	The signaling group number.
Region	The network region of the group.
Hour Average Latency (ms)	The average latency for the whole hour.
Hour Packets Sent	The number of packets sent during the whole hour.

Name	Description
Hour Packets Lost(%)	Hour packets percentage of loss. The percent of lost packets for the whole hour if 100% the corresponding latency is shown as ****.
Hour/Worst Interval	The hour and the worst 3–minute interval within the hour.
Interval Average Latency (ms)	The interval is identified by the last minute of the interval.
Interval Packets Sent	The number of packets sent during the interval.
Interval Packets Lost(%)	Interval packets percentage of loss. The percent lost packets for the interval if 100%, the corresponding latency is shown as ****.

IP traffic measurements reports

There are six reports that list the activity on your IP media processor circuit packs.

- IP Codec Resource Hourly report - lists the codec resources used on all IP media processors for the last 24 hours, from the current hour backwards, for a specific region. This report lists separate information for the G.711 codecs and the G.723/G.729 codecs. The IP Codec Resource Hourly report also shows DSP activity on the IP port networks.
- IP Codec Resource Summary report - lists the codec resources used on all IP media processors for a specific peak hour for all regions. You can list reports for yesterday's peak, today's peak, or the last hour. This report lists separate information for the G.711 codecs and the G.723/G.729 codecs. The IP Codec Resource Summary report also shows DSP activity on the IP port networks.
- IP Codec Resource Detail report - lists the codec resources used on all IP media processors for a specific peak hour for a specific region. You can list reports for yesterday's peak, today's peak, or the last hour. This report lists separate information for the G.711 codecs and the G.723/G.729 codecs. The detail report is generated only for the network regions.
- IP DSP Resource Hourly report - lists the dsp resources used on all IP media processors for the last 24 hours, from the current hour backwards, for a specific region and DSP activity on the IP port networks. In addition, in the DSP Hourly report you can view DSP traffic for a customer's H.248 gateway(s) and IGC traffic (Inter-Gateway Connections) between H.248 gateways and port networks.
- IP DSP Resource Summary report - lists the dsp resources used on all IP media processors for a specific peak hour for all regions. You can list reports for yesterday's peak, today's peak, or the last hour. In addition to reporting by network regions and port

networks, you can also view DSP traffic for a customer's H.248 gateway(s) and IGC traffic (Inter-Gateway Connections) between H.248 gateways and port networks.

- IP DSP Resource Detail report - lists the dsp resources used on all IP media processors for a specific peak hour for a specific region. You can list reports for yesterday's peak, today's peak, or the last hour. The detail report is generated only for the network regions.

Note:

The peak hour is the hour in which the IP media processors are used the most in a specific region.

Note:

On IP traffic measurements reports, the report shows ** if the switch clock time is changed.

Related topics:

IP Codec Resource Hourly report on page 119
IP Codec Resource Summary report on page 121
IP Codec Resource Detail report on page 122
IP DSP Resource Hourly report on page 125
IP DSP Resource Summary report on page 127
IP DSP Resource Detail report on page 130

IP Codec Resource Hourly report

Related topics:

Displaying the IP Codec Resource Hourly report on page 119
IP Codec Resource Hourly field descriptions on page 120

Displaying the IP Codec Resource Hourly report

About this task

Type **`list measurements ip codec hourly <region number> [schedule]`** and press `Enter`.

For example, to display the traffic on media processors for the last 24 hours in region 4, type **`list measurements ip codec hourly 4`**.

Options: The **schedule** option is available for this command.

The region number is assigned on the Ip-interfaces screen during switch administration.

IP Codec Resource Hourly field descriptions

Field	Range	Description
Meas Hour	0000-2300	Measurement Hour. The hour that the system collects the data from the current hour backward.
Region	1-250	The network region of the IP media processors being measured. The region number is assigned on the ip-interfaces screen during switch administration.
DSP Rscs	0-9999	Digital Signaling Processor Resources. Total number of IP codec resources and voice channels in the region.
G711 Usage (Erl)	0-9999	Time in erlangs that G.711 codecs were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. This measurement is calculated by adding the total time in seconds that G.711 resources on all IP media processors are in use, divided by 3600.
G711 In Reg Peg	0-65535	The total number of times an IP media processor port in the region is allocated to a G.711 call.
G711 Out of Reg peg	0-65535	The total number of times an IP media processor port was needed in the region for a G.711 call, but was successfully allocated to a resource in another region. If the **Region** fields on the Inter Network Region Connection Management screen are blank, this measurement will always be 0.
G723/9 Usage (ERL)	0-9999	Time in erlangs that G.723 or G.729 codecs were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. This measurement is calculated by adding the total time in seconds that G.723 or G.729 resources on all IP media processors are in use divided by 3600.
	0-65535	The total number of times an IP media processor port in the region was allocated to a G.723 or G.729 call.
G723/9 Out of Reg peg	0-65535	The total number of times an IP media processor port was needed in the region for a G.723 or G.729 call, but was successfully allocated to a resource in another region. If the **Region** fields on the Inter Network Region Connection Management screen are blank, this measurement will always be 0.

IP Codec Resource Summary report

Related topics:

Displaying the IP Codec Resource Summary report on page 121
IP Codec Resource Summary field descriptions on page 121

Displaying the IP Codec Resource Summary report

About this task

Type **list measurements ip codec summary <yesterday-peak/today-peak/last-hour> [schedule]** and press Enter.

For example, to display the previous day's peak hour traffic for all regions with media processors, type **list measurements ip codec summary yesterday-peak.**

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Type **yesterday-peak** to list the peak hour traffic on media processors for all regions for yesterday.
2. Type **today-peak** to list the peak hour traffic on media processors for all regions for today.
3. Type **last-hour** to list the peak hour traffic on media processors for all regions in the most recently completed hour.

Result

Options: The schedule option is available for this command.

IP Codec Resource Summary field descriptions

Field	Range	Description
Meas Hour	0000-2300	Measurement Hour. The hour in which the system collects the data.
Region	1-250	The network region of the IP media processors being measured. The region number is assigned on the IP Interfaces screen during switch administration.

Field	Range	Description
DSP Rscs	0-9999	Digital Signaling Processor (DSP) resources. Total number of IP codec resources or voice channels in the region.
G711 Usage (Erl)	0-9999	The amount of time in erlangs that G.711 codecs are in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. This measurement is calculated by adding the total time in seconds that G.711 resources on all IP media processors are in use divided by 3600.
G711 In Reg Peg	0-65535	The total number of times an IP media processor port in the region is allocated to a G.711 call.
G711 Out of Reg peg	0-65535	The total number of times an IP media processor port is needed in the region for a G.711 call, but is successfully allocated to a resource in another region. If the **Region** fields on the Inter Network Region Connection Management screen are blank, this measurement will always be 0.
G723/9 Usage (ERL)	0-9999	The amount of time in erlangs that G.723 or G.729 codecs are in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. This measurement is calculated by adding the total time in seconds that G.723 or G.729 resources on all IP media processors are in use divided by 3600.
G723/9 In Reg peg	0-65535	The total number of times an IP media processor port in the region is allocated to a G.723 or G.729 call.
G723/9 Out of Reg peg	0-65535	The total number of times an IP media processor port is needed in the region for a G.723 or G.729 call, but was successfully allocated to a resource in another region. If the **Region** fields on the Inter Network Region Connection Management screen are blank, this measurement will always be 0.

IP Codec Resource Detail report

Related topics:

Displaying the IP Codec Resource Detail report on page 123
IP Codec Resource Detail field descriptions on page 123

Displaying the IP Codec Resource Detail report

About this task

Type **list measurements ip codec detail <region number> <yesterday-peak/today-peak/last-hour> [schedule]** and press Enter.

For example, to display the previous day's peak hour traffic for media processors in region 4, type **list measurements ip codec detail 4 yesterday-peak**.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list the peak hour traffic on media processors for a specific region for yesterday.
2. Enter **today-peak** to list the peak hour traffic on media processors for a specific region for today.
3. Enter **last-hour** to list the peak hour traffic on media processors for a specific region in the most recently completed hour.

Result

Options: The schedule option is available for this command.

IP Codec Resource Detail field descriptions

Field	Range	Description
Meas Hour	0000-2300	Measurement Hour. The hour that the data is collected.
Region	1-250	The network region of the IP media processors being measured. The region number is assigned on the Ip-interfaces screen during switch administration.
DSP Rscs	0-9999	Digital Signaling Processor Resources. Total number of IP codec resources, or voice channels, in the region.

Field	Range	Description
G711 Usage (Erl)	0-9999	Amount of time (in erlangs) that G.711 codecs were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. This measurement is calculated by adding the total time (in seconds) that G.711 resources on all IP media processors are in use, divided by 3600.
G711 In Reg Peg	0-65535	The total number of times an IP media processor port in the region was allocated to a G.711 call.
G711 Out of Reg Peg	0-65535	The total number of times an IP media processor port was needed in the region for a G.711 call, but was successfully allocated to a resource in another region. If the **Region** field on the Network Region Connection Management screen is blank, then this measurement will always be 0.
G723/9 Usage (Erl)	0-9999	Amount of time (in erlangs) that G.723 or G.729 codecs were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. This measurement is calculated by adding the total time (in seconds) that G.723 or G.729 resources on all IP media processors are in use, divided by 3600.
G723/9 In Reg Peg	0-65535	The total number of times an IP media processor port in the region was allocated to a G.723 or G.729 call.
G723/9 Out of Reg Peg	0-65535	The total number of times an IP media processor port was needed in the region for a G.723 or G.729

Field	Range	Description
		call, but was successfully allocated to a resource in another region. If the **Region** field on the Network Region Connection Management screen is blank, then this measurement will always be 0.

IP DSP Resource Hourly report

Related topics:

Displaying the IP DSP Resource Hourly report on page 125
IP DSP Resource Hourly Report field descriptions on page 125

Displaying the IP DSP Resource Hourly report

About this task

To display the IP DSP Resource Hourly report:

Enter **`list measurements ip dsp-resource hourly <region number> [schedule]`**.

Options: The schedule option is available for this command.

IP DSP Resource Hourly Report field descriptions

Field	Range	Description/Algorithm
Net Reg	1 - 250	The network region represents the network region of the IP media processors being measured. The region number is assigned on the ip-interface screen during switch administration.
Meas Hour	0000 – 2300	Hour for which data is collected.
G711 Equivalent DSP Rsrc Capcty	0 - 99999 “”*"	DSP resource capacity indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given network region. The “*” indicates that the media processor capacity changed during the measurement hour. Calculation:

Field	Range	Description/Algorithm
		For the existing network region level reports: G711 DSP Rscs = the total number of G711 equivalent DSP resources available at the top of the measurement hour for a specific network region (total G711 equivalent TN2302/TN2602 DSP resources + total G.711 equivalent H.248 DSP resources within the same network region).
G711 Equivalent DSP Rsrc Peak	0 - 99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour. Spikes in traffic patterns can be used by you to determine if media processor resources should be added.
G711 Equivalent DSP Usage (ERL)	0 - 9999.9 Erlangs	DSP Usage. Total G.711 equivalent usage for all codecs that were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Calculations: $\frac{\sum_{L} (\text{Call Duration}) \times (\text{\# points}) \times (\text{conversion})}{3600 \text{ seconds}} = X.X$ Result is to 1 decimal point.
Total DSP Pegs	0 - 65535	The total number of times media processor resources were allocated in a network region during the measurement hour. Calculation: Endpoint In Region Pegs + Pegs from other regions that come into this network region. (Note: You can derive the number of times that a different network region obtained resources from this network region by taking Total DSP Pegs - Endpoint In Reg Pegs).
Endpoint In Reg Pegs	0 - 65535	The total number of times an IP media processor port in the region was allocated to a call/request within that same network region during the measurement hour. Endpoint calculations also include IP/SIP trunks and IGCs.
Endpoint Out Reg Pegs	0 - 65535	The total number of times an endpoint request for an IP media processor port in the region was allocated to a call/request from outside that same network region. This might occur when there are no available resources in the requested network region, a call has been re-directed to another port network. If the “Region” fields on the **Inter Network Region Connection Management** screen are blank, then this measurement will always be 0.
Endpoint Denied Pegs	0 - 65535	The total number of times an IP media processor port was requested for a call, but was denied because there were no media processing resources available in the system. Note: Calls that were re-directed are not considered denied calls

Field	Range	Description/Algorithm
		Denied peg counts are against the network region or the IP endpoint that is requesting the resource. Denied peg counts for IGCs are against the network region of the cabinet that is requesting the resource.
% Denied	0-99	Percentage Denied: The percent of pegs which were denied during the measurement period. Calculations: For network region level, blockage is computed as: $\frac{\text{\# of denied pegs}}{\text{\# of denied + in-region pegs + out of region pegs}} \times 100$ **Note:** It is possible to have denied calls even though Peak DSP usage has not been exceeded. For example, Peak DSP is 479 out of 480. The next call that comes in could be denied because it needs two DSP resources and only one is available (for example, if the call used a G.729 codec).
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period. This percent includes ports that were manually busied out or maintenance busy during the measured interval. Calculations: [total resource time (in CCS) that any port was out of service divided by the number of available resources x 36] x 100.

IP DSP Resource Summary report

Related topics:

Displaying the IP DSP Resource Summary report on page 127
IP DSP Resource Summary Report field descriptions on page 128

Displaying the IP DSP Resource Summary report

About this task

Type **`list measurements ip dsp-resource summary <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

For example, to display the previous day's peak hour traffic for IP DSP processors in all regions, type **`list measurements ip dsp summary yesterday-peak`**.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list the peak hour traffic on media processors for a specific region for yesterday.
2. Enter **today-peak** to list the peak hour traffic on media processors for a specific region for today.
3. Enter **last-hour** to list the peak hour traffic on media processors for a specific region in the most recently completed hour.

Result

Options: The schedule option is available for this command.

IP DSP Resource Summary Report field descriptions

Field	Range	Description/Algorithm
Net Reg	1 - 250	The network region represents the network region of the IP media processors being measured. The region number is assigned on the ip-interface screen during switch administration.
Peak Hour	0000 – 2300	The measurement hour with the highest Erlang usage for a specific network region.
G711 Equivalent DSP Rsrc Capcty	0 - 99999 “”*" d	DSP resource capacity indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given network region. The asterisk (*) indicates that the media processor capacity changed during the measurement hour. Calculations: For the existing network region level reports: G711 DSP Rscs = the total number of G711 equivalent DSP resources available at the top of the measurement hour for a specific network region (total G711 equivalent TN2302/TN2602 DSP resources + total G.711 equivalent H.248 DSP resources within the same network region).
G711 Equivalent DSP Rsrc Peak	0 - 99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour. The spike traffic pattern helps to determine when resources should be added.

Field	Range	Description/Algorithm
G711 Equivalent DSP Usage (ERL)	0 - 9999.9 Erlangs	DSP Usage. Total G.711 equivalent usage for all codecs that were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Calculations: $\frac{\sum_{I} \text{(Call Duration) x (\# points) x (conversion)}}{\text{3600 seconds}} = X.X$ Result is to 1 decimal point.
Total DSP Pegs	0 - 65535	The total number of times media processor resources were allocated in a network region during the measurement hour. Calculation: Endpoint In Region Pegs + Pegs from other regions that come into this network region. **Note:** You can derive the number of times that a different network region obtained resources from this network region by taking Total DSP Pegs - Endpoint In Reg Pegs.
Endpoint In Reg Pegs	0 - 65535	The total number of times an IP media processor port in the region was allocated to a call/request within that same network region during the measurement hour. Endpoint calculations also include IP/SIP trunks and IGCs.
Endpoint Out Reg Pegs	0 - 65535	The total number of times an endpoint request for an IP media processor port in the region was allocated to a call/request from outside that same network region. This might occur when there are no available resources in the requested network region, a call has been re-directed to another port network. If the **Region** field on the Network Region Connection Management screen is blank, then this measurement will always be 0.
Endpoint Denied Pegs	0 - 65535	The total number of times an IP media processor port is requested for a call, but was denied because there were no media processing resources available in the system. Note: Calls that were re-directed are not considered denied calls Denied peg counts are against the network region or the IP endpoint that is requesting the resource. Denied peg counts for IGCs are against the network region of the cabinet that is requesting the resource.
% Denied	0-99	Percentage Denied: The percent of pegs which were denied during the measurement period. Calculations:

Field	Range	Description/Algorithm
		For network region level, blockage is computed as: $\frac{\text{\# of denied pegs}}{\text{\# of denied + in-region pegs + out of region pegs}} \times 100$ **Note:** It is possible to have denied calls even though Peak DSP usage has not been exceeded. For example, Peak DSP is 479 out of 480. The next call that comes in could be denied because it needs two DSP resources and only one is available (for example, if the call used a G.729 codec).
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period. This percent includes ports that were manually busied out or maintenance busy during the measured interval.

IP DSP Resource Detail report

Related topics:

Displaying the IP DSP Resource Detail report on page 130
IP DSP Resource Detail Report field descriptions on page 131

Displaying the IP DSP Resource Detail report

About this task

Type **`list measurements ip dsp-resource detail <region number> <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

For example, to display the previous day's peak hour traffic for ip dsp processors in region 4, type **`list measurements ip dsp-resource detail 4 yesterday-peak`**.

Required Fields: There is one required field for this command — **`yesterday-peak/today-peak/last-hour`**.

Procedure

1. Enter **`yesterday-peak`** to list the peak hour traffic on media processors for a specific region for yesterday.
2. Enter **`today-peak`** to list the peak hour traffic on media processors for a specific region for today.

3. Enter **last-hour** to list the peak hour traffic on media processors for a specific region in the most recently completed hour.

Result

Options: The schedule option is available for this command.

IP DSP Resource Detail Report field descriptions

Field	Range	Description/Algorithm
Net Reg	1 - 250	The network region represents the network region of the IP media processors being measured. The region number is assigned on the ip-interface screen during switch administration.
Meas Hour	0000 – 2300	Hour for which data is collected.
G711 Equivalent DSP Rsrc Capcty	0 - 99999 “”*"	DSP resource capacity indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given network region. The “*” indicates that the media processor capacity changed during the measurement hour. Calculation: For the existing network region level reports: G711 DSP Rscs = the total number of G711 equivalent DSP resources available at the top of the measurement hour for a specific network region (total G711 equivalent TN2302/TN2602 DSP resources + total G.711 equivalent H.248 DSP resources within the same network region).
G711 Equivalent DSP Rsrc Peak	0 - 99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour. Spikes in traffic patterns can be used by you to determine if media processor resources should be added.
G711 Equivalent DSP Usage (ERL)	0 - 9999.9 Erlangs	DSP Usage. Total G.711 equivalent usage for all codecs that were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Calculations: $\frac{\sum_{I} \text{(Call Duration) x (\# points) x (conversion)}}{\text{3600 seconds}} = X.X$ Result is to 1 decimal point.

Field	Range	Description/Algorithm
Total DSP Pegs	0 - 65535	The total number of times media processor resources were allocated in a network region during the measurement hour. Calculation: Endpoint In Region Pegs + Pegs from other regions that come into this network region. (Note: You can derive the number of times that a different network region obtained resources from this network region by taking Total DSP Pegs - Endpoint In Reg Pegs).
E**ndpoint In Reg Pegs**	0 - 65535	The total number of times an IP media processor port in the region was allocated to a call/request within that same network region during the measurement hour. Endpoint calculations also include IP/SIP trunks and IGCs.
Endpoint Out Reg Pegs	0 - 65535	The total number of times an endpoint request for an IP media processor port in the region was allocated to a call/request from outside that same network region. This might occur when there are no available resources in the requested network region, a call has been re-directed to another port network. If the “Region” fields on the Inter Network Region Connection Management screen are blank, then this measurement will always be 0.
Endpoint Denied Pegs	0 - 65535	The total number of times an IP media processor port was requested for a call, but was denied because there were no media processing resources available in the system. **Note:** Calls that were re-directed are not considered denied calls. Denied peg counts are against the network region or the IP endpoint that is requesting the resource. Denied peg counts for IGCs are against the network region of the cabinet that is requesting the resource.
% Denied	0-99	Percentage Denied: The percent of pegs which were denied during the measurement period. Calculations: For network region level, blockage is computed as: $\frac{\text{\# of denied pegs}}{\text{\# of denied + in-region pegs + out of region pegs}} \times 100$ **Note:** It is possible to have denied calls even though Peak DSP usage has not been exceeded. For example, Peak DSP is 479 out of 480. The next call that comes in could be denied because it needs two DSP resources and only one is available (for example, if the call used a G.729 codec).
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period.

Field	Range	Description/Algorithm
		This percent includes ports that were manually busied out or maintenance busy during the measured interval. Calculations: [total resource time (in CCS) that any port was out of service divided by the number of available resources x 36] x 100.

Port Network level DSP-Resource reports

These reports show DSP activity on the media processors for relevant fiber and IP port networks. That is, port networks without media processors do not show usage data, but they show counts for endpoints that have to go out of their region to obtain a DSP resource. You have the option of viewing peak DSP usage in a summary report, or detailed DSP usage in an hourly report.

Note:

A breakdown of usage for each port network on a network region basis is not available at this time. The “Net Reg” column is included in this report as a place holder. In these reports, your configurations in which a single port network contains media processors over multiple network regions will reflect total DSP numbers; not a break down of traffic for each network region.

Related topics:

PN Summary DSP Resource report on page 133
Displaying the PN Summary DSP Resource Report on page 134
IP DSP Resource Port Network field descriptions on page 134
PN Hourly DSP Resource report on page 136
Displaying the PN Hourly DSP Resource Report on page 137
IP DSP Resource Port Network Hourly Report field descriptions on page 137

PN Summary DSP Resource report

The PN Summary report displays a cumulative/total line of output that shows the hour with the greatest DSP usage for all of the fiber-connected port networks based on the highest Erlang usage. A single line is shown for each fiber- or IP-connected port network. This line represents the peak hour of dsp resource usage for all network regions in a given port network. This includes media resources administered across more than one network region.

Displaying the PN Summary DSP Resource Report

Procedure

Type **list meas ip dsp-resource pn summary ['yest' | 'today' | 'last-hr'] [<blank> | 'pn' <pn number> 'count <number>' |'pn' <pn number> 'to' 'pn' <pn number>], ['schedule']** and press Enter.

Result

The following are examples of valid command entries:

- 'list meas ip dsp-resource pn summary today pn 8 - lists summary DSP resource peak usage data for today only for port network 8 (i.e., implies a count of 1)
- 'list meas ip dsp-resource pn summary today pn 8 count 10' - lists summary DSP resource peak usage data for today starting with port network 8 and continuing for the next ten applicable port networks
- 'list meas ip dsp-resource pn summary today pn8 to pn25' - lists summary DSP resource peak usage data for today starting with port network 8 and continuing through port network 25.

Options: The schedule option is available for this command.

IP DSP Resource Port Network field descriptions

Field	Range	Description/Algorithm
PN#-Type	1-64 F(iber) or I (P)	Indicates the port network of the media processor being measured. A port network number followed by “F” (for example, 1 -F) indicates that this is a fiber-connected PN. Similarly, a port network number followed by “I” (for example 4 -I) indicates that this is a IP-connected PN. Up to five rows of data is shown for each PN, based on the five lowest network region numbers administered. C = Cumulative total of all fiber connected PNs (that is, CCS, ATM)
Net Reg	All	Shows data for a given PN across all network regions in that PN (note that typically media processors in a port network are administered for a single network region. However, that is not always the case).
Peak Hour	0000 - 2300	The measurement hour with the highest Erlang usage for the specific port network/network region combination.

Field	Range	Description/Algorithm
G711 Equivalent DSP Rsrc Capcty	0 - 99999	G.711 Equivalent Digital Signaling Processor Resource Capacity. Indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given port network. The "*" in this column indicates that media processor capacity changed during the measurement hour. Calculation: For PN level DSP resource reports: • If PN# = C, G711 DSP Rscs = running sum of available G711 equivalent DSP resources for fiber-connected PNs for the peak measurement hour. • If resources in a PN are assigned to more than one network region (network region =all), G711 DSP Rscs = running sum of available G711 equivalent DSP resources for this specific PN for the peak measurement hour. • For individual PNs assigned to a single network region: G711 DSP Rscs = total number of G711 equivalent DSP resources available at that port network for the measurement hour. Totals are shown for all fiber- and IP-connected PNs in cases where a port network has multiple media processors across different network regions.
G711 Equivalent DSP Rsrc Peak	0-99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour for that port network. This is helpful if you experience "spike" traffic patterns to determine when resources should be added. Calculation: For PN level DSP resource reports: • If PN# = C, Peak Usage = running sum of available G711 equivalent DSP resources for fiber-connected PNs for the peak measurement hour. • If resources in a PN are assigned to more than one network region (network region =all), G711 Peak Rscs = running sum of available G711 equivalent DSP resources for this specific PN for the peak measurement hour.
G711 Equivalent DSP Usage (ERL)	0 - 9999.9 Erlangs	G.711 Equivalent DSP Usage. Total G.711 equivalent usage for all codecs that were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Calculations: $\frac{\sum_{I} \text{(Call Duration) x (\# points) x (conversion)}}{\text{3600 seconds}} = X.X$

Field	Range	Description/Algorithm
		Result is to 1 decimal point.
G711 Equivalent DSP IGC Usage	0-999.9 Erlangs	Total usage of a port-network or gateway for its involvement in Inter-PN or Inter-GW connections. Channel usage might be from IP endpoints or an IGC. Result is to 1 decimal point.
Total DSP Pegs	0 - 65535	The total number of times media processor resources were allocated in a network region during the measurement hour.
IGC Pegs	0 - 65535	Inter-Gateway Connection Pegs - the number of times media processor resources were allocated in a port network to connect two endpoints through an IGC (this is a subset of total DSP pegs).
PN Denied Pegs	0 - 65535	The total number of times an IP media processor port was needed in the port network for a call, but was denied because there were no media processing resources available in that port network.
% Den	0-99 (pegs)	Percentage Denied: The percent of pegs which were denied during the measurement period. Calculations: For pn/gw reports, % denied is computed as: # of denied pegs / # of denied + total pegs x 100
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period. This percent includes ports that were manually busied out or maintenance busy during the measured interval. Calculations: [total time (in CCS) that any port was out of service divided by the number of available resources x 36] x 100.

PN Hourly DSP Resource report

The PN Hourly DSP Resource report displays up to 24 hours worth of data per port network.

Displaying the PN Hourly DSP Resource Report

Procedure

Type **list meas ip dsp-resource pn hourly [<blank> | <pn number> | <pn number> 'count' <number> |'pn' <pn number> 'to' 'pn' <pn number>], ['schedule']** and press Enter.

Result

The following are examples of valid command entries:

- **list meas ip dsp-resource pn hourly <blank>** - lists detailed information for peak DSP resource usage that occurred over the last 24 hours for all port networks in the system.
- **list meas ip dsp-resource pn hourly 8 count 12** - lists detailed information for peak DSP resource usage that occurred over the last 24 hours starting with port network 8 and including the next 12 administered port networks
- **list meas ip dsp-resource pn hourly pn8 to pn12** - lists detailed information for peak DSP resource usage that occurred over the last 24 hours starting with port network 8 through port network 12.

Options: The schedule option is available for this command.

IP DSP Resource Port Network Hourly Report field descriptions

Field	Range	Description/Algorithm
PN#-Type	1-64 F(iber) or I (P)	Indicates the port network of the media processor being measured. A port network number followed by “F” (for example, 1-F) indicates that this is a fiber-connected PN. Similarly, a port network number followed by “I” (for example, 4 -I) indicates that this is a IP-connected PN. Up to five rows of data is shown for each PN, based on the five lowest network region numbers administered. C = Cumulative total of all fiber connected PNs (that is, CCS, ATM)
Meas Hour	0000 - 2300	The hour for which data is collected for the port network.
G711 Equivalent DSP	0 - 99999	G.711 Equivalent Digital Signaling Processor Resource Capacity. Indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given port network.

Field	Range	Description/Algorithm
Rsrc Capcty		The "*" in this column indicates that media processor capacity changed during the measurement hour. Calculation: For PN level DSP resource reports: • If PN# = C, G711 DSP Rscs = running sum of available G711 equivalent DSP resources for fiber-connected PNs for the peak measurement hour. • If resources in a PN are assigned to more than one network region (network region =all), G711 DSP Rscs = running sum of available G711 equivalent DSP resources for this specific PN for the peak measurement hour. • For individual PNs assigned to a single network region: G711 DSP Rscs = total number of G711 equivalent DSP resources available at that port network for the measurement hour. Totals are shown for all fiber- and IP-connected PNs in cases where a port network has multiple media processors across different network regions.
G711 Equivalent DSP Rsrc Peak	0-99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour for that port network. This is helpful if you experience "spike" traffic patterns to determine when resources should be added. Calculation: For PN level DSP resource reports: • If PN# = C, Peak Usage = running sum of available G711 equivalent DSP resources for fiber-connected PNs for the peak measurement hour. • If resources in a PN are assigned to more than one network region (network region =all), G711 Peak Rscs = running sum of available G711 equivalent DSP resources for this specific PN for the peak measurement hour.
G711 Equivalent DSP Usage (ERL)	0 - 9999.9 Erlangs	G.711 Equivalent DSP Usage. Total G.711 equivalent usage for all codecs that were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Calculations: $\frac{\sum_{i} (\text{Call Duration}) \times (\text{\# points}) \times (\text{conversion})}{3600 \text{ seconds}} = X.X$ Result is to 1 decimal point.

Field	Range	Description/Algorithm
IGC Usage	0-999.9 Erlangs	Total usage of a port-network or gateway for its involvement in Inter-PN or Inter-GW connections. Channel usage might be from IP endpoints or an IGC.
Total DSP Pegs	0 - 65535	The total number of times media processor resources were allocated in a network region during the measurement hour.
IGC Pegs	0 - 65535	Inter-Gateway Connection Pegs - the number of times media processor resources were allocated in a port network to connect two endpoints through an IGC (this is a subset of total DSP pegs).
PN Denied Pegs	0 - 65535	The total number of times an IP media processor port was needed in the port network for a call, but was denied because there were no media processing resources available in that port network.
% Den	0-99 (pegs)	Percentage Denied: The percent of pegs which were denied during the measurement period. Calculations: For pn/gw reports, % denied is computed as: # of denied pegs / # of denied + total pegs x 100
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period. This percent includes ports that were manually busied out or maintenance busy during the measured interval. Calculations: [total time (in CCS) that any port was out of service divided by the number of available resources x 36] x 100.

H.248 GW Level DSP-Resource reports

Similar to PN level dsp resource reports, the H.248 Gateway level dsp resource reports show DSP activity on the media processors for relevant gateways. You have the option of viewing peak DSP usage in a summary report, or detailed DSP usage in an hourly report. Similar to the port network level reports, the gateway level DSP usage reports will include the following data according to H.248 gateway:

- Total number of G.711 equivalent DSP resources available in the gateway for the measurement hour
- Number of G.711 equivalent DSP resources used by the gateway for a given measurement hour
- Peak G.711 equivalent DSP usage during the measurement hour

- Total seizures - that is, the number of DSP resources used within the gateway itself
- DSP usage in a specific gateway for an IGC

Related topics:

GW Summary DSP Resource report on page 140
Displaying the GW Summary DSP Resource Report on page 140
IP DSP Resource H.248 GW Summary Report field descriptions on page 141
GW Hourly DSP Resource report on page 143
Displaying the GW Hourly DSP Resource Report on page 143
H.248 GW DSP Resource Hourly Report field descriptions on page 144

GW Summary DSP Resource report

The gateway summary report shows peak hour DSP usage for a specific H.248 gateway.

Displaying the GW Summary DSP Resource Report

Procedure

Type **`list meas ip dsp-resource gw summary ['yest' | 'today' | 'last-hr'] [<blank> | 'gw' <gw number> 'count <number>' |'gw' <gw number> 'to' 'gw' <gw number>], ['schedule']`** and press `Enter`.

Result

The following are examples of valid command entries:

- 'list meas ip dsp-resource gw summary today gw8 - lists summary DSP resource peak usage data for today only for H.248 gateway 8 (i.e., implies a count of 1)
- 'list meas ip dsp-resource gw summary today gw8 count 10' - lists summary DSP resource peak usage data for today starting with H.248 gateway 8 and continuing for the next ten applicable gateways.
- 'list meas ip dsp-resource gw summary today-peak gw8 to gw25' - lists summary DSP resource peak usage data for today starting with H.248 gateway 8 and continuing through gateway 25.

  Options: The schedule option is available for this command.

IP DSP Resource H.248 GW Summary Report field descriptions

Field	Range	Description/Algorithm
GW Num	G001 - G250	Indicates the number of the administered H.248 gateway for which DSP resource usage is being reported for the given measurement hour.
GW Type	g700 g350 g250 g450 ig550 trm480	Indicates the H.248 gateway type containing the DSP resource being used.
Peak Hour	0000 - 2300	The measurement hour with the highest Erlang usage for the specific gateway.
Net Reg	1 - 250	The network region represents the network region of the IP media processors being measured. The region number is assigned on the ip-interface screen during switch administration.
G711 Equivalent DSP Rsrc Capty	0-99999	G711 Equivalent DSP Resource Capacity. Indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given network region. The "*" in this column indicates that media processor capacity changed during the measurement hour. Gateways with older firmware that do not support this feature shall display capacity data of "n/a", indicating that data is not available. Calculation: For H.248 gateway level DSP resource reports: • For individual H.248 gateways: G711 DSP Rscs = total number of G711 equivalent DSP resources available at a specific gateway for that measurement hour.
G711 Equivalent DSP Rsrc Peak	0 - 99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour. This is helpful if you experience "spike" traffic patterns to determine when resources should be added. Gateways with older firmware that do not support this feature shall display capacity data of "n/a", indicating that data is not available.
G711 Equivalent DSP Usage (Erl)	0-9999.9 Erlangs	G.711 Equivalent DSP Usage. Total G.711 equivalent usage that all codecs were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts

Field	Range	Description/Algorithm
		might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: $\frac{\sum_{I} \text{(Call Duration) x (\# points) x (conversion)}}{\text{3600 seconds}} = X.X$ Result is to 1 decimal point.
IGC Usage	0-999.9 Erlangs	Total usage of a port-network or gateway for its involvement in Inter-PN or Inter-GW connections. Channel usage might be from IP endpoints or an IGC. Result is to 1 decimal point. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
Total DSP Pegs	0 - 65535	The total number of attempts at allocating a media processor resource in a gateway during the measurement hour. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculation: In Region Pegs + Pegs from other regions that come into this network region. **Note:** You can derive the number of times that a different network region obtained resources from this network region by taking Total Peg - In Reg Peg.
IGC Pegs	0 - 65535	Inter-Gateway Connection Pegs - the number of times media processor resources were allocated in a gateway to connect two endpoints through an IGC (this is a subset of total DSP pegs). Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
GW Denied Pegs	0 - 65535	The total number of times an IP media processor port was needed in the gateway for a call, but was denied because there were no media processing resources available in that gateway. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
% Den	0-99 (pegs)	PN Percentage Denied. PN denied pegs shown as a percentage.

Field	Range	Description/Algorithm
		Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: For pn/gw reports, % denied is computed as: # of denied pegs x 100 # of denied + total pegs
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period. This percent includes ports that were manually busied out or maintenance busy during the measured interval. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: [total time (in CCS) that any port was out of service divided by the number of available resources x 36] x 100.

GW Hourly DSP Resource report

The gateway hourly report displays up to 24 hours worth of data per gateway.

Displaying the GW Hourly DSP Resource Report

Procedure

Type **'list meas ip dsp-resource gw hourly [<blank> | <gw number> | <gw number> 'count' <number> |'gw' <gw number> 'to' 'gw' <gw number>], ['schedule']** and press Enter.

Result

The following are examples of valid command entries:

- **`list meas ip dsp-resource gw hourly <blank>`** - lists detailed information for peak DSP resource usage that occurred over the last 24 hours for all H.248 gateways in the system.
- **`list meas ip dsp-resource gw hourly 8 count 12`**- lists detailed information for peak DSP resource usage that occurred over the last 24 hours starting with H.248 gateway 8 and including the next 12 administered H.248 gateways.
- **`list meas ip dsp-resource gw hourly gw8 to gw12`** - lists detailed information for peak DSP resource usage that occurred over the last 24 hours starting with H.248 gateway 8 through gateway 12.

  Options: The schedule option is available for this command.

H.248 GW DSP Resource Hourly Report field descriptions

Field	Range	Description/Algorithm
GW Num	G001 - G250	Indicates the number of the administered H.248 gateway for which DSP resource usage is being reported for the given measurement hour.
Meas Hour	0000 - 2300	The hour for which data is collected for the port network.
Net Reg	1 - 250	The network region represents the network region of the IP media processors being measured. The region number is assigned on the ip-interface screen during switch administration.
GW Type	g700 g350 g250 g450 ig550 trm480	Indicates the H.248 gateway type containing the DSP resource being used.
G711 Equivalent DSP Rsrc Capty	0-99999	G711 Equivalent DSP Resource Capacity. Indicates the maximum number of unencrypted, simultaneous G.711 DSP resources that could be supported for a given network region. The “*” in this column indicates that media processor capacity changed during the measurement hour. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculation:

Field	Range	Description/Algorithm
		For H.248 gateway level DSP resource reports: • For individual H.248 gateways: G711 DSP Rscs = total number of G711 equivalent DSP resources available at a specific gateway for that measurement hour.
G711 Equivalent DSP Rsrc Peak	0 - 99999	Indicates the maximum number of G.711 equivalent DSP resources used at any point in time in the measurement hour. This is helpful if you experience “spike” traffic patterns to determine when resources should be added. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
G711 Equivalent DSP Usage (Erl)	0-9999.9 Erlangs	G.711 Equivalent DSP Usage. Total G.711 equivalent usage that all codecs were in use during the measurement period. The time is measured from the time the voice channel is allocated until it is released, including the time that the voice channel is on a call. Depending on the media processor being used usage counts might vary per codec (for example, TN2302 counts G.729/3 as 2, encryption counts as 1.25, etc.). Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: $\frac{\sum_{i} \text{(Call Duration) x (\# points) x (conversion)}}{\text{3600 seconds}} = X.X$ Result is to 1 decimal point.
IGC Usage	0-999.9 Erlangs	Total usage of a port-network or gateway for its involvement in Inter-PN or Inter-GW connections. Channel usage might be from IP endpoints or an IGC. Result is to 1 decimal point. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
Total DSP Pegs	0 - 65535	The total number of attempts at allocating a media processor resource in a gateway during the measurement hour. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: In Region Pegs + Pegs from other regions that come into this network region. **Note:** You can derive the number of times that a different network region obtained resources from this network region by taking Total Peg - In Reg Peg.

Field	Range	Description/Algorithm
IGC Pegs	0 - 65535	Inter-Gateway Connection Pegs - the number of times media processor resources were allocated in a gateway to connect two endpoints through an IGC (this is a subset of total DSP pegs). Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
GW Denied Pegs	0 - 65535	The total number of times an IP media processor port was needed in the gateway for a call, but was denied because there were no media processing resources available in that gateway. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available.
% Den	0-99 (pegs)	PN Percentage Denied. PN denied pegs shown as a percentage. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: For pn/gw reports, % denied is computed as: # of denied pegs / # of denied + total pegs x 100
% Out of Srv	0 - 99	Percentage Out of Service: The percent of total resource time that ports were out of service during the measurement period. This percent includes ports that were manually busied out or maintenance busy during the measured interval. Gateways with older firmware that do not support this feature shall display capacity data of “n/a”, indicating that data is not available. Calculations: [total time (in CCS) that any port was out of service divided by the number of available resources x 36] x 100.

LAN performance reports

These reports provide a 24-hour history of important packet-level statistics from which you can infer some LAN performance characteristics. For example,

- High collision counts could indicate high traffic on the LAN segment (congestion on the bus).
- High Cyclic Redundancy Check (CRC—detects and corrects errors on every frame) errors could suggest that:

  - the LAN connection is noisy

- a wire connection is loose
- a wire is frayed or broken

The 24-hour histories give the ability to look back at these measures if the trouble is cleared.

The data is collected at 15-minute intervals over 24 hours for the Cyclic Redundancy Check (CRC) and collisions for Ethernet connections. If the data cannot be retrieved for the 15-minute interval, N/A displays in the field. The delta (the change from the last inquiry) and the total are provided for each error count. After the occurrence of “N/A” (not available), the delta equals the total.

The primary use of these reports is to quickly and unambiguously determine if the fault lies within the Avaya-provided equipment or if the fault is with the LAN or LAN administration to which the Avaya Communication Manager configuration is connected.

Related topics:

C-LAN Ethernet Performance Measurements Detailed report on page 147
C-LAN PPP Performance Measurement Detailed report on page 148
CLAN Sockets Hourly report on page 149
C-LAN Sockets Summary report on page 150
CLAN Sockets Detail report on page 152

C-LAN Ethernet Performance Measurements Detailed report

Related topics:

Displaying the C-LAN Ethernet Performance Measurements Detailed report on page 147
C-LAN Ethernet Performance Measurements Detailed report field descriptions on page 148

Displaying the C-LAN Ethernet Performance Measurements Detailed report

About this task

Type **`list measurements clan ethernet <cabinet-carrier-slot address of circuit pack> [schedule]`** and press `Enter`.

For example, to display the performance of the Ethernet circuit pack with the address 05B11, type **`list measurements clan ethernet 05B11`**.

Options: The schedule option is available for this command.

C-LAN Ethernet Performance Measurements Detailed report field descriptions

Name	Description
Date	The date on which the system collects the data.
Time	The 15-minute interval in which the action is performed.
CRC CHECK	The error count for Cyclic Redundancy Check (CRC) errors.
total	The total value of the counter on the board. **Note:** The counter value can be up to 11 digits long because of the 32-bit counter on the board. After the occurrence of an N/A, the delta equals the total. The following activities clear the firmware counters: busy-out of a board, release of a board, release of a port, the **reset board** command, and reseating the board.
delta	The difference between the current and the previous sample.
Collision Count	The error count for collisions on the Ethernet.

C-LAN PPP Performance Measurement Detailed report

Related topics:

Displaying the C-LAN PPP Performance Measurement Detailed report on page 148
C-LAN PPP Performance Measurement Detailed report field descriptions on page 149

Displaying the C-LAN PPP Performance Measurement Detailed report

About this task

Type **list measurements clan ppp <cabinet-carrier-slot address of circuit pack> [schedule]** and press Enter.

For example, to display the performance of the ppp circuit pack with the address 1C1017, type **list measurements clan ppp 1C1017**.

Options: The schedule option is available for this command.

C-LAN PPP Performance Measurement Detailed report field descriptions

Name	Description
Date	The date on which the system collects the data.
Time	The 15-minute interval in which the action is performed.
CRC CHECK	The error count for Cyclic Redundancy Check (CRC) errors.
Total	The total value of the counter on the board. **Note:** The counter value can be up to 11 digits long because of the 32-bit counter on the board. After the occurrence of an N/A, the delta equals the total. The following activities clear the firmware counters: busy-out of a board, release of a board, release of a port, the **reset board** command, and reseating the board.
Delta	The difference between the current and the previous sample.
Invalid Frame	The number of invalid or misaligned frames detected.
CHAP Failures	The number of failed attempts for ppp authentication

CLAN Sockets Hourly report

Related topics:

Displaying the CLAN Sockets Hourly report on page 150
CLAN Sockets Hourly field descriptions on page 150

Displaying the CLAN Sockets Hourly report

About this task

Type **list measurements clan sockets hourly <board location>** and press Enter.

Options: The schedule option is available for this command.

CLAN Sockets Hourly field descriptions

Field	Range	Description
Meas Hour	0000-2300	Measurement Hour. The hour the measurement was taken. Switches in multiple time zones are treated as in the current MMI reports. You should not make any correlation between LAN regions and time zones.
Board	CCcss	The cabinet, carrier, and slot for the specified board.
Region	1-44	The network region that the C-LAN for this measurement is in.
Socket Usage (Erl)	0-9999.9	The total time, in Erlangs, that is available from sockets on this C-LAN board. Calculated by: (Total Socket Seconds of usage)/ 3600
Socket Peg	0-65535	Total number of times a C-LAN socket on the board was allocated to a call or link.
Socket Denial Peg	0-65535	Total number of times a C-LAN socket on the board was needed for a call or link, but was not available.
Denials	0-99	(Socket Denial Peg)/(Socket Denial Peg + Socket Peg)
Time ASB	0-99	The percentage of time during the measured interval that all C-LAN sockets on the board were unavailable for use.

C-LAN Sockets Summary report

Related topics:

Displaying the CLAN Sockets Summary report on page 151
CLAN Sockets Summary field descriptions on page 151

Displaying the CLAN Sockets Summary report

About this task

Type **list measurements clan sockets summary <yesterday-peak/today-peak/last-hour> [schedule]** and press Enter.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list the peak hour traffic on CLAN sockets for yesterday.
2. Enter **today-peak** to list the peak hour traffic on CLAN sockets for today.
3. Enter **last-hour** to list the peak hour traffic on CLAN sockets in the most recently completed hour.

Result

Options: The schedule option is available for this command.

CLAN Sockets Summary field descriptions

Field	Range	Description
Meas Hour	0000-2300	Measurement Hour. The hour the measurement was taken. Switches in multiple time zones are treated as in the current MMI reports. You should not make any correlation between LAN regions and time zones.
Board	CCcss	The cabinet, carrier, and slot for the specified board.
Region	1-250	The network region of the C-LAN.
Socket Usage (Erl)	0-9999.9	The total time, in Erlangs, that is available from sockets on this C-LAN board. Calculated by: (Total Socket Seconds of usage)/ 3600
Socket Peg	0-65535	Total number of times a C-LAN socket on the board was allocated to a call or link.
Socket Denial Peg	0-65535	Total number of times a C-LAN socket on the board was needed for a call or link, but was not available.
% Denials	0-99	(Socket Denial Peg)/(Socket Denial Peg + Socket Peg)

Field	Range	Description
% Time ASB	0-99	Percent of Time All Sockets Busy. The percentage of time during the measured interval that all C-LAN sockets on the board were unavailable for use.

CLAN Sockets Detail report

Related topics:

Displaying the CLAN Sockets Detail report on page 152
CLAN Sockets Detail field descriptions on page 152

Displaying the CLAN Sockets Detail report

About this task

Type **list measurements clan sockets detail <board location> <yesterday-peak/today-peak/last-hour> [schedule]** and press Enter.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list the peak hour traffic on CLAN sockets for yesterday.
2. Enter **today-peak** to list the peak hour traffic on CLAN sockets for today.
3. Enter **last-hour** to list the peak hour traffic on CLAN sockets in the most recently completed hour.

Result

Options: The schedule option is available for this command.

CLAN Sockets Detail field descriptions

Field	Range	Description
Meas Hour	0000-2300	Measurement Hour. The hour the measurement was taken. Switches in multiple time zones are treated as in the current

Field	Range	Description
		MMI reports. You should not make any correlation between LAN regions and time zones.
Board	CCccss	The cabinet, carrier, and slot for the specified board.
Region	1-250	The network region of the C-LAN.
Socket Usage (Erl)	0-9999.9	The total time, in Erlangs, that is available from sockets on this C-LAN board. Calculated by: (Total Socket Seconds of usage)/ 3600
Socket Peg	0-65535	Total number of times a C-LAN socket on the board was allocated to a call or link.
Socket Denial Peg	0-65535	Total number of times a C-LAN socket on the board was needed for a call or link, but was not available.
% Denials	0-99	(Socket Denial Peg)/(Socket Denial Peg + Socket Peg)
% Time ASB	0-99	Percent of Time All Sockets Busy. The percentage of time during the measured interval that all C-LAN sockets on the board were unavailable for use.

LAR Measurements for Preferences in Pattern report

The Look Ahead Routing (LAR) Measurements for Preferences in Pattern report contains usage measurements for LAR processing. This report displays the number of reroute attempts performed and the number of successful ISDN call attempts.

Related topics:

Displaying the LAR Measurements for Preferences in Pattern report on page 153
LAR Measurements for Preferences in Pattern field descriptions on page 154

Displaying the LAR Measurements for Preferences in Pattern report

About this task

Type **`list measurements lar-route-pattern <assigned pattern number> <yesterday/today/last-hour> [schedule]`** and press`Enter`.

Required Fields: There are two required fields for this command.

Procedure

1. **assigned pattern number**
2. Enter the identifying pattern number you want to display.

   This number must previously have been assigned to one of the numbers on the meas-selection route-pattern screen.To obtain data for the pattern, it must previously have been administered on the ARS/AAR/UDP screens.

Result

- **yesterday/today/last-hour**.
  - Enter **yesterday** to list the LAR route pattern activity for yesterday.
  - Enter **today** to list the LAR route pattern activity for today.
  - Enter **last-hour** to list the LAR route pattern activity of the most recently completed hour.

  For example, to display yesterday's measurements for route pattern 2, type **list measurements lar-route-pattern 2 yesterday**.

Options: The schedule option is available for this command.

LAR Measurements for Preferences in Pattern field descriptions

Name	Description
Pref No.	Route Preference Number. The number of the administered route preference.
Grp No.	Trunk Group Number. The number, assigned through the Trunk Group screen, that identifies each trunk group associated with the displayed data. Trunk groups are listed in the same order as they are assigned on the Route Pattern screen. The first trunk group listed is the first selected (preference 1); the second listed is the second selected (preference 2), and so on. If an entry in the column is prefixed with an *, it indicates LAR administration for the preference was changed during the measurement period currently displayed. (LAR valid for ISDN-PRI trunk groups.)
LAR Type	Look Ahead Routing Type. Type of LAR administered on the AAR and ARS Route

Name	Description
	Pattern screen for the trunk group including. Possible values are: • none: no LAR • rehu: rehunt in the same preference • next: reroute to next preference
LAR Calls	Look Ahead Routing Calls. The number of calls initiating LAR processing in the displayed trunk group. Only the initial call is counted, not subsequent rerouting attempts.
Total Rehunt	The number of LAR rehunt attempts within the trunk group.
Suc. Rehunt	Successful Rehunt. The number of successful hunts out of Total Rehunt attempts within the trunk group that ended in the LAR call rerouted successfully.
Total Next	The total number of LAR attempts directed to this trunk group from a previous preference in the route pattern.
Suc. Next	Successful Next. The number of successful LAR attempts directed to this trunk group from a previous preference in the route pattern.

Modem Pool Measurements report

This section describes the traffic measurements report for modem pools.

The Modem Pool Measurements report contains measurements for monitoring the performance of the modem pooling feature. The system records data for the current day's peak hour, the previous day's peak hour, and the last hour. A peak hour is the hour within a 24-hour period that had the greatest usage for the specified day.

Related topics:

Displaying the Modem Pool Measurements report on page 156
Modem Pool Measurements field descriptions on page 156

Displaying the Modem Pool Measurements report

About this task

Type **list measurements modem-pool <yesterday-peak/today-peak/ last-hour> [schedule]** and press Enter.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list the modem pool activity for yesterday's peak hour.
2. Enter **today-peak** to list the modem pool activity for today's peak hour.
3. Enter **last-hour** to list the modem pool activity of the most recently completed hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Modem Pool Measurements field descriptions

Name	Description
Meas Hour	Measurement hour. The starting time of the hour in 24-hour clock during which the system records the data.
Pool No.	Pool number. A number, assigned during administration, that identifies the modem pool group.
Pool Size	The number of conversion resources administered in the modem pool group. The size is up to 16 for integrated and up to 32 for combined resources.
Pool Type	The type of group: integrated or combined.
Total Usage	The time in CCS the members of the modem pool group are active on calls during the polling interval. $Maximum\ Usage = Pool\ Size \times 36\ CCS$

Name	Description
Inc Usage	Incoming usage. The usage in CCS for modem pool calls originating from incoming or two-way trunks that end on the switch. $Outgoing\ Usage = Total\ Usage - Inc\ Usage$
Tan Usage	Tandem Usage. The usage in CCS for tandem calls that used a modem pool member.
Calls Carried	The number of calls carried, during the polling interval, by the identified modem pool. These calls includes both incoming and outgoing calls.
Inc Calls	Incoming calls. The number of calls originating from incoming or two-way trunks that end on the switch. $Outgoing\ Calls = Calls\ Carried - Inc\ Calls$
Tan Calls	Tandem calls. The number of tandem calls that use a modem pool member.
Calls Blocked	The number of calls blocked because of the unavailability of a conversion resource. Suggested actions: • If this field indicates a significant number of modem pool calls are blocked, verify that the users have the data modules set for autobaud. • Increase the pool size.
Calls Ovflw	Calls overflow. The number of calls directed to a modem pool group that overflow and end successfully in another group.
% AMB	Percent All Modems Busy (AMB). The percent of the time all modem pool members are busy processing calls.

Multimedia reports

These reports are available to help you determine the amount of traffic your switch carries for multimedia conferences and conversion calls. All reports show traffic over multimedia circuit packs housed within the same switch, although not necessarily in the same port network. Use these reports to determine if you have adequate resources to handle the multimedia traffic on your system.

Note:

Point-to-point multimedia calls between Basic mode or standalone multimedia endpoints do not use MultiMedia Interfaces (MMI) or voice conditioners (VC), and therefore do not count in these measurements.

The following reports are available:

- MultiMedia Interface (MMI) Hourly and Summary reports
- Expansion Service Module (ESM) Hourly and Summary reports
- Voice Conditioners (VC) Hourly and Summary reports

The hourly and summary reports provide the same types of information. The hourly report shows measurements for the last 24 hours, whereas the summary reports show measurements for one hour, according to the type of summary you request.

Related topics:

ESM Hourly and ESM Summary reports on page 158
MMI Hourly and MMI Summary reports on page 160
Voice Conditioners report on page 162

ESM Hourly and ESM Summary reports

The ESM Hourly report shows hourly traffic over the MMI that is cabled to the expansion service module. The ESM Summary report shows a summary of traffic over the multimedia interface that is cabled to the ESM.

Related topics:

Displaying the ESM Hourly report on page 158
ESM Hourly report and ESM Summary reports on page 159

Displaying the ESM Hourly report

About this task

Type **`list measurements expansion-service-mod hourly [schedule]`** and press `Enter`.

The following step displays the ESM Summary report:

Type **`list measurements expansion-service-mod summary <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday-peak/today-peak/last-hour`**. You must choose one of these.

Procedure

1. Enter **yesterday-peak** to list the activity for yesterday's peak hour.
2. Enter **today-peak** to list the activity for today's peak hour.
3. Enter **last-hour** to list the activity of the most recently completed hour.
   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

ESM Hourly report and ESM Summary reports

Name	Description
Peak Hour For All ESM-MMIs	Displays the hour of greatest usage for the specified day. The system displays this field only on the ESM summary report if you use the **yesterday-peak** or **today-peak** qualifier.
Meas Hour	Measurement hour. The hour for which these measurements apply.
Avail Ports	Available ports. Total network ESM-MMIs in the system.
Avail Usage	Available usage. Total time, in CCS units, that is available in the system for ESM-MMI ports.
Total Usage	The total time, in CCS units, that ESM-MMI ports are in use on a call including the time that the ports are out of service or maintenance busy. The usage is measured from the time the port is allocated until it is released.
Total Alloc	Total allocation. The total number of times that an ESM-MMI port was allocated to a call.
ESM Denials	The total number of times an ESM-MMI port was needed but could not be allocated because all ports were busy.
Out of Srv-CCS	Out of service in CCS units. The total time, in CCS units, that any ESM-MMI ports were out

Name	Description
	of service during any part of the measured interval.
%APB	Percent All Ports Busy (APB). The percentage of time during the measured interval that all ESM-MMI ports are unavailable to carry a new call.
% Blockage	Percent blockage. The percentage of attempted allocations of ESM-MMI ports that are not successful. This value is calculated as: % blockage = (MMI Denials / Total Alloc + MMI Denials) * 100

MMI Hourly and MMI Summary reports

The MMI Hourly report displays traffic activity for the multimedia interface, broken down by hour. The MMI Summary report shows a summary of traffic activity for the multimedia interface.

Related topics:

Displaying an MMI Hourly report on page 160
MMI Hourly report and MMI Summary field descriptions on page 161

Displaying an MMI Hourly report

About this task

Type **`list measurements multimedia-interface hourly [schedule]`** and press `Enter`.

Options: The schedule option is available for this command.

The following step displays an MMI Summary report:

Type **`list measurements multimedia-interface summary <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday-peak/today-peak/last-hour`**. You must choose one of these.

Procedure

1. Enter **`yesterday-peak`** to list the activity for yesterday's peak hour.

2. Enter **today-peak** to list the activity for today's peak hour.
3. Enter **last-hour** to list the activity of the most recently completed hour.
   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

MMI Hourly report and MMI Summary field descriptions

Name	Description
Peak Hour For All MMIs	Displays the hour of greatest usage for the specified day. The system displays this field on the MMI summary report only if you use the **yesterday-peak** or the **today-peak** qualifier.
Meas Hour	Measurement hour. The hour in the 24-hour clock for which these measurements apply.
Avail Ports	Available ports. The total network MMI ports, except the MMI ports that are cabled to an ESM. ESM-MMIs ports are measured separately.
Avail Usage	Available usage. The total time in CCS units that is available in the system for network MMI ports.
Total Usage	The total time, in CCS units, that MMI ports are in use on a call. The total time Includes the time that the ports are out of service or maintenance busy. The usage is measured from the time the port is allocated until it is released.
Total Alloc	Total allocated. The total number of times that an MMI port was allocated to a call. A two-channel call occupies two ports, so this number does not necessarily reflect the number of calls that take place. Point-to-point calls do not use MMI resources, so these allocations are for conversion calls of multimedia conferences.
MMI Denials	The total number of times an MMI port was needed but could not be allocated because

Name	Description
	all ports were busy. Ideally, this number should be zero. If you see denials on a regular basis, you should add MMIs to your system.
Out of Srv - CCS	The total time, in CCS units, that any MMI ports are out of service during any part of the measured interval.
% APB	Percent All Ports Busy (APB). The percentage of time during the measured interval that all MMI ports are unavailable to carry a new call.
% Blockage	Percent blockage. The percentage of attempted allocations of MMI ports that are unsuccessful. This value is calculated as: % blockage = (MMI Denials / Total Alloc + MMI Denials) * 100

Voice Conditioners report

Related topics:

Displaying a VC Hourly report on page 162
VC Summary Report field descriptions on page 163

Displaying a VC Hourly report

About this task

Type **`list measurements voice-conditioners hourly [schedule]`** and press `Enter`.

The following step displays a VC Summary Report:

Type **`list measurements voice-conditioners summary <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday-peak/today-peak/last-hour`**. You must choose one of these.

Procedure

1. Enter **`yesterday-peak`** to list the activity for yesterday's peak hour.
2. Enter **`today-peak`** to list the activity for today's peak hour.

3. Enter **last-hour** to list the activity of the most recently completed hour.
   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

VC Summary Report field descriptions

Name	Description
Peak Hour For All VCs	This field is only available on the VC Summary report if you use the **yesterday-peak** or **today-peak** qualifier. Displays the hour of greatest usage for the specified day. **Note:** This field is not available on the VC Hourly report .
Meas Hour	Measurement Hour. The hour for which these measurements apply, on the 24-hour clock.
Avl Prt	Available Ports. Total number of VC ports in the system.
Usage - Avail	Available Usage. Total time, in CCS, that all VC ports are available in the system. Calculated as #MMI ports x 36.
Usage - H320	H320 Usage. Total time that VC ports are allocated to H320 endpoints.
Usage - Voice	Total time VC ports are allocated to voice endpoints.
Usage -Total	Total time, in CCS units, that VC ports are unavailable to carry a new call. This includes time that the ports are busy on a call, out of service or maintenance busy. Measured from the time that the port is allocated until it is released.
Allocations - H320	Total time VC ports are allocated to H320 endpoints.

Name	Description
Allocations - Voice	Total time VC ports are allocated to voice endpoints.
Allocations - Total	Total number of times a VC port was allocated to a call. Each B-channel used on a multimedia call counts as one allocation.
Denials - H320	Number of times a port was needed for an H320 call, but was not available.
Denials - Voice	Number of times a port was needed for a voice call, but was not available.
Denials - Total	Total number of times a VC port was needed for any call, but was not allocated because all VC ports were busy.
Out Srv	Time Out of Service. The total time, in CCS units, that any MMI ports were out of service during any part of the measured interval.
%APB	Percent All Ports Busy. The percentage of time during the measured interval that all MMI ports are unavailable to carry a new call.
% Blk	Percent Blockage. The percentage of attempted allocations of MMI ports that are not successful. This value is calculated as % blockage = (MMI Denials / Total Alloc + MMI Denials) * 100

Performance Summary report

This describes the traffic measurements Performance Summary report. The Performance Summary report summarizes the Peak Hour Trunk Blocking Daily Routing Pattern traffic data, Trunks Out of Service, and Trunks Not Used. The system gives a summary report for the previous day or the current day.

Related topics:

Displaying the Performance Summary report on page 165
Summary Performance Report field descriptions on page 165

Displaying the Performance Summary report

About this task

Type **`list performance summary <yesterday/today> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday/today`**.

Procedure

1. Enter **`yesterday`** to list a summary of the activity for yesterday.
2. Enter **`today`** to list a summary of the activity for today.

Result

Options: The schedule option is available for this command.

Summary Performance Report field descriptions

On each Performance Summary report screen, the time and date the report is requested, displays at the upper-right. The report displays the information both graphically and numerically.

Name	Description
PEAK HOUR TRUNK BLOCKING	Lists up to a maximum of five trunk groups with the highest percent of blocking in a measurement hour (for example, Grp No. 54 had 42 percent blocking). For incoming trunk groups, the percent of blocking is referred to as Percent All Trunks Busy (% ATB). For outgoing and two-way trunk groups, the percent blocking is referred to as % Out Blocking. % ATB is the percentage of time that all trunks in the trunk group were simultaneously in use during the measurement interval. % Out Blocking is the percentage of outgoing calls that arrive when all trunks are busy (ATB). For trunk groups with no queue, the calls not carried are those calls that could not be carried over any trunk member. For trunk groups with queues, the calls not carried are

Name	Description
	those calls that could not be carried over any trunk member and could not be queued because the queue was full (for example, the Queue Overflow calls). Suggested action: You should determine the exact reason that a trunk group is blocking calls. To determine if blocking is being caused by a high volume of calls, refer to Trunk Group Performance report (for the indicated trunk group). If it is because of calling volume alone, consider the possibility of adding more members to the trunk group. The **Total Calls** field on the Trunk Group Performance report indicates the calling volume. If blocking is not because of calling volume, the reason must be because trunks are in the maintenance busy state. Determine whether maintenance personnel have been or should be alerted.
DAILY ROUTING PATTERN CALLS CARRIED	The percentage of calls carried, on a per-trunk-type basis, by the 25 routing patterns selected and measured (with the **`change meas-selection route-pattern`** command). The report displays the information both graphically and numerically. This measurement is simply a summation of the Total Calls Carried on a per-trunk-type basis for the trunk groups listed in the measured route-patterns, divided by the system-wide Total Calls Carried for all trunk types all day. The trunk group types for which routing pattern performance is reported in the summary report are: co, fx, wats , tie, and misc. • The tie trunk group type includes both internal and external tie, both internal and external Advanced Private Line Termination (APLT) access, and tandem trunk group types. • The term misc represents all other remaining trunk group types over which ARS/AAR/UDP calls might be routed.
TRUNKS OUT OF SERVICE	Lists trunk groups with out-of-service trunks over the report interval. A list of the first 10

Name	Description
	trunks out of service is also given. The indication “more trunks out of service” is given if there are more than four trunk groups with out of service trunks or more than 10 members are out of service in any of the groups listed. **Note:** This measurement is a summary of the list measurements outage-trunk report.
TRUNKS NOT USED	Lists trunk groups with trunks not used over the report interval (yesterday or today). A list of the first five trunks, in each of the identified groups, not used is also listed. The indication “more trunks not used” is given if there are more than four trunk groups with trunks not used or whenever more than five members are not used in any of the groups listed. Suggested action: You should determine the exact reason the trunks are not being used. Is the reason because there are more trunks than actually needed or because there is a problem? If the identified trunk group has a large number of members and there are several trunks within that trunk group that receive few or zero calls, then the obvious conclusion is there are more trunk members than needed for the trunk group. As a contrast, if there is only one trunk member identified for the trunk group and that member has zero calls, then the trunk probably is defective.

Port network load balance study reports

The port network load balance reports are designed to show the loading on each port network and give an indication of the load source by call type. Knowing the load source means informed decisions can be made on how best to decrease the load or the effect of adding various kinds of ports to the port network. Growth can be accommodated with a minimum of new equipment.

There are five port network load balance reports.

- The Total report provides an overview of time slot usage, blockage, pegs, and occupancy for time slots on the TDM bus and port network links. This report also contains an EI board

control utilization field (G3r only). See Port Network Load Balance Study - Total report on page 169.

- The other four reports include time slot usage and pegs for the following call types:
  - intercom (see Port Network Load Balance Study - Intercom report on page 171)
  - incoming trunk (see IPort Network Load Balance Study - Incoming report on page 172)
  - outgoing trunk (see Port Network Load Balance Study - Outgoing report on page 173)
  - tandem trunk (see Port Network Load Balance Study - Tandem report on page 174)

These reports show characteristic patterns of the load on each port network for each of the call types.

All the reports are peak reports; data is provided for yesterday-peak, today-peak, and last-hour. The peak for each of the four call-type reports is time-coincident with the peak from the Total Report (TDM usage field).

Related topics:

Displaying any variation of the Port Network Load Balance Study Report on page 168
Port Network Load Balance Study Report - Total Calls field descriptions on page 169
Port Network Load Balance Study Report - Intercom Calls field descriptions on page 171
Port Network Load Balance Study Report - Incoming Trunk field descriptions on page 172
Port Network Load Balance Study Report - Outgoing Trunk field descriptions on page 173
Port Network Load Balance Study Report - Tandem Trunk field descriptions on page 174

Displaying any variation of the Port Network Load Balance Study Report

About this task

Type **`list measurements load-balance <total/intercom/incoming/outgoing/tandem> <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There are two required fields for this command.

Procedure

1. **`total/intercom/incoming/outgoing/tandem`**
   - Enter **`total`** for an overview of time slot usage, blockage, pegs, and occupancy.
   - Enter **`intercom`** for time slot usage and pegs for the intercom call type.

- Enter **incoming** for time slot usage and pegs for the incoming call type.
- Enter **outgoing** or time slot usage and pegs for the outgoing call type.
- Enter **tandem** for time slot usage and pegs for the tandem call type.

2. **yesterday-peak/today-peak/last-hour**
   - Enter **yesterday-peak** to list the load balance activity for yesterday's peak hour.
   - Enter **today-peak** to list the load balance activity for today's peak hour.
   - Enter **last-hour** to list the load balance activity of the most recently completed hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Port Network Load Balance Study Report - Total Calls field descriptions

Name	Description
PN	Port network. Identifies the port network being measured.
Meas Hour	Measurement hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
TDM Usage	Time Division Multiplexed Usage. The total TDM time-slot usage, in CCS, for the PN being measured: TDM Usage = Sum of the allocated TDM Time Slots at the end of each 100 second interval in a measurement hour TDM Total Potential Usage = 483 x 36 CCS = 17,388 CSS
TDM Peg	Time Division Multiplexed Peg. The total count of circuit switch TDM time-slot seizure attempts for the PN during the measurement hour (requests for maintenance processes are not included).

Name	Description
TDM Peak	Time Division Multiplexed Peak. The maximum number of TDM time-slots allocated at any one time during the measurement hour.
TDM Blockage	Time Division Multiplexed Blockage. The total count of TDM blockages, that is, the total number of times a TDM time-slot request is denied for the PN being measured, during the measurement hour.
TDM Occ	Time Division Multiplexed Occupancy. The percent TDM Occupancy is computed as follows: *(TDM Usage/TDM Total Potential Usage) x 100* Suggested action: Generally, the load should be distributed evenly across port networks. If the percent occupancy is out of line with the occupancy on other port networks, consideration should be given to shifting resources. Use the Intercom, Outgoing, Incoming, and Tandem reports to help determine which resources to shift.
Port Network (PN) Link Usage	The total circuit switch usage (Measured in CCS) of the PN Link(s). PN Link Usage = Sum of the allocated PN *link time-slots at the end of each 100 second interval in a measurement hour*. PNL Total Potential Usage = 766 x 36 CCS = 27,576 CCS
PNL Peg	Port Network Link Peg. The total number of circuit switched time slot seizure attempts for the PN during the measurement hour.
PNL Peak	Port Network Link Peak. The maximum number of PNL time slots allocated at any one time during the measurement.
PNL Blockage	Port Network Link Blockage. The total count of circuit switched PN link blockages, that is, the total number of times a PN link time-slot is denied, during the measurement hour. This count includes calls originating or terminating on this PN. This field should be zero for all configurations that do not use T1 remoting and are smaller than 16 PNs since the center stage is non-blocking in these configurations.

Name	Description
	Suggested action: If blockages occur in the switching fabric, consider shifting resources. Use the Intercom, Outgoing, Incoming and Tandem reports to determine which resources to switch.
PNL Occ	Port Network Link Occupancy. The percent Port Network Link Occupancy is computed as follows: *(PN Link Usage/PNL Total Potential Usage) x 100*
Control Util (G3r only)	The fraction of the total capacity of the processor on the measured EI board. This value is expressed in percent, where 0% is the processor occupancy corresponding to no control measure traffic, and 100% is the processor occupancy corresponding to the maximum message traffic that can be handled and meet delay criteria. The data used to calculate this field is obtained as a traffic counter from the EI board. When the processor is idle, it usually reads about 14%.

Port Network Load Balance Study Report - Intercom Calls field descriptions

Name	Description
PN	Port network. The port network measured.
Meas Hour	Measurement hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Intra PN Usage	Intra Port Network Usage. The TDM time-slot usage caused by station-to-station calls between terminals on the same port network. Usage is displayed in CCS.
Intra PN Peg	Intra Port Network Peg. The count of TDM time-slot seizures caused by station-to-station calls between terminals on the same port network.

Name	Description
Inter PN Usage	Inter Port Network Usage. The TDM time slot usage caused by station-to-station calls between terminals on different port networks. Usage is displayed in CCS.
Inter PN Peg	Inter Port Network Peg. The TDM time slot seizures caused by station-to-station calls between terminals on different port networks. Suggested action: Generally, load across port networks should be evenly distributed. If inter PN usage is high on a particular network, you should consider shifting station resources to another port network. Although usage data is not displayed for each port network pair, analyzing the distribution of data across each port network can provide insight.

Port Network Load Balance Study Report - Incoming Trunk field descriptions

Name	Description
PN	Port network. The port network measured.
Meas Hour	Measurement hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Intra PN Usage	Intra Port Network Usage. The TDM time-slot usage caused by incoming trunk calls to a station on the same port network. Usage is displayed in CCS.
Intra PN Peg	Intra Port Network Peg. The count of TDM time-slot seizures caused by incoming trunk calls to a station on the same port network.
Incoming Usage	The TDM time-slot usage caused by calls to a station on the port network from an incoming trunk on another port network. Usage is displayed in CCS.
Incoming Peg	The count of TDM time-slot seizures caused by calls to a station on the port network from an incoming trunk on another port network.

Name	Description
Outgoing Usage	The TDM time-slot usage caused by calls to a station on another port network from an incoming trunk on the measured port network. Usage is displayed in CCS.
Outgoing Peg	The count of TDM time-slot seizures caused by calls to a station on another port network from an incoming trunk on the measured port network.

Port Network Load Balance Study Report - Outgoing Trunk field descriptions

Name	Description
PN	Port network. The port network measured.
Meas Hour	Measurement hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Intra PN Usage	Intra Port Network Usage. The TDM time-slot usage caused by outgoing calls made by stations on the measured port network and serviced by outgoing trunks on the same port network. Usage is displayed in CCS.
Intra PN Peg	Intra Port Network Peg.The count of TDM time-slot seizures caused by outgoing calls made by stations on the measured port network and serviced by outgoing trunks on the same port network.
Incoming Usage	The TDM time-slot usage resulting from outgoing calls originated at stations on another port network but serviced by trunks on the port network measured. Usage is displayed in CCS.
Incoming Peg	The count of TDM time-slot seizures resulting from outgoing calls originated at stations on another port network but serviced by trunks on the port network measured.
Outgoing Usage	The TDM time-slot usage resulting from outgoing calls originated at stations on the port network measured but serviced by

Name	Description
	trunks on another port network. Usage is displayed in CCS.
Outgoing Peg	The count of TDM time-slot seizures resulting from outgoing calls originated at stations on the port network measured but serviced by trunks on another port network.

Port Network Load Balance Study Report - Tandem Trunk field descriptions

Name	Description
PN	Port network. The port network measured.
Meas Hour	Measurement hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Intra PN Usage	Intra Port Network Usage. The TDM usage caused by tandem trunk calls originating and terminating on the port network being measured. The usage is represented in CCS.
Inter PN Peg	Intra Port Network Peg. The count of TDM time-slot seizures caused by tandem trunk calls originating and terminating on the port network being measured.
Incoming Usage	The TDM usage resulting from tandem trunk calls originating on another port network but terminating on the port network measured. The usage is represented in CCS.
Incoming Peg	The count of TDM time-slot seizures resulting from tandem trunk calls originating on another port network but terminating on the port network measured.
Outgoing Usage	The TDM usage resulting from tandem trunk calls originating on the port network measured but terminating on another port network. The usage is represented in CCS.
Outgoing Peg	The count of TDM time-slot seizures resulting from tandem trunk calls originating

Name	Description
	on the port network measured but terminating on another port network.

Blockage study reports

The blockage study reports provide information on usage and blockage for each port network as well as between switch node pairs.

There are two reports: one provides port network (PN) and port network link (PNL) data and the other provides switch node link (SNL) data. The latter report is available only on the G3r server.

A port network link is the hardware that provides a bridge between two port networks in a direct-connect configuration or between a port network and a switch node in a center stage configuration. A switch network link is the hardware that provides a bridge between two switch nodes.

The blockage study reports are designed to identify where congestion is occurring within the switching fabric and provide insight on how ports (load) can be adjusted to achieve satisfactory service. Planning for growth additions is also simplified because the report helps quick identification and quantification of reserve switching capacity.

Both reports are available for the following time intervals:

- last-hour
- today-peak
- yesterday-peak

The Blockage Study report for port networks provides local Time Division Multiplexed (TDM) time slot usage, pegs, and blockages, as well as PNL time slot usage, pegs, and blockages. The Blockage Study report for switched networks provides SN to SN time-slot usage, pegs, blockages, and overflow.

Of the 512 TDM time slots in each port network, usage measurements are only provided for 483 time slots employed in call processing, data links, and maintenance. Usage is not reported for the remaining 29 time slots, which primarily serve system functions.

The TDM time slots are sampled every 100 seconds. Usage measurements for these sampled intervals are expressed in hundred call seconds or CCS. For example, any time slot in use when the sample is taken is busy for the entire sampling interval and is counted as one CCS for the interval. Because there are 36 CCS in an hour and 483 reported time slots, the maximum TDM usage per port network is:

```
Maximum TDM usage = 483 X 36 CCS = 17,388 CCS
```

It should be understood that 17,388 CCS represents the maximum calling volume a single port network can support. Any calls that attempt to exceed this maximum are blocked because there are no time slots available. When this happens, the blockage field (TDM blockage) is incremented.

There are a maximum of 766 port network fiber time slots associated with a port network connected to another port network or between a port network and a switch node in a center stage configuration. Some of those time slots might be allocated for packet bandwidth, in which case the number is lower. For T1 remoting, there is a maximum of 188 fiber time slots (PNL Time Slots).

The PNL time slots are sampled every one hundred seconds. Usage measurements for these sampled intervals are expressed in hundred call seconds or CCS. For example, any time slot in use when the sample is taken is assumed busy for the entire sampling interval and is counted as one CCS for the interval. Because there are 36 CCS in an hour and 766 reported time slots, the maximum PNL usage per port network is:

```
Maximum PNL usage = 766 x 36 CCS = 27,576 CCS
```

It should be understood that 27,576 CCS represents the maximum calling volume supported between port networks or between a port network and a switch node. Any calls that attempt to exceed this maximum are blocked because there are no time slots available. When this happens, the blockage field (TDM blockage) is incremented.

Related topics:

Displaying the Blockage Study report on page 176
Blockage Study Report field descriptions - Port Network on page 177
Blockage Study Report field descriptions - Switch Node on page 179

Displaying the Blockage Study report

About this task

Type **`list measurements blockage <pn/sn> <yesterday-peak/today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There are two required fields for this command — **pn/sn** and **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **`pn`** to display the Blockage Study report for port networks; or **sn** to display the Blockage Study report for switch nodes
2. Enter **`yesterday-peak`** to list the blockage activity for yesterday's peak hour; **`today-peak`** to list the blockage activity for today's peak hour; **`last-hour`** to list the blockage activity of the most recently completed hour.

The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available with this command.

Blockage Study Report field descriptions - Port Network

Name	Description
PN	Port Network. The port network being measured.
Meas Hour	Measurement Hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
TDM Usage	Time Division Multiplexed Usage. The total TDM time-slot usage, in CCS, for the PN being measured, during the measurement hour. This is calculated as follows: TDM Usage = Sum of the allocated TDM time slots at the end of each 100 second interval in a measurement hour. TDM usage max = 483 x 36 CCS = 17,388 CCS After each 100-second interval, a snapshot is taken of the number of TDM time-slots used on each port network.
TDM Peg	Time Division Multiplexed Peg. The total count of circuit switch TDM time-slot seizure attempts for the PN during the measurement hour (requests for maintenance processes not included).
TDM Peak	Time Division Multiplexed Peak. The maximum number of time-slots allocated at any one time during the measurement hour.
TDM Blockage	Time Division Multiplexed Blockage. The total count of TDM blockages, that is, the total number of times a TDM time-slot request is denied for the PN measured, during the measurement hour. Suggested Action: Generally, it is desirable to balance the traffic across port networks. If the usage nears the maximum CCS, some

Name	Description
	resources should be moved to another port network.
PNL Time-Slots	Port Network Link. The number of port network link time-slots available between port networks or between port networks and switch nodes. At any given time interval, this translation value is fixed. (Remember, this refers to available time slots, not measurement data.)
Port Network Link Usage	The total circuit switch usage of the available PN Link(s) connecting the PN to the SN or to other PNs. For directly connected PNs in three PN systems, this is the sum of the usage for both links. PN LINK USAGE = Sum of the allocated PN Link time-slots at the end of each 100 second interval in a measurement hour. PN Link Usage Max = 766 x 36 CCS = 27,576 CCS.
Port Network Link Peg	The total count of circuit switched time-slot seizure attempts for the link(s) during the measurement hour.
Port Network Link Peak	The maximum number of time slots allocated at any one time on the port network links.
Port Network Link Blockage	The total count of circuit switched PN blockages, that is, the total number of times a PN link time-slot is denied during the measurement hour. This count includes calls originating or terminating on this PN. This field should be zero for all configurations that do not use T1 remoting and are smaller than 16 PNs since the center stage is non-blocking in these configurations. Suggested action: Generally, it is desirable to balance traffic between port networks, or between port networks and switch nodes. If the usage is high for a port network, move the resources from one port network to another.

Blockage Study Report field descriptions - Switch Node

The following table describes those data fields presented in this report which are different from those in the Blockage Study - Port Network report.

This report is only accessible from the G3r server.

Name	Description
SN Pair	Switch Node Pair. Identifiers for the two SNs connected by the SNL being measured.
Meas Hour	Measurement Hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded.
Switch Node Link (SN) Time-Slots	The number of switch node link time-slots available between switch nodes. At any given time interval, this translation value is fixed. The SNL time slot maximum is 766; for T1 remoting it is 94.
Switch Node Link Usage	The total circuit switch usage of the SNL=connecting the two SN. This is the total usage on interconnecting fibers. At the end of each 100-second interval, a snapshot is taken of the number of SNL time-slots used on each port network. Max SNL usage = 766 x 36 CCS = 27,576.
Switch Node Link Peg	The total count of circuit switched SNL time-slot seizure attempts during the measurement hour between the two measured SNs. This is the total peg count on all interconnecting fibers.
Switch Node Link Blockage	The total count of circuit switched SNL blockages, that is, the total number of times a call is blocked because no time-slots are available either in the most direct route or through any alternate route, during the measurement hour.
Switch Node Link Overflow	The total number of times a call is routed over an alternate route. This counter is incremented when a call was not successfully routed over the most direct route and is routed over an alternate route. You can distinguish true blockage of a call from the direct route blockage. Suggested action: Generally, the usage between switch nodes should be equally

Name	Description
	distributed. If the usage between switch nodes is high, move resources to another switch node or add a new switch node.

Attendant and Maintenance Status report

This describes the attendant and maintenance status reports which provide an overall view of how the system is performing in real-time. To ensure that the authorized users log into the system, you must click Cancel to log off from the SAT screen after running the **monitor system view1** and **monitor system view2** commands.

The **monitor system** commands generate dynamic one-page status reports that summarize the overall current condition of the system and last-hour traffic status.

Using these commands, you can generate two different status report screens. These two screens contain the following information:

- **monitor system view**: Includes the attendant status, maintenance status, and last hour's traffic data for attendant, hunt, and trunk groups. The screen also shows the date and time of day at which you requested the report.
- **monitor system view2**. Includes attendant status, maintenance status, and last hour's traffic data for attendant and trunk groups. The screen also shows the date and time of the day at which you requested the report.

  Data for attendant and maintenance status updates every 60 seconds. Data for the traffic status updates once every hour because traffic status is obtained from existing measurements collected on an hourly basis.

Note:

Requesting either of the system status reports should be your last request during your current log on. The screens are exited by pressing **CANCEL**, which also logs you off the system, or after a 30-minute time-out.

Related topics:

Displaying the desired system status report on page 181
Maintenance Status and Attendant Status field descriptions on page 181

Displaying the desired system status report

Procedure

1. Choose one of the following:
   - Type **monitor system view1**
   - Type **monitor system view2**
2. Press Enter.

Maintenance Status and Attendant Status field descriptions

Name	Description
ATTENDANT STATUS	Shows the activated and deactivated attendant consoles. **Note:** Activated means the agent's headset/ handset is plugged into the console, and the console is not busied-out or set for Night Service. To obtain other details, use the **status attendant** command.
MAINTENANCE STATUS	Shows the number of alarms (including minor and major alarms) that might indicate problems on trunks, stations, and other resources. If any alarm exists in the system or if remote maintenance has acknowledged an alarm, indications are shown on the report. A y indicates acknowledgment. An n indicates no acknowledgment. To determine exactly what alarms currently exist, use the **display alarms** command.
TRAFFIC STATUS	View1 displays the call handling status for trunk, hunt, and attendant groups; View2 only displays the call handling status for trunk and attendant groups. For trunk groups, the reports indicate the number of queued calls during the previously completed measurement interval for the identified trunk groups.

Name	Description
	For hunt groups, the reports indicate the number of queued calls and abandoned calls during the previously completed measurement interval for the identified trunk groups. For the trunk group measurements, only the four trunk group numbers with the highest percentage of blocking are listed. The reports also display trunk group direction (two-way, outgoing, or incoming), the number of calls queued, the percentage of outgoing blocking (for outgoing and two-way trunks), and the percentage of all trunks busy. For outgoing and two-way trunk groups only experiencing a high number in the **%Time ATB** field, no action is required since this indicates that the trunks are used very efficiently. However, a bad condition is when both the **%Time ATB** and **%Out blkg** fields display high numbers, indicating calls arrive and are blocked because all trunks are already in use. For incoming trunk groups experiencing a high number in the **%Time ATB** field, then some incoming calls are probably blocked. Suggested actions: • For outgoing and two-way trunk groups experiencing a high number in both the **%Time ATB** and **%Out blkg** fields, use the **`list performance trunk-group`** command and follow the suggested actions specified for that command. • For incoming trunk groups experiencing a high number in the **%Time ATB** field, use the **`list performance trunk-group`** command and follow the suggested actions specified for that command.

Tone receiver reports

Tone Receiver Summary Measurements report

The Tone Receiver Summary Measurements report provides traffic data for Dual Tone Multi frequency (DTMF) receivers, general purpose tone detectors (GPTDs), and Call Classifiers (CCs). DTMF receivers detect touch tones, while GPTDs detect call progress tones. CCs can function either as Call Progress Tone Receivers (CPTRs), touch-tone receivers (TTRs), or multi frequency compelled receivers (MFCRs).

Note:

Tone receivers are required to support the ARS, Terminal Dialing, Abbreviated Dialing, LND, and Call Prompting features. for additional details, refer to the *Avaya Aura® Communication Manager Hardware Description and Reference*.

Reports can be requested on tone receiver activity for yesterday's peak hour, today's peak hour, or the last hour. The peak is the hour of the day with the highest Peak Req measurement. The data in this report can be used to determine if there is a need for additional Tone Detector or Tone Detector/Generator circuit packs.

Related topics:

Displaying the Tone Receiver Summary Measurements report on page 183
Tone Receiver Measurements Summary field descriptions on page 184

Displaying the Tone Receiver Summary Measurements report

About this task

Type **`list measurements tone-receiver summary <yesterday-peak /today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday-peak/today-peak/last-hour`**.

Procedure

1. Enter **`yesterday-peak`** to list the tone receiver activity for yesterday's peak hour.
2. Enter **`today-peak`** to list the tone receiver activity for today's peak hour.

3. Enter **last-hour** to list the tone receiver activity of the most recently completed last hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Tone Receiver Measurements Summary field descriptions

Name	Description
Hour	Measurement Hour. The starting time (using 24-hour clock) of the last hour or the hour with the highest Peak Req measurement.
Type	The type of tone receiver measured.
Total Req	Total Requests. The system-wide total number of requests, by call processing, for DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers during the listed hour. The total number of requests is calculated by incrementing a counter for each request.
Peak Req	Peak Requests. The system-wide peak number of simultaneous requests for DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers that occurred at any one time for the listed hour. The peak (or maximum) number is calculated by incrementing a counter for each request and decreasing the counter when the request fails or a tone receiver is released. **Note:** If the Peak Req field indicates a number higher than listed in the Avail field, then certain requests were either queued or denied during the peak time interval. Denied requests fail and are given the reorder tone.
Total Queued	The system-wide total number of requests queued during the listed hour. A request is queued when there are no receivers immediately available. Only DTMF and CC-TTR requests are queued.

Name	Description
	Note: If a request for a receiver is made in one port network, and no receivers are available, then the request is offered to the next port network. If no receivers are available on any port network, then the request is queued. Queued call requests do not receive dial tone until a tone receiver becomes available.
Peak Queued	The system-wide maximum number of call requests queued at any one time during the listed hour. **Note:** The system has a maximum queue size of 4 for DTMF requests and 80 for CC-TTR call vectoring requests.
Total Denied	The system-wide total number of requests denied because no receivers were available during the listed hour. For DTMF-receiver or CCTR requests, this happens only after the queue is full. Those requests denied are given reorder tone.
Peak Denied	The system-wide peak number of requests denied because no receivers were available during the listed hour. Suggested action: At a minimum you should increase the number of tone receivers by the number displayed in the Peak Denied field. Engineer the switch as non-blocking for tone receivers. This involves increasing the number of tone receivers (the Avail field) so all requests receive service immediately and no requests are queued. For example, keep the value displayed in the Avail field greater than that displayed in the Peak Req field.
TR Type	Tone Receiver Type. The tone receiver circuit packs physically connected at the time of the hour measurement.
Total Avail	Total Available. The number of the ports available for the type of tone receiver listed in the previous column.

Name	Description
Capa- bilities	The types of tone(s) the tone receiver can detect.

Tone Receiver Detail report

The Tone Receiver Measurements Detail report provides traffic data for Dual Tone Multifrequency (DTMF) receivers, general purpose tone detectors (GPTDs), and Call Classifiers (CCs) as Call Progress Tone Receivers (CC-CPTRs) for call classification, as touch-tone receivers (CC-TTRs) for call vectoring, and as multifrequency compelled receivers (MFCRs).

Note:

Tone receivers are required to support the ARS, Terminal Dialing, Abbreviated Dialing, LND, and Call Prompting features. For additional details, refer to the *Avaya Aura® Communication Manager Hardware Description and Reference*.

Reports can be requested on tone receiver activity for yesterday's peak hour, today's peak hour, or the last hour. The peak is the hour of the day with the highest Peak Req measurement. The data in this report can be used to determine if there is a need for additional Tone Detector or Tone Detector/Generator circuit packs.

Related topics:

Displaying the Tone Receiver Measurements Detail report screen on page 186
Tone Receiver Detail Measurements field descriptions on page 187

Displaying the Tone Receiver Measurements Detail report screen

About this task

Type **`list measurements tone-receiver detail <yesterday-peak /today-peak/ last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday-peak/today-peak/last-hour`**.

Procedure

1. Enter **`yesterday-peak`** to list the tone receiver activity for yesterday's peak hour.
2. Enter **`today-peak`** to list the tone receiver activity for today's peak hour.

3. Enter **last-hour** to list the tone receiver activity of the most recently completed hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Tone Receiver Detail Measurements field descriptions

Name	Description
Hour	Measurement hour. The starting time (using 24-hour clock) of the last hour or of the hour with the highest Peak Req measurement.
PN	Port network. The port network in which the circuit pack containing the type of tone receiver listed is physically located.
Type	The type of tone receiver measured. **Note:** Each TN748 and TN420 circuit pack provides four DTMF ports (for touch-tone reception) and two GPTD ports (for call progress tone reception). The TN744 Call Classifier Circuit Pack provides eight ports for call progress tone reception (CC-CPTR), touch-tone reception (CC-TTR), or MFC (CC-MFCR) reception.
PN Req	Port Network Requests. The number of requests for DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers within the port network during the listed hour.
PN Alloc	Port Network Total Allocation. The total number of DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers located in the listed port network allocated for use during the listed hour.
Peak Alloc	Peak Allocation. The peak number of DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers located in the listed port network in use simultaneously during the listed hour.

Name	Description
Total Off-PN	Total Off-Port Network. For the identified hour and port network, this is the total number of DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers allocated on a different port network for requests originated on this port network. **Note:** With ideal conditions, this field displays the number 0. However, with more practical conditions, the field displays a larger number. Suggested actions: Locate communities of interest within the same port network. Provide sufficient tone receivers for each port network.
Peak Off-PN	Peak Off-Port Network. For the identified hour and port network, this is the peak number of DTMF, GPTD, CC-TTR, CC-CPTR, or MFCR receivers simultaneously allocated on a different port network for requests originated on this port network. **Note:** A desirable goal is to minimize (within reason) the number displayed with this field. Suggested actions: Locate communities of interest within the same port network. Provide sufficient tone receivers for each port network. Perhaps you should move one TN748 and TN420 circuit pack (or, if you are working with a CC-TTR, CC-CPTR, and MFCR, move a TN744 circuit pack) to the PN with the Off-PN counts to minimize Off-PN allocations.

Abbreviated Dialing report

Abbreviated Dialing lists are accessed by both the SYSTEM 75 abbreviated dialing button feature and the abbreviated dialing code feature. The difference between the two features is feature activation. Abbreviated dialing code feature is activated by dialing a feature activation code (which identifies the list), and dialing an entry number. Abbreviated dialing button feature

is activated by a button depression, which identifies the feature access code and the entry number.

Abbreviated dialing lists can be assigned to the following:

- Multi-function stations
- Analog stations
- Data terminals
- Attendant group

Note:

To access the abbreviated dialing reports, create group abb dialing or personal dialing into your switch.

Related topics:

Displaying the Abbreviated Dialing report on page 189
Abbreviated Dialing Lists OR Abbreviated Dialing Personal Lists field descriptions on page 189

Displaying the Abbreviated Dialing report

About this task

Type **`list abbreviated dialing group or personal [schedule]`** and press `Enter`.

Options: The schedule option is available for this command.

Abbreviated Dialing Lists OR Abbreviated Dialing Personal Lists field descriptions

Name	Description
List Type	Indicates whether the list is group, personal, or system type.
List No.	Indicates list number used to identify a particular list.
List Id	Indicates list Id used to identify a particular list.
List Name	Indicates list name used to identify a particular list.

Name	Description
Total Entries	Indicates the number of abbreviated dialing list entries.
No. unused	Indicates the number of entries not used for abbreviated dialing list.
Priviledged	Indicates whether the system or group list is privileged or not privileged.
Prg Ext	Indicates privileged extension number.

Traffic Summary report

The Traffic Summary report provides an overview of system performance. Summarized in the report are peak hour call processing and system management occupancy, peak hour blocking for TDM time slots on each port network, peak hour blocking for port network links and switch node links, and the peak hour for the TDM time slots, port network links and switch node links combined, peak hour for the worst attendant speed of service, and the peak for today and yesterday for trunk blocking for the worst five trunk groups.

Also included are a series of traffic flags and counters provided for the last hour of measurement data. They include a time stamp for a major alarm, trunk group, wideband trunk group, coverage path, coverage principals, and routing-pattern time stamps for measurement selection modifications.

There are, as well, for last hour, totals for Trunks Out of Service, CDR high water mark and overflow, and total security violations.

Page 4 of the report features vector variable usage data showing the number of currently administered global vector variables; and instantaneous in-use totals, corresponding "high-water marks" and average usage for local and persistent vector variables.

Note:

Data in this report is not updated on demand. It is generated every hour on the hour and can be used to identify problem areas in the system. More detailed data can be retrieved from other measurements reports, as noted in the field descriptions.

When a potential problem is identified from this report, other more detailed reports in the suspect area are required to adequately characterize the problem.

Related topics:

Displaying the Traffic Summary report on page 191
Measurements Summary Report field descriptions on page 191

Displaying the Traffic Summary report

About this task

Type **`list measurements summary [schedule]`** and press `Enter`.

Options: The schedule option is available for this command.

Measurements Summary Report field descriptions

Name	Description
Meas Hour	Measurement Hour. The starting time (using the 24-hour clock) of the hour during which the data is recorded. Vector variable data displays information that is current at the time the report is run.
Static Occupancy	Static Occupancy. The percentage of processor occupancy required by background processes in support of call processing, maintenance, and system management. Examples of this activity are high-level sanity checks, system timing, and polling of adjuncts.
CP Occupancy	Call Processor Occupancy. The percentage of processor occupancy due to high priority processing and dynamic call processing. The peak hour is determined by the hour with the largest combined call processing and static occupancy.
SM Occupancy	System Management Processor Occupancy. The percentage of processor occupancy due to system management processes. This measurement is time coincident with the peak value of the combined call processing and static processor occupancy.
Total Blockage	The percent of total circuit switched time slot seizures blocked due to insufficient TDM or CSS time slots. Total Blocking = ((TDM Blockage + SNL Blockage + PNL Blockage) x 100) / (TDM Pegs + SNL Pegs + PNL Pegs).

Name	Description
High PN Blk	Highest Port Network Blocking. The highest percent of TDM time slot seizure failures due to insufficient time slots for any PN. This is time coincident with Peak Total Blocking above. It is computed as follows: Highest PN Blk = (TDM Blockage x 100) / TDM Pegs
High PNL/SNL Blk	Highest Port Network Link/Switch Node Link Blocking. (G3r only). The highest percent of SNL and PNL seizure failures due to insufficient time slots. This measurement is only meaningful for links between Center Stage Nodes or T1 remote PNs since connectivity to the Center Stage from any PN is non-blocking with fiber connectivity. This is time coincident with Peak Total Blocking. It is computed as follows: Highest PNL/SNL Blk = ((SNL Blockage + PNL Blockage) *100)) / SNL Pegs + PNL Pegs) The data from Total Blockage, High PN Blk and High PN/SNL Blk can be correlated to data on the Blockage PN and Blockage SN Reports. The peak hour has the worst total (TDM, PNL, and SNL) blockage.
Attendant Speed	Attendant Group Speed of Service. The average time calls are in the attendant queue. The peak hour has the slowest speed of service. *Attendant Speed = Total Delay for all Answered Call (in seconds) / Total Number of Calls Answered* Suggested action If the speed of answer is not acceptable, review the attendant group and attendant positions reports for suggested actions.
Major Alarm	The time stamp of the last major alarm active when the report was generated for the last hour. Suggested action If measurement data on reports seems inconsistent, further study of alarms can point to a potential problem (“display alarms”).
Trunk Group	The time stamp that indicates when the Trunk Groups Measurement Selection screen was last updated. This time stamp is retrieved when the measurements for the

Name	Description
	Trunk Group Hourly Report are collected each hour.
Wideband Trunk Group	The time stamp that indicates when the Wideband Trunk Group Measurement Selection screen was last updated. This time stamp is retrieved when the measurements for the Wideband Trunk Group Hourly Report are collected each hour.
Coverage Path	The time stamp that indicates when the Coverage Measurement Selection screen was last updated. This time stamp is retrieved when the measurements for the associated report(s) are collected each hour.
Covered Principals	The time stamp that indicates when the Principal Measurement Selection Administration screen was last updated. This time stamp is retrieved when the measurements for the associated report(s) are collected each hour.
Route Pattern	The time stamp that indicates when the Measurement Route Pattern Selection Administration screen was last updated. This time stamp is retrieved when the measurements for the associated report(s) are collected each hour. The time at which the identification of routing patterns to be studied was last changed. Type **`change meas-selection route-pattern`**command to view this screen.
Total Trunks Out of Service	The total number of trunks out of service for the entire system as of the last hour. For more details and suggested actions, refer to.
Security Violations	The total number of security violations, login, barrier code, and authorization code, as recorded in the Security Violations Summary Report. Generally, this number should not be high. for suggested actions.
CDR High Water Mark	Call Detail Recording High Water Mark. The number of times during the measurement interval the CDR Record Buffer High Water Mark is exceeded. This is a warning level reached when the number of CDR records

Name	Description
	stored on the switch is close to the maximum number of buffers allocated.
CDR Overflow	Call Detail Recording Overflow. The number of times during the last hour the CDR record buffer overflowed invoking the administration selectable overflow response. Special handling procedures occur when all CDR buffers are filled. To prevent undesired loss of data, options are put in effect to redirect calls generating CDR records to the attendant or to give those calls intercept treatment. Suggested actions: Both the above conditions might indicate that the CDR primary link is down and that maintenance tests should be done to check the link doesn't have hardware problems ("test cdr-link primary").
Grp No	Group Number. The trunk group number.
% ATB	Percent All Trunks Busy. The observed blocking as determined by All Trunks Busy (ATB) for the trunk group. This is reported for the 5 trunk groups with the highest % ATB for today and yesterday.
Administered Global Vector Variables (702 Max)	The number of global vector variables currently administered using the **display/ change variables** form. A maximum of 702 vector variables of all types (global, local or persistent) can be defined.
Total Local and Persistent Variables	For reference, this static field displays the system maximum number of local and persistent variables that can be actively in use.
Total Local Variables in Use	The instantaneous number of local variables currently active in calls.
Local Variable Usage High-Water-Mark	The maximum number of local variable simultaneously in use since the last system boot.
Local Variable Average Usage	An average of the last 1000 values for the **Total Local Variables in Use** field.
Total Persistent Variables in Use	The instantaneous number of persistent variables currently active in calls.

Name	Description
Persistent Variable Usage High-Water-Mark	The maximum number of local variable simultaneously in use since the last system boot.
Persistent Variable Average Usage	An average of the last 1000 values for the **Total Persistent Variables in Use** field.

Trunk group reports

This section describes the traffic, outage, performance, status, call-by-call, and lightly used reports for trunk groups, and describes the validation and analysis of the data provided in the reports.

Related topics:

Trunk Group Summary report on page 195
Trunk Group Hourly report on page 200
Specifying trunks to monitor for Trunk Group Hourly report on page 203
Highest Hourly Trunk Group Blocking Performance report on page 204
Trunk Out of Service report on page 207
Trunk Group Status report on page 209
CBC Trunk Group Measurements report on page 218

Trunk Group Summary report

The Trunk Group Summary report gives traffic measurements for all trunk groups except for personal central office line groups. By using this report, you can determine the trunk group total usage (in CCS), the total number of calls, trunk blockage, and other measurement data.

Related topics:

Displaying the Trunk Group Summary report on page 195
Trunk Group Summary Report field descriptions on page 196

Displaying the Trunk Group Summary report

About this task

Type **`list measurements trunk-group summary <yesterday-peak/ today-peak/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **yesterday-peak/today-peak/last-hour**.

Procedure

1. Enter **yesterday-peak** to list a summary of the trunk group activity for yesterday's peak hour.
2. Enter **today-peak** to list a summary of the trunk group activity for today's peak hour.
3. Enter **last-hour** to list a summary of the trunk group activity for the most recently completed hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Trunk Group Summary Report field descriptions

Name	Description
Peak Hour for All Trunk Groups	The hour during the specified day with the largest total usage, when summed over all trunk groups. Peak hour and busy hour are synonymous. With conventional traffic theory data analysis, there are two methods for determining the peak hour. One is the time-coincident peak hour, meaning that hourly usage values are averaged across days for each hour of the day. The other is the bouncing peak hour, meaning that the highest usage is selected for each day without regard to the average across days. For the bouncing peak hour the highest load on a given day may or may not occur during the time-coincident busy hour. These traffic reports and accompanying trunk group data worksheet only use the bouncing peak hour method. Note that if the total usage for the current hour equals the total usage for the previous peak hour, then the peak hour is the hour with the greatest number of total seizures.
Grp No.	Group Number. A number that identifies each trunk group associated with the displayed data. Group numbers are displayed in numerical order, beginning with the lowest administered number and continuing to the highest administered number.
Grp Siz	Group Size. The number of administered trunks in the trunk group.
Grp Type	Group Type. The type of trunk in the trunk group. The system monitors/measures the following trunk types: • Access Tie Trunk (Access) • Advanced Private Line Termination (aplt)

Name	Description
	• Central Office (co) • Public Network Service Customer Provided Equipment (cpe) • Direct Inward Dialing (did) • Direct Inward/Outward Dialing (diod) • Digital Multiplexed Interface Bit Oriented Signaling (dmi-bos) • Foreign Exchange (fx) • Integrated Services Digital Network (isdn-pri) • Release Link Trunk (rlt) • Session Initiated Protocol (sip) • Tandem (tan) • Tie Trunk (tie) • Wide Area Telecommunications Service (wats)
Grp Dir	Trunk Group Direction. Identifies whether the trunk group is incoming (inc), outgoing (out), or two-way (two).
Meas Hour	Measurement Hour. The hour (using 24-hour clock) in which the measurements are taken. For the last-hour report, it is the last hour of measurement (each trunk group's measurement hour is identical; but not necessarily the same as the indicated peak hour for the day). For the today-peak report, the measurement hour is the peak hour for each trunk group. Measurement hour for each trunk group can be different. For the yesterday-peak report, the measurement hour is the peak hour for each trunk group yesterday (each trunk group's measurement hour can be different).
Total Usage[2]	Total usage (in CCS) for all trunks in the trunk group. Represents the total time the trunks are busy (with calls) during the one-hour measurement period. Total usage measures each time a trunk is seized for use by an incoming call (whether it is picked up or not) or an out going call (only after digits have been dialed).
Total Seize	The number of incoming and outgoing seizures carried on the trunk group. This includes the number of times a trunk in the group is seized, including false starts, don't answer, and busy.
Inc. Seize	Incoming Seize. The number of incoming seizures carried on the trunk group.
Grp Ovf	Group Overflow. The number of calls offered to a trunk group not carried or queued (if a queue is present). Calls rejected for authorization reasons are not included.

[2] The usage that wideband calls contribute to this measurement is proportional to the resources the calls consume. For example, a 384-kbps call contributes six times more to the total usage than does a 64-kbps call.

Name	Description
Que Siz	Trunk Group Queue Size. A number (0 to 100) that identifies the number of slots assigned to the trunk group queue. This number represents how many calls may be held in queue by the trunk group. If 0 is displayed, then no queue is administered. Hence, the other queue measurements are also 0. Generally, the queue size should be larger than the trunk group size; however, not more than three times as large as the trunk group size.
Call Qued	Calls Queued. The total number of calls that entered the trunk group queue after finding all trunks busy.
Que Ovf	Queue Overflow. The total number of calls not queued because the queue is full. These calls receive a reorder signal. Suggested actions: Generally, this field indicates the number 0. If this field indicates a high number, then either the queue size may be too small, or add more trunks to reduce the number of calls queuing.
Que Abd	Queue Abandoned. The number of calls removed from the queue in one of the following manners: • By the system because they have been in the queue for more than 30 minutes • By the user (for example, dialing the cancel code). Suggested action: Typically, this field indicates a small number. However, a large number generally indicates the queue size is too large and people are abandoning because they remained in queue for a long holding time and gave up.
Out Srv	Out of Service. The number of trunks in the trunk group out of service (listed as maintenance busy) at the time data is collected. An individual trunk may be taken out of service by the switch whenever an excessive number of errors occur, or by maintenance personnel to run diagnostic tests. Suggested action: If the trunks are removed from service by the switch, then the appropriate maintenance personnel should be notified. The objective is to keep all members of a trunk group “in service.” Generally, you should not make adjustments to the trunk group because of “Out of Service” trunks, but should get those trunks returned to service. For specific details, refer to Trunk Out of Service report on page 207.
% ATB	Percentage All Trunks Busy. The percentage of time all trunks in the trunk group were simultaneously in use during the measurement interval. **Note:** In use means the trunks are busy — either serving calls or because they are busied-out by maintenance. Suggested actions: • If the group direction is outgoing or two-way, then a high number in the % ATB field and nothing in the Grp Ovfl or Que Ovfl indicates everything is functioning normally. However, a more typical scenario is a high

Name	Description
	number in this field and a high number in the Grp Ovfl field. This indicates a possible problem that necessitates further analysis. Unless it is the last trunk group in the pattern, overflow is to the next choice trunk group, and the number in the Grp Ovfl field is of no great significance. Otherwise, the obvious choice is to add more trunks to the trunk group. • If the group direction is incoming, then a high number in this field is bad. It indicates some incoming calls are probably blocked. Generally, you add more trunks. Therefore, % ATB and the number of calls blocked is low.
% Out Blk	Percentage Outgoing Blocking. The percentage of offered calls not carried on the trunk group. It does not include unauthorized calls denied service on the trunk group (due to restrictions) or calls carried on the trunk group but do not successfully complete at the far end (that is, where there is no answer). For trunk groups without a queue, the calls not carried are those calls that arrive when all trunks are busy. The number of Outgoing Seizures is calculated as follows: $Outgoing\ \ Seizures = Total\ \ Seizures - Incoming\ \ Seizures$ Similarly, the equation for calculating Outgoing Calls Offered is as follows: $Outgoing\ \ Calls\ \ Offered\ \ =\ \ Group\ \ Overflow\ \ +\ \ Outgoing\ \ Seizures$ $\%\ \ OutBlk\ \ =\ \ \left(\frac{Group\ \ Overflow}{Outgoing\ \ Calls\ \ Offered} \right)$ For trunk groups with a queue, the calls not carried are those calls that arrive when all trunks are busy and the queue is full (Queue Overflow) and calls removed from queue before being carried (Queue Abandoned). For this scenario, the Percentage Outgoing Blocking is calculated as follows: $Outgoing\ \ Calls\ \ Offered\ \ =\ Que\ \ Ovf\ \ +\ Que\ \ Abd\ \ +\ \ Outgoing\ \ Seizures$ $\%\ \ OutBlk\ \ =\ \ \left(\frac{Queue\ \ Overflow\ \ +\ \ Que\ \ Abd}{Outgoing\ \ Calls\ \ Offered} \right) \times 100$ Suggested actions: • You can increase the length of the queue rather than adding more trunks. Subsequently, you should monitor the Que Abd field to insure it stays within reasonable limits. • If conditions are such that Step 1 is not appropriate, then you may find it necessary to add more trunks.

Name	Description
	Note: If you are using ARS you may see a high number in this field. This only indicates calls are overflowing to the next choice.
Wideband Flag	If the trunk group supports wideband (n X DS0) switching, the system displays a “W” next to the trunk group entry. In addition, if any trunk group on the report supports wideband switching, the system displays the tag “W = Wideband Support” in the report heading.

Trunk Group Hourly report

The Trunk Group Hourly report provides data necessary to validate the information in the Trunk Group Summary report and to size the trunk groups. A separate report is generated for each trunk group. On the G3r, a maximum of 75 trunk groups can be studied hourly at the same time. On the G3csi and G3si, a maximum of 25 trunk groups can be studied.

Note:

To display these hourly reports, you must first complete the Trunk Group Measurement Selection screen. See Specifying trunks to monitor for Trunk Group Hourly report on page 203.

Related topics:

Displaying the Trunk Group Hourly report on page 200
Trunk Group Hourly Report field descriptions on page 201

Displaying the Trunk Group Hourly report

About this task

Type **`list measurements trunk-group hourly <assigned trunk group number> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command —**`assigned trunk group number`**. Enter the trunk group number for which you want to list trunk group activity.

Options: The schedule option is available for this command.

Trunk Group Hourly Report field descriptions

The report contains two sections: a header section that provides report ending time and trunk group administrative information; and a data section that provides the measurement data for 24 hours.

Note:

If a translation change has occurred during a particular hour, the system displays an asterisk (*) in front the data for the hour in which the translation change occurred.

Name	Description
Grp No	Group Number. A number that identifies the trunk group associated with the displayed data.
Grp Size	Group Size. The number of trunks in the trunk group.
Grp Type	Group Type. All trunk group types except PCOL trunk groups.
Grp Dir	Group Direction. Incoming, outgoing, or two-way.
Que Size	Queue Size. The size of the trunk group queue. If there is no queue, the size is zero and the other queue measurements are irrelevant.

Name	Description
Meas Hour	Measurement Hour. The starting time (using 24-hour clock) of the hour during which the data is recorded.
Total Usage[3]	The total time (in CCS) trunks in the trunk group are unavailable to carry a new call. It includes the time the trunks are busy on calls, false starts, don't answers, or any other reason the trunk is unavailable. Not included are calls denied service on the trunk group for authorization reasons or because of queue overflow.
Maint Usage	Maintenance Usage. The total usage (in CCS) of trunks in this trunk group for Maintenance Busy or any other non-call

[3] The usage that wideband calls contribute to this measurement is proportional to the resources the calls consume. For example, a 384-kbps call contributes six times more to the total usage than does a 64-kbps call.

Name	Description
	situation where trunks are not available to carry a call.
Total Seize	Total Seizures. The total number of seizures on the trunk group.
Inc. Seize	Incoming Seizures. The number of incoming seizures on the trunk group.
Tandem Seize	Tandem Seizures. The number of trunk-to-trunk call seizures. This count is incremented on the outgoing-trunk side of the connection.
Grp Ovfl	Group Overflow. The outgoing calls offered to the trunk not carried. These are calls that arrive when all trunks in the group are busy and are not queued on the trunk group. It does not include calls denied service on the trunk group because of authorization reasons.
Call Qued	Calls Queued. The calls that enter the trunk group queue. This can happen automatically for analog terminal users or at the request of the caller for other terminal types.
Que Ovf	Queue Overflow. The number of calls that arrive when all slots in the Trunk Group Queue are occupied.
Que Abd	Queue Abandoned. Calls removed from the queue either by the system because they have been in the queue for the maximum allowed time (currently fixed at thirty minutes), or forced by users when they cancel the auto-call back, set earlier to put the call in the queue.
Out Serv	Out of Service. The number of trunks in the trunk group out of service at the time the data is collected.
% ATB	Percent All Trunks Busy. The percentage of time during the measurement interval all trunks in the group are unavailable to carry a new call (All Trunks Busy).
%Out Blk	Percent Outgoing Blocking. The percent of the outgoing seizures, including tandem seizures, offered to that trunk group that are not carried on that trunk group. The value is calculated as follows:

Name	Description
	% Out Blk = {Grp Ovfl / [Total Seize - Inc Seize> x 100
Wideband Flag	If the trunk group supports wideband (n X DS0) switching, the system displays “Wideband Support” in the report heading.

Specifying trunks to monitor for Trunk Group Hourly report

To specify which trunk groups to monitor for the Trunk Group Hourly report, use the Trunk Group Measurement Selection screen. The Summary Report lists all administered trunks. You can administer a maximum of 75 trunk groups for the hourly report studied hourly on the G3r; on the G3csi and G3si, the maximum is 25. If you do not select which trunk groups to study, none appear on the hourly report.

Related topics:

Displaying the Trunk Group Measurement Selection screen on page 203
Changing the Trunk Group Measurement Selection screen on page 203
Trunk Group Measurement Selection field descriptions on page 204

Displaying the Trunk Group Measurement Selection screen

Procedure

Type `display meas-selection trunk-group [schedule]` and press `Enter`.

Use the schedule command to print the report at a later time.

Changing the Trunk Group Measurement Selection screen

Procedure

1. Type `change meas-selection trunk-group` and press `Enter`.
2. Enter the trunk group number to be monitored and press `Enter`.

   Trunk group numbers do not have to be in numerical order. If the trunk group number you want is not in the list, add the trunk group number (if there is space available),

or replace an existing trunk group number you no longer need. To do so, perform one of the following:

- Press `Enter` until the cursor is placed on the unwanted trunk group number and enter the new number.
- Press `CLEAR FIELD` and enter the new trunk group number.

Trunk Group Measurement Selection field descriptions

Name	Description
Trunk Group Numbers	The trunk groups to be studied hourly.

Highest Hourly Trunk Group Blocking Performance report

The Highest Hourly Trunk Group Blocking Performance report gives a graphical and numerical display of the peak hour blocking for each trunk group. You can display this performance report for the previous (yesterday) or current (today) day.

Related topics:

Displaying the Highest Hourly Trunk Group Blocking Performance on page 204
Highest Hourly Trunk Group Blocking Performance Report field descriptions on page 205

Displaying the Highest Hourly Trunk Group Blocking Performance

About this task

Type **`list performance trunk-group <yesterday/today> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday/today`**.

Procedure

1. Enter **`yesterday`** to list the trunk group activity for yesterday.
2. Enter **`today`** to list the trunk group activity for today.

Result

Options: The schedule option is available for this command.

Highest Hourly Trunk Group Blocking Performance Report field descriptions

Name	Description
Grp No.	Group number. The number that identifies the trunk group associated with the displayed data.
Grp Type	Group type. The type of trunk associated with the accumulated data. The system monitors the following trunk types. For more information about these trunk types, see *Administering Avaya Aura® Communication Manager*. • Access (access) • Advanced Private Line Termination (aplt) • Central Office (co) or Public Network Service • Customer Provided Equipment (cpe) • Direct Inward Dialing (did) • Direct Inward/Outward Dialing (diod) • Digital Multiplexed Interface Bit Oriented Signaling (dmi-bos) • Foreign Exchange (fx) • Integrated Services Digital Network (isdn-pri) • Release Link Trunk (rlt) • Session Initiated Protocol (sip) • Tandem (tandem) • Tie Trunk (tie) • Wide Area Telecommunications Service (wats)
Grp Dir	Trunk Group Direction. Identifies whether the trunk group is incoming (inc), outgoing (out), or two-way (two).
Grp Size	Group Size. The number of trunks in the trunk group.

Name	Description
%Out Blkg	Percentage Outgoing Blocking. The percentage of calls that arrive when all trunks are busy.
% Outgoing Blocking or % ATB	Percent Outgoing Blocking or Percent All Trunks Busy. A graphical representation equivalent to the numerical value of calls offered but not carried. For two-way and outgoing trunk groups, peak hour blocking is the largest % Outgoing Blocking. For incoming trunks, peak hour is the largest % ATB. Since % Outgoing Blocking is meaningless for incoming trunks, it is displayed as asterisk (*) in that column. For trunk groups without a queue, calls not carried are those calls that arrive when all trunks are busy. For trunk groups with a queue, calls not carried are calls that arrive when all trunks are busy and the queue is full (Queue Overflow) and calls removed from queue before being carried (Queue Abandoned). Suggested actions: If a trunk group has a higher percent of blocking than desired, determine the exact reason that the trunk group is blocking calls. • The Total Calls field indicates the calling volume. If excessive blocking is because of calling volume alone, consider the possibility of adding more members to the trunk group. • If excessive blocking is not because of calling volume, the reason might be because trunks are in the maintenance busy state. You can use the Trunk Outage Report (described next) to identify those trunks determined to be out of service. Furthermore, and as required, use the ACA feature to monitor any trunk group still experiencing unexplained excessive blockage. • For identified problems, determine whether maintenance has been alerted or should be alerted.
% Time ATB	Percent of Time All Trunks Busy. The percent of time all trunks in the trunk group

Name	Description
	are simultaneously in use during the measurement interval. **Note:** In use means the trunks are busy, either serving calls, or because they are busied-out by maintenance.
Meas Hour	Measurement Hour. The starting time (using 24-hour clock) of the hour during which the data is recorded.
Total Calls	The total number of calls (seizures) for the trunk group during the peak hour of blocking.

Trunk Out of Service report

The Trunk Out of Service report lists up to a maximum of five trunks (in each trunk group) out of service when sampled. The number of times the trunks are out of service when sampled is also given. The trunk outage data is kept for the current day, the previous day, and the last hour.

Related topics:

Displaying the Trunk Out of Service report on page 207
Trunk Out of Service Report field descriptions on page 208

Displaying the Trunk Out of Service report

About this task

Type **`list measurements outage-trunk <yesterday/today/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is one required field for this command — **`yesterday/today/last-hour`**.

Procedure

1. Enter **`yesterday`** to list the trunk group activity for yesterday.
2. Enter **`today`** to list the trunk group activity for today.

3. Enter **last-hour** to list the trunk group activity for the most recently completed hour.

Result

Options: The schedule option is available for this command.

Trunk Out of Service Report field descriptions

Name	Description
Grp No.	Group number. The number that identifies each trunk group associated with the displayed data.
Grp Type	Group type. The type of trunk associated with the accumulated data. The system monitors the following trunk types. For more information, see *Administering Avaya Aura® Communication Manager*. • Access (access) • Advanced Private Line Termination (aplt) • Central Office (co) or Public Network Service • Customer Provided Equipment (cpe) • Digital Multidmi-bosplexed Interface Bit Oriented Signaling () • Direct Inward Dialing (did) • Direct Inward/Outward Dialing (diod) • Foreign Exchange (fx) • Integrated Services Digital Network (isdn-pri) • Release Link Trunk (rlt) • Session Initiated Protocol (sip) • Tandem (tandem) • Tie Trunk (tie) • Wide Area Telecommunications Service (wats)

Name	Description
Grp Dir	Group Direction. Identifies whether the trunk group is incoming (inc), outgoing (out), or two-way (two).
Grp Size	Group Size. The number of trunks in the trunk group.
Grp Mbr#	Group Member Number. The number that identifies a specific trunk member (in the group) out of service.
#Sampled Outages	Number of Sampled Outages. The number of times the group member is sampled as out of service over the period covered by the report (yesterday, today, or last hour). Yesterday includes the 24 hours beginning at midnight and ending at midnight. Today includes those hours from midnight to the most recently completed hour. Last hour only includes the most recently completed hour. Note: If there are no outages, no data is displayed. Suggested actions: • The sampling period is once per hour. Therefore, if the report covers several hours (for example, the yesterday or today report) but the column only indicates a small number of outages, then the trunk member may be providing intermittent service. To determine whether a specific trunk member is functioning, use the Facility Test Calls feature. • If a trunk is suspected of causinACAg problems, use the feature to monitor the particular trunk group. • If a trunk member is totally out of service, then (depending on local arrangements) you may choose to refer the problem to maintenance personnel.

Trunk Group Status report

The Trunk Group Status report gives a current indication of the load on various trunk groups in terms of the number of calls waiting to be serviced.

For each trunk group, the Trunk Group Status Report displays the number of calls in the queue waiting to be serviced. For comparative analysis, the trunk members in the group active on calls are also displayed. With this data, it is possible to rearrange the members in the groups to provide load balancing. For example, if one group shows a higher number of calls waiting in the queue and the size of the group is too small, more members can be added to that group.

Related topics:

Displaying the Trunk Group Status report on page 210
Trunk Group Status Report field descriptions on page 210
Data analysis guidelines for trunk group reports on page 211
Analyzing trunk group data on page 212

Displaying the Trunk Group Status report

About this task

Type **monitor traffic trunk-groups [option]** and press Enter.

Options: Entering the command without an option produces a display of the first 60 administered trunk groups. To display higher numbered trunk groups, enter the number of the first group of the 60 trunk groups to be displayed. Only those trunk groups administered are shown on the report.

Because the command is constantly updated, you must click **CANCEL** to cancel the command.

Trunk Group Status Report field descriptions

Some of the right-hand columns in the Trunk Group Status report are blank when the System has less than 60 groups administered. The date and time at which the report was requested are displayed on the right of the screen title.

The data on the screen is updated every 60 seconds. If the values of any of the fields for a given trunk group are changed, all fields for that trunk group are updated.

Name	Description
#	Group number. The number that identifies each trunk group.
S	Group size. The number of trunks administered for the trunk group.
A	Active group members. The number of trunk members in the group active on a call. Busied-out trunks are not active.

Name	Description
Q	Queue length. The length of the queue administered for the group.
W	Waiting calls. The number of calls waiting in the group queue.

Data analysis guidelines for trunk group reports

The following guidelines are intended to show an easy and fast method of determining whether the collected data is invalid or questionable. These guidelines represent the least you should do for validation. Perform additional validation as necessary.

Use the list performance trunk-group report to obtain an overall indication of those trunk groups that may be providing poor service. The five trunk groups with the highest percentage of blocking are listed in the list performance summary report. However, this report (summary) has the following limitations:

- The Group Blocking shown on this report is the percentage of blocking for outgoing and two-way trunk groups. For incoming trunk groups, the Group Blocking value is the percentage of all trunks busy (ATB). A high value for either % ATB or the % Out Blocking is an indication of possible traffic load problems.
- A two-way trunk group with undesirable incoming blocking do not show any problems on this report, since only outgoing blocking is displayed on two-way trunks.

Use data from the Trunk Group Measurements report for a more accurate estimate of service levels on incoming and two-way trunk groups. To validate the Trunk Group Measurements report, verify the following data is in order:

- Total Usage (in CCS) should not exceed 36 times group size. For example, with two trunks, the total usage measured should not exceed 2 X 36 = 72 CCS.
- On incoming trunks, total seizures should be equal to total incoming seizures.
- Incoming trunk groups should have a queue length of zero.
- The number of incoming calls should never be greater than the total number of calls carried by all trunks in the group.
- Outgoing trunk groups should indicate zero as their number of incoming calls.
- Out-of-service trunks should never be greater than group size.
- For trunk groups with queues, the two fields (Calls Queued and Queue Overflow) should total the number displayed in the Group Overflow field.
- For trunk groups with queues, the Queue Overflow field is incremented whenever a call finds the all trunks busy condition and the queue is full.

- For trunks groups without queues, the Calls Queued and Queue Overflow fields are always zero. The blocked call count is reflected in the Group Overflow field.
- If the Percent Outgoing Blocking field shows a value greater than zero, the Queue Overflow (if a queue is administered for the trunk group), Queue Abandon, and Group Overflow fields should also have values greater than zero.
- Measurement hour data reported in the System Status Report (for example, monitor system view1 or monitor system view2) should correspond to those shown on the hourly trunk group measurements and performance reports.

Analyzing trunk group data

The Trunk Group Summary report may be used to determine:

- Average holding time
- Trunk blockage
- Number of trunks required for a specified Analyzing trunk group data Grade of Service

Note:

Data collected in a real-time environment virtually always deviates from the theoretically predicted data because of the asynchronous nature of processes and interactions with other events such as maintenance.

Related topics:

Determining Average Holding Time on page 212
Determining Trunk Group Blockage on page 213
Determining the number of trunks required for a specified Grade of Service on page 214

Determining Average Holding Time

Determine the Average Holding Time (in seconds) of a trunk group by dividing the Total Usage CCS by Calls Answered and multiplying the result by 100. A short holding time can indicate trouble.

Example:

The following data is reported for a one-way trunk group:

- Total Usage CCS = 656 CCS
- Total Seizures = 280

Determine the Average Holding Time as follows:

$$Average\ Holding\ Time\ =\ \left[\frac{Total\ Usage\ CCS}{Total\ Seizures}\right]\times\frac{100\ Seconds}{CCS}$$

$$Average\ Holding\ Time\ =\ \left[\frac{656\ CCS}{280}\right]\times\frac{100\ Seconds}{CCS}$$

$$Average\ Holding\ Time\ =\ 234\ seconds\ (or\ 3\ minutes\ \text{and}\ 54\ seconds)$$

Determining Trunk Group Blockage

Generally, use either the list measurements trunk-group summary or list performance trunk-group report for determining trunk group blockage. The system performs all appropriate calculations and displays results in reports. However, to be complete, the equations and an example are included.

The following equations will help to determine the Percent Blocking one-way outgoing and two-way trunk groups.

One-Way Trunk Group (outgoing)

$$Percent\ Out\ Blocking\ =\ \left[\frac{Group\ Overflow}{Total\ Seizures\ +\ Group\ Overflow}\right]\times 100\ \%$$

Two-Way Trunk Group

$$Percent\ Out\ Blocking\ =$$

$$\left[\frac{Group\ Overflow}{Total\ Seizures\ -\ Incoming\ Seizures\ +\ Group\ Overflow}\right]\times 100\ \%$$

Note:

If the trunk group has a queue, group overflow is calculated as follows:

$$Group\ Overflow\ =\ Queue\ Overflow\ +\ Queue\ Abandons$$

Example:

With the following data, determine the Percent Blocking of a two-way CO trunk group without a queue:

- Total Seizures = 280
- Incoming Seizures = 170
- Group Overflow = 6

Using the equation for two-way trunk groups, you can calculate average Percent Blocking as follows:

$$Percent\ Blocking = \left(\frac{6}{(280 - 170) + 6} \right) \times 100 = 5.2\ \%$$

Determining the number of trunks required for a specified Grade of Service

For both stand-alone and last-choice trunk groups, use the trunk group peak traffic reports to determine the number of trunks required to provide a specified Grade of Service. The number of trunks required strictly depends on the Grade of Service you want to provide.

Note:

Stand-alone and last-choice trunk groups do not reroute their blocked calls. As a contrast, Alternate Routing trunks do reroute their blocked calls.

The procedure for determining the optimal number of trunk members for a particular trunk group requires you initially generate the appropriate reports and subsequently record the data on the Trunk Group Data Worksheets. What you attempt to accomplish is to identify the peak hour and the traffic data for that hour. The **`list measurements trunk-group summary yesterday-peak scheduled`** command results in generating all of the necessary data on a daily basis. You can enter 20 weekdays of data on each Trunk Group Data Worksheet. Subsequently, you need only scan the worksheet to identify which measurement hour occurs most frequently. The most frequent measurement hour is considered the peak hour. You should use the data for the identified peak hour, that has the highest total usage, to calculate the required number of trunks.

Example 1:

Assumptions

1. You obtain data (daily) and record that data on appropriately identified Trunk Group Data Worksheets.
2. 1300 is the peak hour (or bouncing peak hour).
3. Trunk Group 1 is suspected of not providing the desired Grade of Service.

For two-way trunk groups the equation for determining Calls Carried is as follows:

$$Calls\ Carried = Total\ Seize$$

$$Calls\ Carried = 280$$

For Trunk Groups Without a Queue

$$Total\ Calls\ Offered = Calls\ Carried + Group\ Overflow$$

For Trunk Groups With a Queue

$$Total\ Calls\ Offered =$$

$$Calls\ Carried + Queue\ Overflow + Queue\ Abandoned$$

Since Trunk Group 1 has a queue, the equation for Calls Offered is as follows:

$$Total\ Calls\ Offered = Calls\ Carried + Queue\ Overflow$$

$$Total\ Calls\ Offered = 280 + 50 + 1$$

$$Total\ Calls\ Offered = 331$$

The Average Holding Time is determined as follows:

$$Average\ Holding\ Time\ (in\ seconds) = \left(\frac{Total\ Usage\ (in\ CCS)}{Total\ Seizures}\right) \times \frac{100\ seconds}{CCS}$$

$$Average\ Holding\ Time\ (in\ seconds) = \left(\frac{656\ CCS}{280\ seizures}\right) \times \frac{100\ seconds}{CCS}$$

$$Average\ Holding\ Time\ (in\ seconds) = 234.29\ seconds$$

Offered Load is defined as the number of calls in progress if there had been no blocking or delay. The Offered Load is calculated as follows:

$$Offered\ Load = Average\ Holding\ Time\ (in\ seconds) \times Calls\ Offered$$

$$Offered\ Load\ (in\ CCS) = \frac{234.29\ (in\ seconds) \times 331\ calls}{100\ seconds\ per\ CCS}$$

$$Offered\ Load\ (in\ CCS) = 775.5$$

The calculated Offered Load is used with the Retrial Capacity tables, to determine the number of trunks required to provide a specified Grade of Service. For more information, refer to *Basic Traffic Analysis*.

The desired Grade of Service is dependent on the particular trunk type (for example, CO, did, tie, FX, WATS, and so on) and the nature of the business the trunk type supports. Generally, those trunk types that are least expensive (for example, CO) are engineered for a 1 percent (P.01) Grade of Service. Those trunk types that are more expensive are engineered to provide from 2 percent to 5 percent (P.02 to P.05) Grade of Service.

Note:

A one percent Grade of Service means the fraction of calls blocked during the identified bouncing peak hour should not exceed 1 percent.

Assuming we desire a P.01 Grade of Service on Trunk Group 1, for the calculated Offered Load of 775.5 CCS, the Retrial Capacity tables in *Basic Traffic Analysis* indicate (under the column heading GROUP SIZE) 32 trunks are required.

The number of currently functioning (or in service) trunks is calculated as follows:

$$\#\ of\ In-Service\ Trunks\ =\ Trunk\ Group\ Size\ -\ Out\ of\ Service\ Trunks$$

$$\#\ of\ In-Service\ Trunks\ =\ 23\ -\ 0$$

$$\#\ of\ In-Service\ Trunks\ =\ 23$$

Therefore, since 32 trunks are required but only 23 are currently in service, nine additional trunks must be added to obtain the desired Grade of Service.

Example 2:

Assumptions

1. You obtain data (daily) and record that data on appropriately identified Trunk Group Data Worksheets.
2. 1300 is the peak hour (or bouncing peak hour).
3. Data on trunk group 4 indicates a higher than desired percentage of outgoing blockage.

For one-way outgoing trunk groups, the equation for determining Calls Carried is as follows:

$$Calls\ Carried\ =\ Total\ Seize$$

$$Calls\ Carried\ =\ 81$$

Since Trunk Group 4 does not have a queue, the equation for Calls Offered is as follows:

$$Calls\ Offered\ =\ Calls\ Carried\ +\ Group\ Overflow$$

$$Calls\ Offered\ =\ 81\ +\ 5$$

$$Calls\ Offered\ =\ 86$$

The Average Holding Time is determined as follows:

$$Average\ Holding\ Time\ (in\ seconds)\ =\ \left(\frac{Total\ Usage\ (in\ CCS)}{Total\ Calls}\right)\ \times\ \frac{100\ seconds}{CCS}$$

$$Average\ Holding\ Time\ (in\ seconds)\ =\ \left(\frac{73\ CCS}{81\ calls}\right)\ \times\ \frac{100\ seconds}{CCS}$$

$$Average\ Holding\ Time\ (in\ seconds)\ =\ 90.12\ seconds$$

Offered Load is defined as the number of calls in progress if there is no blocking or delay. The Offered Load can be calculated as follows:

$$Offered\ Load\ =\ Average\ Holding\ Time\ (in\ seconds)\ \times\ Calls\ Offered$$

$$Offered\ Load\ (in\ CCS)\ =\ 90.12\ (in\ seconds)\ \times\ 86\ calls$$

$$Offered\ Load\ (in\ CCS)\ =\ 77.50\ CCS\ \ or\ \ 78\ CCS$$

The calculated Offered Load is used, with the Retrial Capacity tables, to determine the number of trunks required to provide a specified Grade of Service.

Assuming we desire a P.03 Grade of Service on Trunk Group 4, then for the calculated Offered Load of 78 CCS the Retrial Capacity tables in *Basic Traffic Analysis* indicate (under the column heading GROUP SIZE) six trunks are required. The number of currently functioning (or in-service) trunks is as follows:

$$\#\ of\ In-Service\ Trunks\ =\ Trunk\ Group\ Size\ -\ Out\ of\ Service\ Trunks$$

$$\#\ of\ In-Service\ Trunks\ =\ 5\ -\ 1$$

$$\#\ of\ In-Service\ Trunks\ =\ 4$$

Therefore, since six trunks are required but only four are currently in-service, two additional trunks are needed to obtain the desired Grade of Service. The obvious options are have the out-of-service trunk repaired and just add one new trunk, or add two new trunks.

Example 3:

Assumptions

1. You obtain data (daily) and record that data on appropriately identified Trunk Group Data worksheets.
2. 1300 is the peak hour (or bouncing peak hour).
3. That Trunk Group 2 indicates a higher % ATB than desired.

Incoming trunk groups do not have queues. Therefore, from the switch perspective you cannot determine the number of calls blocked. But, in this case Total Usage is actually the Carried CCS. You can use the Carried CCS, with the Retrial Capacity tables, to determine the number of trunks required to provide a specified Grade of Service.

Assuming you desire a P.05 Grade of Service on trunk group #2, then for a Carried CCS of 201 CCS the Retrial Capacity tables indicate (under the column heading GROUP SIZE) 10 trunks are required. The number of currently functioning (or in-service) trunks is as follows:

$$\#\ of\ In-Service\ Trunks\ =\ Trunk\ Group\ Size\ -\ Out\ of\ Service\ Trunks$$

$$\#\ of\ In-Service\ Trunks\ =\ 6\ -\ 0$$

$$\#\ of\ In-Service\ Trunks\ =\ 6$$

Therefore, since 10 trunks are required but only 6 are currently in-service, four additional trunks are needed to obtain the desired Grade-of-Service. The solution is to add four trunk members to the trunk group.

CBC Trunk Group Measurements report

The CBC Trunk Group Measurements report displays last-hour traffic data for any specified Call-by Call trunk group, provided the trunk group had a Usage Allocation Plan (UAP) administered for the last-hour. Use the report to monitor the trunk group and to determine if the UAP meets current needs. Whenever it is determined changes are required, you must make these changes on the appropriate trunk group screen(s).

Note:

If the trunk group is administered to support wideband switching, the system displays the tag “WIDEBAND Support” in the report title.

Related topics:

Displaying the Trunk Group CBC Measurements Report on page 219
CBC Trunk Group Measurements field descriptions on page 219
Background information for CBC Trunk Group Measurements report on page 223

Displaying the Trunk Group CBC Measurements Report

About this task

Type **`list measurements cbc-trunk-group <ISDN CBC trunk group number> last-hour [schedule]`** and press `Enter`
.

Required Fields: There is only one required field for this command—**`ISDN CBC trunk group number`**. Enter the ISDN CBC trunk group number for which you want to list the last-hour traffic data.

Options: The schedule option is available for this command.

CBC Trunk Group Measurements field descriptions

Name	Description
Queue Size	Size of the queue for the ISDN-PRI CBC trunk group. If zero is displayed, then no queue is administered. Hence, the other queue measurements is also zero. If the queue is administered, then it serves all of the network services/features administered for the trunk group. However, its functional operation is somewhat different than the queue used with conventional trunk groups. When a particular service/feature uses its allotted maximum number of channels, then any additional call attempts are queued, even though not all of the trunks are currently in use. If the queue is already full, any additional call attempts simply overflow with the caller receiving reorder tone. Recommendations: Since one service/feature generally does not experience peak traffic the same time as another service/feature, there is an averaging effect. Furthermore, the queue size for a CBC trunk group need not be much larger than for a non-CBC trunk group. The Queue Size should be larger than the trunk group size; but, typically, not more than three times as large as the trunk group size.
Calls Queued	The total number of calls entered the CBC trunk group queue during the hour.
Queue Overflow	The total number of calls denied access to a trunk, found the queue full, and the caller received reorder tone. Suggested actions: Generally, this field displays the number 0. If this field indicates a high number, then the queue size may be too small, more trunks may be needed so fewer calls will queue, or the UAP may be too restrictive (for example, some of the “Min Chn” values may be too high, or some of the “Max Chn” values may be too low). Also, see Suggested actions in the % TBM description.

Name	Description
Queue Abandonments	The number of calls removed from the queue by either the system or the user. The system automatically removes calls from the queue after 30 minutes. A user may abandon that call by canceling the Automatic Callback feature (set earlier to place their call in the queue). Suggested action: Recall that a trunk group and its associated queues are sized to accommodate peak-hour traffic loads. Typically, this field indicates a small number. However, a large number generally indicates the queue size is too large and people are abandoning because they remained in queue for a long time. Consider adding more trunks so fewer calls queue.
Out of Service	The number of trunks in the trunk group out of service at the time the measurements are collected. An individual trunk may be taken out of service either automatically by the switch whenever an excessive number of errors occur, or by maintenance personnel to run diagnostic tests. Suggested action:If the trunks were removed from service by the switch, then the appropriate maintenance personnel should be notified. The objective is to keep all members of a trunk group in service. Generally, you should not make adjustments to the CBC trunk group because of Out of Service trunks, but should get those trunks returned to service.
Usage Allocation Plan Used	A list of the Usage Allocation Plan numbers followed by a list of the durations (in minutes) each plan was in effect during the measurement interval. The Number field can display up to a maximum of six plan numbers. A maximum of three different UAPs (identified by the numbers 1, 2, and 3) may be defined for each trunk group. All three plans are defined on Page 3 of the trunk group screen. Page 4 of the corresponding trunk group screen is where you administer plan assignments.
Usage Allocation Plan Used (Contd)	Each CBC trunk group is administered with either “fixed” allocation or “scheduled” allocation. If fixed, it remains in effect continuously. If scheduled, the designated plans are activated on a per-day and time-of-day basis determined by the schedule.
Service Feature	The names of up to 10 services/features and the special identifier “other” for which the associated measurements are reported.
Min Chn	Minimum Number of Channels. The minimum number of channels in the ISDN-PRI CBC trunk group allocated to the specified service/feature at the time the measurements are collected.
Max Chn	Maximum Number of Channels. The maximum number of channels in the ISDN-PRI CBC trunk group allocated to the specified service or feature at the time the measurements are collected.
Total Usage	The sum of time, in hundred-call-seconds (CCS), for all channels used by the specified service/feature during the measurement interval.
Total Seize	Total Seizures. The total number of incoming and outgoing calls that requested the specified service/feature through the ISDN-PRI CBC trunk group.

Name	Description
Inc. Seize	Incoming Seizures. The total number of incoming calls that requested the specified service/feature through the ISDN-PRI CBC trunk group. For two-way and outgoing trunks, the number of *Outgoing Seizures* can be calculated as follows: $Out\ Seize = Total\ Seize - In\ Seize$
Tan Seize	Tandem Seizures. The total number of trunk-to-trunk call seizures using this Service/Feature.
Ovf TG	Overflow Trunk Group. The number of outgoing calls that requested the specified service/feature, on the ISDN-PRI CBC trunk group, but are not carried because the calls arrived to find no idle trunk members available. **Note:** There are three overflow fields, each with a different priority. They are: overflow trunk group (Ovf TG) (priority 1), overflow maximum (Ovf Max) (priority 2), and overflow services/features (Ovf S/F) (priority 3). If more than one of the overflow conditions is met, only the field that represents the condition with the highest priority is incremen ted.
Ovf S/F	Overflow Services/Features. The number of calls that requested the specified service/feature but denied because the calls arrived under the following conditions: • The specified service/feature is at or above its minimum channel allocation and below its maximum allocation. • There are idle channels available in the trunk group, but they are reserved to meet the minimum channel allocation for other services/ features. Suggested actions: • Investigate the possibility of raising the Min Chn requirements for this service/feature. • Investigate the possibility of increasing the number of members for the trunk group. • Determine whether or not the Min Chn assignments for the other services/features are appropriate. For example, if the column % TBM displays a high number for one or more of the other service/features, then you can lower the minimums (for one or more of the other services/ features). This makes more trunks available for this service/feature.
Ovf Max	Overflow maximum. The number of calls not carried because the calls originated at a time when the service/feature already used-up its allotted maximum number of channels. In this case, the trunk group may still have trunk members available for the other services/features.

Name	Description
	Suggested actions: • Investigate the possibility of raising the number administered in the Max Chn field. This is only possible provided the free pool is not exceeded. To determine whether or not you have more trunks available for a S/F calculate the following: $Max - Min\ (for\ the\ identified\ S/F) \leq Free\ Pool$ For example, use the above equations with the data in the formula as follows: $Free\ Pool = Total\ \#\ of\ in-service\ trunks - \sum Min\ \text{for each}\ S/F$ $Free\ Pool = 18 - (5+4)$ $Free\ Pool = 9$ $8 - 4\ (for\ SDN) \leq 9$ $4 \leq 9\quad Therefore,\ you\ can\ increase\ the\ Max$ • Consider adding more trunks to the trunk group and increase the maximum for the identified service/feature.
% TBM	Percentage of Trunks Below Minimum. The percentage of time during the polling interval that the number of channels in use by the specified service/feature is below the specified minimum. Suggested action: Lower the “Min Chn” since this may be the cause for the “Ovf S/F”. **Note:** If the % TBM field is high, then you are reserving more trunk members than will be used. Determine if another service/feature needs more trunks and, if so, lower the “Min Chn” for this service/feature.
% ATB	Percentage All Trunks Busy. The percentage of time (0 to 100%) during the measurement interval that the specified service/feature could not get a channel because of at least one of the following reasons: • All trunks in the ISDN-PRI CBC trunk group are busy on a call or busied-out by maintenance. • This service/feature is above its minimum; and all available trunks are reserved for other features/services below their minimums. • The specified feature or service is at its maximum number of channels. Suggested actions: • A number in the Ovf TG field indicates the physical maximum number of trunks is exhausted. Unless the trunk group is the last preference in

Name	Description
	the routing pattern, overflow is to the next trunk group. Otherwise, the obvious choice is to add more trunks to the trunk group. • If the Ovf S/F field indicates a problem (for example, a significant number), refer to Suggested actions in the Ovf S/F description. • If the Ovf Max field indicates a problem (for example, a significant number), refer to Suggested actions in the Ovf Max description. **Note:** If the ISDN-PRI CBC trunk group is administered to support wideband switching, the system displays the title WIDEBAND Support in the report title.
% BLK	Percentage Outgoing Blocking. The ratio of outgoing calls not carried for a specified service/feature to the outgoing calls offered by the service/feature. For an ISDN-PRI CBC trunk group without a queue, the calls not carried are those calls that find all facilities busy for the specified service/feature. For an ISDN-PRI CBC trunk group with a queue, the calls not carried are queue abandons plus those calls that find all facilities for the specified service/feature busy and cannot be queued because the queue is full. Suggested actions: • Look at the % ATB column and identify any service/feature with a high value. Follow the Suggested actions in the % ATB description. • You can increase the length of the queue rather than adding more trunks. Subsequently, you should monitor the Queue Abandonments field to insure it stays within reasonable limits. • If conditions are such that Item 1 above is not appropriate, you may find it necessary to add more trunks.

Background information for CBC Trunk Group Measurements report

For background information:

1. In a non-Call-By-Call Service Selection environment, a trunk group must be preassigned and provisioned for each desired service (for example, MEGACOM telecommunications service, WATS, SDN, and so on). With this arrangement, each trunk group must be designed to accommodate the peak traffic load for the intended service application. Furthermore, the time when one service application encounters peak traffic may not coincide with when another service application encounters peak traffic. As an alternative, if multiple network services are accommodated with a single trunk group (referred to as a CBC Trunk Group), and that trunk group is provided with allocation and scheduling controls, significant trunking efficiencies

may be realized by distributing the total traffic for all of the specified network services over the total number of available trunk members.

2. By implementing Usage Allocation Plans (UAPs) you can optimize, within certain limits, the CBC trunk group without involving any of the Inter-Exchange Carrier/ Local Exchange Carrier (IXC/LEC) network services personnel. Each Usage Allocation Plan specifies the network services/features that may be accommodated with the trunk group. It also specifies the minimum number of reserved channels and maximum number of channels each service/feature may use at a given time.
3. The free pool concept is associated with UAP's. Specifically, free pool refers to the number of trunks not reserved for a specific service/feature and free to be assigned to another service or feature. The free pool is calculated as:

   $$Free\ Pool\ =\ Total\ \#\ of\ in-service\ Trunks\ -\ \sum\ of\ the\ Mins^{*}\ (for\ each\ S/F)$$

   * Minimum channel assignment.

4. Each UAP may be administered as fixed or scheduled. If fixed, a specified plan remains in effect continuously. If scheduled, two or three UAPs may be scheduled to vary both by day of week and time of day.
5. Before you analyze the Trunk Group CBC Measurements Report, you must know the intent of the strategy for each UAP. You should have (in hand) a completed copy of the CBC Trunk Group UAP and the associated Assignment Schedule, which are Pages 3 and 4 of the Trunk Group Administration screen. For more information, see *Avaya Aura® Communication Manager Screen Reference*, 03-602878.
6. For wideband calls that consume more than 64 kbps of bandwidth, the total usage consumed is reflected in the Total Usage field. (For example, the usage for a 384-kbps call is six times more than for a 64-kbps call.) However, these calls are counted only as a single call. The call counts that may be incremented due to wideband calls are: Total Seize, Incoming Seize, Overflow Trunk Group, Overflow Service/Feature, and Overflow Maximum Service/Feature. The %ATB and %Out Blk fields are also affected by wideband calls.

Trunk Lightly Used report

The Trunk Lightly Used report lists the five trunk members with the lowest number of calls carried for each trunk group. The trunk lightly used data is kept for the current day, the previous day, and the last hour.

Related topics:

Displaying the Trunk Lightly Used report on page 225
Trunk Lightly Used field descriptions on page 225

Displaying the Trunk Lightly Used report

About this task

Type **`list measurements lightly-used-trunk <yesterday/ today/last-hour> [schedule]`** and press `Enter`.

Required Fields: There is only one required field for this command—**`yesterday/today/last-hour`**.

Procedure

1. Enter **`yesterday`** to list the trunk activity for yesterday.
2. Enter **`today`** to list the trunk activity for today.
3. Enter **`last-hour`** to list the trunk activity of the most recently completed hour.

Result

Options: The schedule option is available for this command.

Trunk Lightly Used field descriptions

Name	Description
Grp No.	Group Number. A number that identifies the trunk group associated with the displayed data.
Grp Type	Group Type. The type of trunk associated with the accumulated data. The system monitors the following trunk types. For more information about these trunk types, see *Administering Avaya Aura® Communication Manager*. • Access (access) • Advanced Private Line Termination (aplt) • Central Office (co) or Public Network Service • Customer Provided Equipment (cpe) • Digital Multiplexed Interface Bit Oriented Signaling (dmi-bos)

Name	Description
	• Direct Inward Dialing (did) • Direct Inward/Outward Dialing (diod) • Foreign Exchange (fx) • Integrated Services Digital Network (isdn-pri) • Release Link Trunk (rlt) • Session Initiated Protocol (sip) • Tandem (tandem) • Tie Trunk (tie) • Wide Area Telecommunications Service (wats)
Grp Dir	Group Direction. Identifies whether the trunk group is incoming (inc), outgoing (out), or two-way (two).
Grp Size	Group Size. The number of administered trunks in a specified trunk group. For more information, see *Avaya Aura® Communication Manager Hardware Description and Reference*.
Grp Mbr#	Group Member Number. The number that identifies a specific trunk member (in the group number).
Calls Carried	The number of calls carried on the trunk member over the report interval (yesterday, today, or last hour). Wideband calls increment this counter once for every trunk or 64-kbps channel that they use. Suggested actions: • If the identified trunk member has zero or a very small number of calls (seizures) in comparison to other listed trunk members, use the Facility Test Calls feature to determine whether a specific trunk member is functioning. • If a trunk is just suspected of causing problems, use the ACA feature to monitor the particular trunk group.
Wideband Flag	If any trunks in the trunk group are used in a wideband (n X DS0) connection, the system displays a **W** next to the trunk entry. In

Name	Description
	addition, the system also displays the **W = Wideband Support** tag in the report heading.

Voice Announcement Measurements report

Use this command to generate a detailed report about the announcement usage for all integrated and non-integrated announcements.

Related topics:

[list measurements announcement command](#) on page 227
[Voice Announcement Measurements Report field descriptions](#) on page 227

list measurements announcement command

The command syntax is

`list measurements announcement <all, integ-all, board <board-loc> <period>`

The type qualifiers are

- **`all`** lists announcements regardless of type (analog, aux-trunk and integrated).
- **`integ-all`** lists all active integrated announcement circuit packs (TN2051AP or TN750) in the order they were activated. The report for each circuit pack starts on a new page.
- **`board`** lists announcements for the specified circuit pack.

The period qualifiers are

- **`yesterday-peak`** (for yesterday's peak hour)
- **`today-peak`** (for today's peak hour)
- **`last-hour`** (for today's previous hour)

Voice Announcement Measurements Report field descriptions

All of the fields on the Voice Announcement Measurements report apply to announcements that are administered as type **`integrated`** or **`integ-rep`**.

The following fields do not apply for all other announcement types (for example, analog, aux-trunk):

- **Mport Plays**
- **Max Pts**
- **Max Call**

Name	Description
Switch Name	The administered switch name.
Date	The date and time of the report submission.
Board Location	The physical location (UUCSS) of the TN750B or C or TN2501AP circuit packs. This field displays only with the integ-all and board-loc qualifiers.
Play Ports	The number of ports available on the circuit pack. This field displays only with the integ-all and board-loc qualifiers.
Max Callers on Board in Period	The peak number callers simultaneously connected to a circuit pack (sum of the ports) at the same time. This field displays only with the integ-all and board-loc qualifiers.
All-Ports-Busy in Period	A count of how many times the all-ports-busy condition occurred within the reporting period. This field displays only with the integ-all and board-loc qualifiers.
Ann No.	The administered announcement number.
Ext	Assigned extension.
Name (first 24 chars)	The first 24 characters of the 27-character announcement name as administered on the announcement form.
Meas Hour	Measurement Hour. The starting time (using 24-hour clock) of the hour during which the data is recorded.
Play Reqts	Play Requests. The number of requests to play this announcement. • If there is a queue, equals the number of times played plus abandons • If there is no queue, equals the number of times played plus “busys” no ports are available)

Name	Description
Calls Que	Calls Queued. The number of announcements that were held in queue while waiting for a port during the period.
ASP	Average speed-to-play from the time the request to play the announcement went into the queue until the time it starts playing. Abandoned calls that are waiting for announcement port are not included in the calculation (sum of the queue time divided by the number of calls queued).
PSP	Peak speed to play, that is, the maximum amount of time an announcement was in the queue until the time it starts playing.
Queue Drops	Calls that dropped while in queue. A count of the individual calls that had to queue but dropped while waiting during the period - this includes calls abandoned by the caller and VOA aborts but excludes calls that were waiting but answered by an agent.
MPort Plays	Multi-port Plays. A count of how many times the announcement played through more than one port simultaneously during the period.
Mx Pt	Maximum Ports. The peak number of ports used simultaneously for playing the same announcement during the period (1-16 for TN750; 1-31 for TN2501AP).
Max Cls	Maximum Calls. The peak number callers simultaneously connected to a port by announcement during the period.

Voice/Network Statistics reports

The Voice/Network Statistics feature provides you measurement data to resolve voice quality issues within your network. You can view the measurement data through the SAT interface in the form of reports, which is helpful to troubleshoot threshold events during calls, for example, packet loss, jitter, round trip delay.

The media processor board gathers data on a per call basis, based on SAT-administered threshold events that have been exceeded. Then it supplies this data to Communication

Manager that in turn generates the voice/network statistics reports. These reports help you to determine the cause of a voice quality issue.

The SYSTEM PARAMETERS IP-OPTIONS screen and IP INTERFACES screen provide information on Voice/Network Statistics. In the IP-OPTIONS SYSTEM PARAMETERS screen, a **Voice/Network Stats** field is added to the system-parameters IP-options report and in the IP INTERFACES screen, the **VOIP/Network Thresholds** field is added to the IP-interfaces report.

Related topics:

Voice/Net Stats Field on System-Parameters IP-Options Form on page 231
Enabling Voice/Network Statistics on page 231
Voice/Network Stats Field on System-Parameters IP-Options form on page 231
Thresholds Fields on IP-Interface Form on page 232
Enabling Voice/Network Statistics for the IP-Interface report on page 232
IP-Interfaces Form for Media Processor Threshold Options on page 232
Status Station report on page 233
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Voice/Net Stats Field on System-Parameters IP-Options Form

The **Enable Voice/Network Stats?** field in the change system-parameters ip-options form, enables/disables Voice/Network Statistics at the system level. When the **Enable Voice/Network Stats?** is set to `y`, Voice/Network Statistics for threshold events are recorded on the media processor boards. However, Voice/Network Statistics feature has to be turned on at the media processor board level as well.

Enabling Voice/Network Statistics

Procedure

1. Type `change system-parameters ip-options`, and press Enter.
2. In the **Enable Voice/Network Stats** field, type `y`.
   The default value of the **Enable Voice/Network Stats** field is n.

Voice/Network Stats Field on System-Parameters IP-Options form

The following table describes the administration field used to enable collecting data for the reports described later in this section.

Name	Description
Enable Voice/Network Stats?	Enables/disables the recording of voice/ network statistics at a system level for all TN2302/TN2602 media processor boards in your network.

Thresholds Fields on IP-Interface Form

The change ip-interface screen includes Voice/Network thresholds at the media processor board level. The threshold fields and their default values are displayed only when the value in the **Enable Voice/Network Stats?** field on the form is Y and a valid TN2302 or TN2602 media processor board is used. The location of the board has also been entered on the form.

Enabling Voice/Network Statistics for the IP-Interface report

Procedure

1. Type `change ip-interface 1A03`, and press `Enter`.
2. In the **Enable Voice/Network Stats** field, type `y`.
   The default value of the **Enable Voice/Network Stats** field is n.

Note:

If duplicated TN2602 boards have been administered, the Voice/Network Statistics feature is applied to both boards, provided each is capable of supporting this feature.

Note:

Before setting the value of the **Enable Voice/Network Stats** field to y, the board must be removed the MEDIA PROCESSORS MEASUREMENT SELECTION screen.

IP-Interfaces Form for Media Processor Threshold Options

The following table describes the data fields presented in this administration screen.

Name	Description
Enable VoIP/Network Thresholds?	Enables/disables the recording of Voice/ Network Statistics at a single media processor board level (applies to both TN2602 boards, if duplicated).
Packet Loss (%)	Unacceptable packet loss coming into the administered media processor board. **Note:** "xxx" indicates 100% packet loss.
Jitter (ms)	Unacceptable jitter coming into the media processor board at which point data is captured to send up to Communication Manager.
RT Delay (ms)	Unacceptable elapsed time for a packet to reach remote location and revert. (Round Trip Delay)

Status Station report

A page on Voice Statistics is added to the Status Station report. Use this page to view real time Voice Statistics for the calls in progress, which may or may not exceed the administered Voice/Network thresholds.

Displaying the Status Station report

Procedure

Type **`status station 4901201`** and press `Enter`.

General Status field descriptions

Name	Description
TN Code	The media processor board code used for the call.

Name	Description
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Encryption	The type of media encryption used on the call (for example, aes, aea, srtp1, none, etc.)
DSP Number	The number of the DSP on the media processor board used for the call.
Endpoint ID	The endpoint ID assigned for the call.
UDP Port	The UDP port used by the media processor board for the call.
Codec	The codec used for the call.
Called Number	The number of the endpoint which received the call (far end).
Dst Net Reg	The network region where the destination media processor is located.
Far-End IP Addr	IP address of the device on the far end of the call (called party).
Echo Canc	Indicates whether the echo cancellation is on/off for the call.
Echo Tail (ms)	The tail length of the echo canceller used for the call. “0” implies that a different echo canceller was used than the one on the media processor.
Silence Suppression	Indicates whether Voice Activation Detection (VAD) is used for the call.
Comfort Noise Gen	Indicates whether CNG is being used for the call.
Data Call/Type	Indicates whether the call is a data call. Indicates type of data call (for example, FAX, Modem, Clear Channel, TTY, Fax-PT (pass-thru), Mod-PT, TTY-PT) For instance, Data Call/Type: y/T.38 FAX
Total Exceptions	A total number of thresholds that are exceeded for the call.
Packet Size (ms)	The size for each steam of data for the associated call, measured in milliseconds.
% Packet Loss	The amount of packet loss for the call. **Note:** “xxx” indicates 100% packet loss.

Name	Description
Peak Packet Loss (%)	The peak packet loss percentage recorded for the call.
Jitter Buffer Size (ms)	The size of the jitter buffer used for the call, measured in milliseconds.
Jitter Buffer Overruns	A number of jitter buffer overruns occurred for the call. Overruns occur when too many packets arrive into the jitter buffer very quickly, causing the jitter buffer to fill up. When it happens, the jitter buffer is unable to handle additional traffic/packets. If the number of overruns exceeds 99, the value in this field is “99+”.
Jitter Buffer Underruns	A number of jitter buffer underruns occurred for the call. When the arrival time of packets goes beyond the size of the jitter butter, the jitter buffer underrun occurs which results in silence until there are additional packets in the jitter buffer to process. If the number of underruns exceeds 99, the value in this field is “99+”.
Average Jitter (ms)	The average amount of jitter recorded for the call over a 10-second reporting interval, measured in milliseconds.
Peak Jitter (ms)	The peak amount of jitter recorded for the call, measured in milliseconds.
Avg RT Delay (ms)	The average round trip delay of packets, measured in milliseconds.
Peak RT Delay (ms)	The peak round trip delay recorded for the call, measured in milliseconds.

Hourly Voice/Network Statistics reports

These reports are generated to record the voice statistics for the TN media processor boards. They comprise measurement data for up to a 24-hour period for three of the threshold events, namely jitter, packet loss, and round trip delay, at both an hourly and summary level. The fourth report type contains information on data calls.

Hourly Jitter Network Region report

The Hourly Jitter Network Region report is used to assess the jitter at the network region per hour during calls.

Displaying the Hourly Jitter Network Region report

Procedure

Type **list measurements ip voice-stats hourly jitter <net reg #>** and press Enter.

Hourly Jitter Network Region Report field descriptions

Name	Description
Switch Name	The name of system from which measurement data is being collected/ reported.
Date	Time and date for which measurement data is requested.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number	The number of the endpoint initiating the call (near end).
Called Number/FarEnd IP Addr	The number of the endpoint which has received the call (far end), followed by the corresponding IP Address.
Codec	The codec used for the call.
Pkt Size (ms)	The packet size for each stream of data for the associated call, measured in milliseconds.

Name	Description
Time of Call	A time stamp when threshold was first exceeded for the associated call, shown in MMSS (minutes seconds).
Jitter Buffr Size (ms)	The size of the jitter buffer used for the call, measured in milliseconds.
Jitter Buffr Orn	The number of jitter buffer overruns occurred for the call. Overruns occur when many packets arrive into the jitter buffer very quickly, causing the jitter buffer to fill up. When this happens, the jitter buffer is unable to handle additional traffic/packets. If the number of overruns exceeds 99, the value in this field is “99+”.
Jitter Buffr Urn	The number of jitter buffer underruns occurred for the call. When the arrival time of packets goes beyond the size of the jitter butter, a jitter buffer underrun occurs. This results in silence until there are additional packets in the jitter buffer to process. If the number of underruns exceeds 99, the value in this field is “99+”.
Avg Jitter (ms)	The average amount of jitter recorded for the call over a 10-second reporting interval, measured in milliseconds.
Peak Jitter (ms)	The peak amount of jitter recorded for the call, measured in milliseconds.

Hourly Delay Network Region report

The Hourly Delay Network Region report is used to assess the round trip delay at the network region per hour during calls.

Displaying the Hourly Delay Network Region report

Procedure

Type **`list measurements ip voice-stats hourly rtdelay <net reg #>`** and press `Enter`.

Hourly Delay Network Region Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end) The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Codec	The codec used for the call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Dst Reg	The network region where the destination media processor is located.
Avg RT Delay (ms)	The average round trip delay of packets, measured in milliseconds.
Peak RT Delay (ms)	The peak round trip delay recorded for the call.
Time of Call	A time stamp when threshold was first exceeded for the associated call, shown in MMSS (minutes seconds).
Data Call	Indicates whether the call is a data call.
Encryp	Indicates whether media encryption was used for the call.
EC	Indicates whether the echo cancellation is on/off for the call.

Hourly Packet Loss Network Region report

The Hourly Packet Loss Network Region report is used to assess the packet loss at the network region per hour during calls.

Displaying the Hourly Packet Loss Network Region report

Procedure

Type **list measurements ip voice-stats hourly pktloss <net reg #>** and press Enter.

Hourly Packet Loss Network Region Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end). The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Codec	The codec used for the call.
Dst Reg	The network region where the destination media processor is located.
Time of Call	A time stamp when threshold was first exceeded for the associated call, shown in MMSS (minutes seconds).

Name	Description
UDP Port	The UDP port used by the media processor for this call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Total #Lost Pkts	The total number of packets lost for the call.
Pkt Loss (%)	The peak packet loss for the call. The packet loss percentage is calculated at 10-second intervals. **Note:** "xxx" indicates 100% packet loss.
Sil Sup	Indicates whether the silence suppression was used for the call.

Hourly Data Network Region report

The Hourly Data Network Region report is used to assess the data calls which exceeded a threshold event at the network region. This report is not applied to the specific threshold exceeded, but applies only to pass-through and TTY relay calls, which exceed any one of the three thresholds.

Displaying the Hourly Data Network Region report

Procedure

Type **`list measurements ip voice-stats hourly data <net reg #>`** and press `Enter`.

Hourly Data Network Region Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number	The number of the endpoint initiating the call (near end).
Called Num/Farend IPAddr	The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Codec	The codec used for the call.
Data Type	Indicates the type of data call. Valid options include: ~ ttyrel (TTY Relay) ~ mod-pt (Modem pass-through) ~ fax-pt (FAX pass-through) ~ tty-pt (TTY pass-through) ~ t38fax (T.38 FAX) ~ faxrel (FAX relay) ~ modrel (Modem relay)
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Pkt Loss (%)	The packet Loss for the call. The Packet loss percentage is calculated at 10-second intervals. **Note:** "xxx" indicates 100% packet loss.
Peak Jit (ms)	The peak amount of jitter recorded for the call, measured in milliseconds.
Peak Dly (ms)	The peak round trip delay recorded for the call, measured in milliseconds.
EC	Indicates whether the echo cancellation is turned on/off for the call.

Hourly Jitter Media Processor report

The Hourly Jitter Media Processor report is used to assess the jitter at the media processor region per hour during calls.

Displaying the Hourly Jitter Media Processor report

Procedure

Type **list measurements ip voice-stats hourly jitter <medpro location>** and press Enter.

Hourly Jitter Media Processor Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested
Net Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour (military time) in which data is collected.
Calling Number	The number of the endpoint initiating the call (near end).
Called Number/Farend IP Addr	The number of the endpoint that received the call (far end), followed by the corresponding IP Address.
Codec	The codec used for the call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.

Name	Description
Time of Call	A time stamp when threshold was first exceeded for the associated call, shown in MMSS (minutes seconds).
Jitter Buffr Size (ms)	The size of the jitter buffer used for the call, measured in milliseconds.
Jitter Buffr Orn	The number of jitter buffer overruns that occurred for the call. Overruns occur when many packets arrive into the jitter buffer very quickly, causing the jitter buffer to fill up. When this happens, the jitter buffer is unable to handle additional traffic/packets. If the number of overruns exceeds 99, the value in this field is “99+”.
Jitter Buffr Urn	Underruns occur when packets arrive into the jitter buffer too slowly, causing the jitter buffer to run out of received packets to play to the near end of the call. This results in silence until there are additional packets in the jitter buffer to process. If the number of underruns exceeds 99, the value in this field is “99+”.
Avg Jitter (ms)	The average amount of jitter recorded for the call over a 10-second reporting interval, measured in milliseconds.
Peak Jitter (ms)	The peak amount of jitter recorded for the call, measured in milliseconds.

Hourly Delay Media Processor report

The Hourly Delay Media Processor report is used to assess the round trip delay at the media processor region per hour during calls.

Displaying the Hourly Delay Media Processor report

Procedure

Type **`list measurements ip voice-stats hourly rtdelay <medpro location>`** and press `Enter`.

Hourly Delay Media Processor Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested
Net Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour in military time in which data is collected.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end). The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Codec	The codec used for the call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds
Dst Reg	The network region where the destination media processor is located.
Avg RT Delay (ms)	The average round trip delay of packets, measured in milliseconds.
Peak RT Delay (ms)	The peak round trip delay recorded for the call, measured in milliseconds.
Time of Call	A time stamp when threshold was first exceeded for the associated call, shown in MMSS (minutes seconds).
Data Call	Indicates whether the call is a data call.
Encryp	Indicates whether media encryption was used for the call.
EC	Indicates whether the echo cancellation is on/off for the call.

Hourly Packet Loss Media Processor report

The Hourly Packet Loss Media Processor report is used to assess the packet loss at the media processor region per hour during calls.

Displaying the Hourly Packet Loss Media Processor report

Procedure

Type **list measurements ip voice-stats hourly pktloss <medpro location>** and press Enter.

Hourly Packet Loss Media Processor Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested
Net Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour in military time in which data is collected.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end). The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Codec	The codec used for the call.
Dst Reg	The network region where the destination media processor is located.
Time of Call	A time stamp when threshold was first exceeded for the associated call, shown in MMSS (minutes seconds).

Name	Description
UDP Port	The UDP port used by the media processor for the call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Total #Lost Pkts	The total number of packets lost for the call.
Pkt Loss (%)	The peak packet loss for the call. The packet loss percentage is calculated at 10-second intervals. **Note:** "xxx" indicates 100% packet loss.
Sil Sup	Indicates whether the silence suppression is used for the call.

Hourly Data Media Processor report

The Hourly Data Media Processor report is used to assess the data calls which exceeded a threshold event at the media processor region. This report is not applied to the specific threshold exceeded, but applies only to pass-through and TTY relay calls which exceed any one of the three thresholds.

Displaying the Hourly Data Media Processor report

Procedure

Type **`list measurements ip voice-stats hourly data <medpro location>`** and press `Enter`.

Hourly Data Media Processor Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Net Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour in military time in which data is collected.
Calling Number	The number of the endpoint initiating the call (near end).
Called#/Farend IPAddr	The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Codec	The codec used for the call.
Data Type	Indicates the type of data call. Valid options include: • ttyrel (TTY Relay) • mod-pt (Modem pass-through) • fax-pt (FAX pass-through) • tty-pt (TTY pass-through) • t38fax (T.38 FAX) • faxrel (FAX relay) • modrel (Modem relay)
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Pkt Loss (%)	The packet Loss for the call. The packet loss percentage is calculated at 10-second intervals. **Note:** "xxx" indicates 100% packet loss.
Peak Jit (ms)	The peak amount of jitter recorded for the call.

Name	Description
Peak Dly (ms)	The peak round trip delay recorded for the call.
EC	Indicates whether the echo cancellation is turned on/off for the call.

Summary Voice/Network Statistics reports

The summary reports can be obtained for yesterday-peak, today-peak, or last-hour interval. The summary reports provide measurement data on the calls during the peak hour per board over a 24-hour period.

Summary Jitter report

The summary jitter report summarizes up to five worst jitter calls for the corresponding peak hour for a given media processor board in the network region.

Displaying the Summary Jitter report

Procedure

Type **`list measurements ip voice-stats summary jitter ['yesterday' | 'today' | 'last-hour']`** and press `Enter`.

Summary Jitter Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.

Name	Description
Src Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number	The number of the endpoint initiating the call (near end).
Called Number/FarEnd IP Addr	The number of the endpoint that received the call (far end), followed by the corresponding IP Address.
Dst Reg	The network region where the destination media processor is located.
Codec	The codec used for the call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Time of Call	A time stamp when the threshold is first exceeded for the associated call, shown in MMSS (minutes seconds).
Jitter Buffer Size (ms)	The size of the jitter buffer used for the call, measured in milliseconds.
Jitter Buffer Orn	The number of jitter buffer overruns occurred for the call. Overruns occur when many packets arrive into the jitter buffer very quickly, causing the jitter buffer to fill up. When this happens, the jitter buffer is unable to handle additional traffic/packets. If the number of overruns exceeds 99, the value in this field is “99+”.
Jitter Buffer Urn	Underruns occur when packets arrive into the jitter buffer too slowly, causing the jitter buffer to run out of received packets to play to the near end of the call. This results in silence until there are additional packets in the jitter buffer to process. If the number of underruns exceeds 99, the value in this field is “99+”.
Avg Jitter (ms)	The average amount of jitter recorded for the call over a 10-second reporting interval, measured in milliseconds.

Name	Description
Peak Jitter (ms)	The peak amount of jitter recorded for the call, measured in milliseconds.

Summary Round Trip Delay report

The summary round trip delay report summarizes up to five worst round trip delay calls for the corresponding peak hour for a given media processor board in the network region.

Displaying the Summary Round Trip Delay report

Procedure

Type **`list measurements ip voice-stats summary rtdelay ['yesterday' | 'today' | 'last-hour']`** and press `Enter`.

Summary Round Trip Delay Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Src Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end). The number of the endpoint that received the call (far end), followed by the associated far-end IP address.

Name	Description
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Dst Reg	The network region where the destination media processor is located.
Codec	The codec used for the call.
Avg RT Delay (ms)	The average round trip delay of packets, measured in milliseconds.
Peak RT Delay (ms)	The peak round trip delay recorded for the call.
Time of Call	A time stamp when the threshold is first exceeded for the associated call, shown in MMSS (minutes seconds)
Data Call	Indicates whether the call is a data call.
Encryp	Indicates whether media encryption is used for the call.
EC	Indicates whether the echo cancellation is on/off for the call.

Summary Packet Loss report

The summary packet loss report summarizes up to five worst packet loss calls for the corresponding peak hour for a given media processor board in the network region.

Displaying the Summary Packet Loss report

Procedure

Type **`list measurements ip voice-stats summary pktloss ['yesterday' | 'today' | 'last-hour']`** and press `Enter`.

Summary Packet Loss Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Src Reg	The network region associated with the media processor for which data is being recorded.
Meas Hour	The hour (military time) in which data is collected.
Board Loc	The carrier/slot location of the media processor for which data is being reported.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end). The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Dst Reg	The network region where the destination media processor is located.
Codec	The codec used for the call.
Time of Call	A time stamp when the threshold is first exceeded for the associated call, shown in MMSS (minutes seconds)
UDP Port	The UDP port used by the media processor for the call.
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Total #Lost Pkts	The total number of packets lost for this call.
Pkt Loss (%)	The peak packet loss for the call. The packet loss percentage is calculated at 10-second intervals. **Note:** "xxx" indicates 100% packet loss.
Sil Sup	Indicates whether the silence suppression is used for the call.

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Summary Data report

The summary data report summarizes up to five worst data calls for the corresponding peak hour for a given media processor board in the network region.

Displaying the Summary Data report

Procedure

Type **list measurements ip voice-stats summary data ['yesterday' | 'today' | 'last-hour']** and press Enter.

Summary Data Report field descriptions

Name	Description
Switch Name	The name of system from which data is being collected/reported.
Date	Time and date for which data is requested.
Src Reg	The network region associated with the media processor for which data is being captured.
Meas Hour	The hour in military time in which data is collected.
Calling Number/Called#/FE Addr	The number of the endpoint initiating the call (near end). The number of the endpoint that received the call (far end), followed by the associated far-end IP address.
Dst Reg	The network region where the destination media processor is located.
Codec	The codec used for the call.

Name	Description
Data Type	Indicates the type of data call. Valid options include: • ttyrel (TTY Relay) • mod-pt (Modem pass-through) • fax-pt (FAX pass-through) • tty-pt (TTY pass-through) • t38fax (T.38 FAX) • faxrel (FAX relay) • modrel (Modem relay)
Pkt Size (ms)	The packet size for each steam of data for the associated call, measured in milliseconds.
Pkt Loss (%)	The packet loss for the call. The packet loss percentage is calculated at 10-second intervals. **Note:** "xxx" indicates 100% packet loss.
Peak Jit (ms)	The peak amount of jitter recorded for the call.
Peak Dly (ms)	The peak round trip delay recorded for the call, measured in milliseconds.
EC	Indicates whether the echo cancellation is turned on or off for the call.

Change measurement selection forms

When you specify a specific network region or media processor in a list measurements ip voice-stats report and that network region or media processor is included in the ch meas-selection form, then the system shows a list measurement report, otherwise the following error message is displayed: `Not a measured resource`. For more information, refer to Voice/Network Statistics reports on page 229.

There is a major inter-dependency between ch meas-sel media-processor form and the ip-interface form. For example, you have to have the media processor on both of these forms r to collect data. In addition, the board has to be Voice/Network Statistics-enabled and Voice/Network Statistics-capable (correct firmware version on the media processor board). You cannot enter `Enable Voice/Net Stats?Y` in the field unless the board location has been

entered on the ch meas-sel media-processor form and that media processor's firmware is Voice/Network Statistics-capable. For more information, refer to Thresholds Fields on IP-Interface Form on page 232

Related topics:

Displaying the NETWORK REGION MEASUREMENT SELECTION report on page 255
NETWORK REGION MEASUREMENT SELECTION field descriptions on page 255

Displaying the NETWORK REGION MEASUREMENT SELECTION report

Procedure

Type `display meas-selection network-region [schedule]`, and press Enter.

NETWORK REGION MEASUREMENT SELECTION field descriptions

Note:

If you enter a network region on this screen, and have not specified corresponding media processor board location in that same region on the *ch meas-selection media-processor* form, then measurements for that region will not be reported. For example, if you enter network region 10 on the *ch meas-sel network region* form, but do not specify any media processors form region 10 on the *ch meas-sel media-processor* form, no measurements will be reported for network region 10.

To display the MEDIA PROCESSOR MEASUREMENT SELECTION screen, use the **`display meas-selection media-processor [schedule]`** command.

The validations for the command are as follows:

- If media processor board is not a TN2302 or TN2602, do not allow it on this form. Communication Manager performs this validation.
- If TN2302/TN2602 is physically inserted, perform a capabilities exchange to confirm that the board can support this feature. Communication Manager performs this validation.
- When a media processor board is removed from the *ch meas-sel media-processor* form, Communication Manager must verify that the Voice/Net Stats feature has been disabled on the *ip-interface* form, otherwise the following error message is displayed: `Must first disable voice/net stats on ip-interface form`. Also, you must check the same, that is, Voice/Net Stats feature is disabled on the *ip-interface* form, with duplicated

TN2602 media processor boards, if your are going to/from duplicated, simplex or load balanced media processor boards.

- In addition, if a board location or network region is moved or deleted, all previous data for that board/network region and measurement hour is lost. If you attempt to move a network region/media processor board from one position to another, the following warning message is displayed: `Moving a board/NR from one location to another will result in the loss of existing data.`

Name	Description
Network region	You can enter a value from 1 to 250.
Media Processor board location	You can enter five alpha-numeric characters that consist of: the cabinet number, the carrier number, and the slot number.

Wideband trunk groups reports

This section describes the traffic reports and selection screen for wideband trunk groups. It also provides guidelines for validating and analyzing the wideband trunk group data.

Related topics:

Wideband Trunk Group Summary report on page 256
Wideband Trunk Group Hourly report on page 259

Wideband Trunk Group Summary report

The Wideband Trunk Group Summary report gives traffic measurements for all trunk groups administered to support wideband switching. By using this report, you can determine the trunk group total wideband usage (in CCS), the total number of wideband calls, the percentage of wideband calls blocked, and other measurement data.

Note:

This report is only available if the Wideband Switching field is set to `y` on page 4 of the System-Parameters Customer-Options screen.

Related topics:

Displaying the Wideband Trunk Group Summary report on page 257
Wideband Trunk Summary Report field descriptions on page 257

Displaying the Wideband Trunk Group Summary report

About this task

To display the Wideband Trunk Group Summary report:

Enter **`list measurements wideband-trunk-group summary <yesterday-peak/today-peak/last-hour> [schedule]`**.

Required Fields: There is only one required field for this command—**`yesterday-peak/today-peak/last-hour`**.

Procedure

1. Enter **`yesterday-peak`** to list the wideband call activity for yesterday's peak hour.
2. Enter **`today-peak`** to list the wideband call activity for today's peak hour.
3. Enter **`last-hour`** to list the wideband call activity of the most recently completed hour.

   The peak hour is the hour (within a 24-hour period) with the greatest usage.

Result

Options: The schedule option is available for this command.

Wideband Trunk Summary Report field descriptions

Name	Description
Peak Hour for Wideband Usage for All Trunk Groups	The hour during the specified day with the highest total wideband call usage, when summed over all trunk groups. Peak hour and busy hour are synonymous. With conventional traffic theory data analysis, there are two methods for determining the peak hour. One is the time-consistent peak hour, meaning hourly usage values are averaged across days for each hour of the day. The other is the bouncing peak hour, meaning the highest usage is selected for each day without regard to the average across days. For the bouncing peak hour, the highest load on a given day may or may not occur during the time-consistent busy hour. These traffic reports and accompanying trunk group data worksheet only use the bouncing peak hour method. Note that if the total usage for the current hour equals the total usage for the previous peak hour, the peak hour is the hour with the greatest number of total seizures.
Grp No.	Group Number. A number that identifies each trunk group associated with the displayed data. Group numbers are displayed in numerical order,

Name	Description
	beginning with the lowest administered number and continuing to the highest administered number.
Grp Size	Group Size. The number of administered trunks in the trunk group.
Grp Dir	Trunk Group Direction. Identifies whether the trunk group is incoming (inc), outgoing (out), or two-way (two).
Service Type	Service Type. The administered Service Type for the trunk group. Valid entries are accunet, i800, inwats, lds, mega800, megacom, multiquest, operator, other, **outwats-bnd**, **public-ntwrk**, **sdn**, **sub-operator**, and **wats-max-bnd**.
Meas Hour	Measurement Hour. The hour, using 24-hour clock, in which the measurements are taken. For the last-hour report, it is the last hour of measurement. Measurement hour for each trunk group is identical, but not necessarily the same as the indicated peak hour for the day. For the today-peak report, the measurement hour is the peak hour for each trunk group. Measurement hour for each trunk group can be different. For the yesterday-peak report, the measurement hour is the peak hour for each trunk group yesterday. Measurement hour for each trunk group can be different.
Total Usage	Total wideband call usage (in CCS) for all trunks in the trunk group. Represents the total time the trunks are busy processing wideband calls.
Total Seize	Total Seizures. The number of wideband call attempts. This measurement includes completed calls, false starts, don't answers, and busies.
Inc. Seize	Incoming Seizures. The number of wideband incoming call attempts. This measurement includes completed calls, false starts, don't answers, and busies. The number of Outgoing Seizures can be calculated as follows: $Out\ Seize = Total\ Seize - Inc\ Seize$
Grp Ovfl	Group Overflow. The number of outgoing wideband calls attempted when the remaining trunk group capacity is insufficient to accommodate the call or the trunk group's remaining bandwidth is in the wrong configuration. This measurement does not include unauthorized calls denied service on the trunk group (due to restrictions). The number of wideband calls equals the number of actual calls, regardless of the number of trunks involved in the call.
Out Srv	Out of Service. The number of trunks in the trunk group out of service (listed as maintenance busy) at the time the data is collected. Suggested action: If the trunks are removed from service by the switch, then the appropriate maintenance personnel should be notified. The objective is to keep all members of a trunk group "in service." Generally, you should not make adjustments to the trunk group because of "Out of

Name	Description
	Service" trunks, but should get those trunks returned to service. For specific details, refer to the Trunk Out of Service report on page 207.
% ATB	Percentage All Trunks Busy. The percentage of time all trunks in the trunk group were simultaneously in use during the measurement interval. **Note:** In use means that the trunks are busy — either serving calls or because they are busied-out by maintenance. Suggested actions: • If the group direction is outgoing or two-way, a high number in the % ATB field and nothing in the Grp Ovfl indicates everything is functioning normally. However, a more typical scenario is a high number in this field and a high number in the Grp Ovfl field. This indicates a possible problem that necessitates further analysis. Unless this trunk group is the last preference in the pattern, overflow is to the next choice trunk group, and the number in the Grp Ovfl field is of no great significance. Otherwise, the obvious choice is to add more trunks to the trunk group. • If the group direction is incoming, a high number in this field is bad. It indicates some incoming calls are probably blocked. Generally, you want to add more trunks. Therefore, the % ATB and the number of calls blocked is low.
% Out Blk	Percentage Outgoing Blocking. The percentage of offered wideband calls not carried on the trunk group. It does not include unauthorized wideband calls denied service on the trunk group (due to restrictions) or calls carried on the trunk group but do not successfully complete at the far end (where there is no answer). The calls not carried are calls made when the remaining trunk group capacity is insufficient to serve them. The Percentage Outgoing Blocking is calculated as follows: $\%\ OutBlk = \left[\frac{Group\ Overflow}{Outgoing\ Calls\ Offered}\right] \times 100$ The number of Outgoing Seizures is calculated as follows: Outgoing Seizures = Total Seizures - Incoming Seizures Similarly, the equation for calculating Outgoing Calls Offered is as follows: Outgoing Calls Offered = Group Overflow + Outgoing Seizures

Wideband Trunk Group Hourly report

For trunk groups chosen at the Wideband Trunk Group Selection screen, the Wideband Trunk Group Hourly report lists the wideband call activity for all hours of switch activity. This

information helps you validate the information in the Wideband Trunk Group Summary report.

Related topics:

Displaying the Wideband Trunk Group Hourly report on page 260
Wideband Trunk Group Hourly field descriptions on page 260

Displaying the Wideband Trunk Group Hourly report

About this task

To display the Trunk Group Hourly report:

Enter **`list measurements wideband-trunk-group hourly <assigned wideband-trunk-group number> [schedule]`**.

Required Fields: There is only one required field for this command—**`assigned wideband-trunk-group number`**. Enter a specific trunk group number to list the wideband call activity for all hours of switch activity.

Options: The schedule option is available for this command.

Wideband Trunk Group Hourly field descriptions

This report contains two sections:

Name	Description
Grp No:	Group Number. A number that identifies the trunk group associated with the displayed data.
Grp Size:	Group Size. Number of trunks in the trunk group.
Grp Dir:	Group Direction. Incoming (inc), outgoing (out), or two-way (two).
Service Type:	Service Type. The administered Service Type for the trunk group. Valid entries are accunet, i800, inwats, lds, mega800, megacom, multiquest, operator, other, outwats-bnd, public-ntwrk, sdn, sub-operator, and wats-max-bnd.

Name	Description
Total Usage	Total wideband call usage (in CCS) for all trunks in the trunk group. Represents the total time the trunks are busy processing wideband calls.
Maint Usage	Maintenance Usage. The total usage of trunks in this trunk group for Maintenance

Name	Description
	Busy or any other non-call situation where trunks are not available to carry a call.
Total Seize*	Total Seizures. The number of wideband call attempts. This measurement includes completed calls, false starts, don't answers, and busies.
Inc. Seize*	Incoming Seizures. The number of wideband incoming call attempts. This measurement includes completed calls, false starts, don't answers, and busies. The number of Outgoing Seizures can be calculated as follows: $\%\ OutBlk = \left(\frac{Group\ Overflow}{Outgoing\ Calls\ Offered} \right) \times 100$
Tandem Seize*	Tandem Seizures. The number of trunk-to-trunk wideband call seizures. This count is incremented on the outgoing-trunk side of the connection.
Grp Ovfl	Group Overflow. The number of outgoing wideband calls attempted when the remaining trunk group capacity is insufficient to accommodate the call or the trunk group's remaining bandwidth is in the wrong configuration. This measurement does not include unauthorized calls denied service on the trunk group (due to restrictions).
Out Serv	Out of Service. The number of trunks in the trunk group out of service during the measurement hour.
% ATB	Percent All Trunks Busy. The percentage of time during the measurement interval all trunks in the group are unavailable to carry a new call (All Trunks Busy).
%Out Blk	Percent Outgoing Blocking. The percent of the outgoing wideband call seizures, including tandem wideband call seizures, offered to a trunk group that are not carried on that trunk group. The value is calculated as follows: % Out Blk = {Grp Ovfl / [Total Seize - Inc Seize + Grp Ovfl> x 100

Wideband Trunk Group Measurement Selection

The Wideband Trunk Group Measurement Selection screen is used at administration time to specify trunk groups to list on the Wideband Trunk Group Hourly reports. It permits you to administer which trunk groups are to be reported for the hourly report. (Measurements on administered trunk groups are collected to list them on the wideband summary and hourly reports.) A maximum of 10 trunks can be studied on the G3csi and G3si. On the G3r, the maximum is 30. If no selections are made, no trunk groups are studied hourly.

Related topics:

Configuring Wideband Trunk Group Measurement Selection on page 262
Wideband Trunk Group Measurement Selection field descriptions on page 263
Data analysis guidelines for trunk groups on page 263
Summary report on page 263
Hourly report on page 264
Performance considerations on page 264

Configuring Wideband Trunk Group Measurement Selection

Procedure

1. Type `change meas-selection wideband-trunk-group`, and press Enter.
2. Enter the wideband trunk group number to be measured.

   Wideband trunk group numbers do not have to be in numerical order. If the wideband trunk group number you want is not listed, add the wideband trunk group number (if there is space available), or replace an existing wideband trunk group number you no longer need. Press Enter until the cursor is placed on the unwanted wideband trunk group number and enter the new wideband trunk group number, or press **CLEAR FIELD** and enter the new wideband trunk group number.

   You can use the schedule option only with the **`display meas-selection wideband-trunk-group [schedule]`** command.

Wideband Trunk Group Measurement Selection field descriptions

Name	Description
Trunk Group Numbers	The trunk groups to be studied hourly for wideband activity.

Data analysis guidelines for trunk groups

The wideband summary and hourly reports closely parallel the other trunk group summary and hourly reports. That is, visually they contain similar fields, except there is no queuing for wideband calls, so queuing fields are eliminated. Logically, the difference is that only the wideband reports isolate wideband call usage. If the trunk group processes ordinary narrowband calls during the measurement period, the narrowband measurements are *not* included in the wideband traffic measurements.

With the overall trunk group measurements and the wideband trunk group measurements, you have data for all usage and can calculate the narrowband call usage and counts by subtracting the wideband measurement from the overall measurements.

Summary report

The Wideband Trunk Group Summary report provides data essential for monitoring trunk groups supporting wideband service to assure they provide the expected level of service. The report is modeled after the Trunk Group Summary report but only trunk groups administered to provide wideband service are reported. The report does not display the other trunk groups. If a trunk group is administered to provide wideband service but had no wideband traffic during the measurement period, then zeros are shown on the report.

The yesterday-peak and today-peak reports list the wideband call activity for the peak wideband traffic hour. That is, the measurements shown are those that occurred during the hour in which the Total Usage for wideband service for that trunk group was highest. This is not necessarily the same peak hour as the peak hour for total usage as shown on the overall Trunk Group Summary report. Note that on the Wideband Trunk Group Summary report, the measurements for different trunk groups are not necessarily time-coincident with each other.

Caution:

The yesterday-peak and today-peak reports cannot be used to determine narrowband usage except in cases where the peak traffic hour for total usage (shown on the overall report) is the same as the peak hour for wideband usage (shown on this report) for a particular trunk group in the same measurement period. In this case alone, narrowband measurements for

that trunk group may be determined by subtracting the wideband measurements from the measurements shown on the overall report for the same trunk group.

Caution:

For trunk groups where the peak hour is different on the overall summary report from that shown on the wideband summary report, the narrowband usage must be determined by using the measurements on the Wideband Trunk Group Hourly report. In addition, if there were calls blocked at that time, the group should be studied using both the overall and wideband hourly reports to determine whether wideband calls were blocked.

Hourly report

The Wideband Trunk Group Hourly report shows the wideband call activity for each hour in the current 24-hour period. A separate report is generated for each measured wideband trunk group.

For trunk groups having mixed wideband and narrowband traffic, it is best to administer the trunk group. Both the overall and wideband hourly trunk group reports must display the trunk group. In this way a complete picture of usage and blockages is possible. For these trunk groups, direct comparisons can be made between measurements for the same hour on the overall and wideband reports. For example, if the hour beginning at 1:00 p.m. is examined for the same trunk group on both the overall hourly report and on the wideband hourly report, the narrowband usage measurements may be determined by subtracting the wideband data from the overall data. This can be done for each hour in the 24-hour period.

Note that some measurements, such as trunks-out-service and all-trunks-busy, are identical for the same hour on both the wideband and the overall reports for the same trunk group.

Performance considerations

Although Communication Manager supports wideband transmission for from two to 30 channels, the most common transmissions are at the H channel rates:

H Rate	Speed	# 64-Kbps Channels
H0	384 Kbps	6
H11	1.536 Mbps	24
H12	1.920 Mbps	30

When considering how many trunks to put in a trunk group that supports wideband call activity, remember:

- Every wideband call must be carried on a single DS1 interface. That is, when the bandwidth on one interface is insufficient for the call, another interface must be found that can accommodate the entire call. The bandwidth for the call cannot be spread over 2 or more interfaces. The chances for finding enough bandwidth on a single interface are far less than finding the bandwidth on several interfaces.
- Some far end switches (for example, the 4ESS) require the bandwidth for a call be contiguous. That is, not only must the call be carried over a single interface, but the channels over which the call is carried must be consecutively numbered. The chances for finding contiguous bandwidth are far less than for finding the bandwidth on a single interface alone.

To increase the chances of providing the bandwidth a wideband call requires, either put as many trunks as possible in the trunk groups you have designated for wideband call usage or put as many trunk groups as possible in the wideband routing pattern.

Chapter 5: Processor occupancy reports

About processor occupancy reports

The term *processor occupancy* (or simply, *occupancy*) is defined as the percentage of time the configuration's processor is busy performing call processing tasks, maintenance tasks, administration tasks, and operating system tasks. As a contrast, the percentage of time the processor is not used is referred to as *idle occupancy*.

In Communication Manager, processor occupancy, also known as server occupancy, consists of three main categories: static occupancy (ST), call processing occupancy (CP), and system management occupancy (SM).

Static occupancy: The processing required for keep-alive operations. Despite the nomenclature, the value of static occupancy in a List Measurements report can slightly vary.

Call processing occupancy: The processing required for setting up, maintaining, and tearing down calls, and for executing vectoring operations in call centers. The processor occupancy limit of Communication Manager Release 6.3.6 and later for H.323 registrations (RAS) is 65%.

System management occupancy: The processing required for maintaining the sanity of the system, including periodic maintenance and audits. Due to the bursty nature of system management functions, a fixed portion of the overall processing capacity is allocated to system management for design purposes. For all Communication Manager servers, 27% of the total system processing capacity is assigned for system management. The 27% occupancy is not dedicated to system management but only used for traffic configuration calculations.

The primary objectives of the processor occupancy reports are:

- To provide a summary of your usage data so that you can determine the processor occupancy and available capacity.
- To display, on a per-time interval basis, the processor occupancy and associated calling rates to facilitate the isolation of certain customer-reported problems.

You can use four different processor occupancy commands:

- **`list measurements occupancy summary`**
- **`list measurements occupancy last-hour`**
- **`list measurements occupancy busiest-intervals`**
- **`list measurements communications-links`**

The first three commands provide processor occupancy data and associated call traffic for different measurement intervals. The last command provides a picture of the traffic data generated on each processor interface link.

You can execute the processor occupancy commands from all valid user logins. However, for most systems, the two primary users are the telecommunications manager of the customers and the service technician.

The type of application can significantly affect processor occupancy. For the purpose of determining processor occupancy, your calling traffic is defined as one of the following applications:

- General Business: The majority of applications. General Business does not include the impact of the Inbound Call Management (ICM)/Call Management System (CMS) or CallVisor Adjunct Switch Applications Interface (ASAI)/Outbound Call Management (OCM) applications.
- ICM/Avaya Aura® CM S: Only includes the impact due to the ICM traffic using the ACD, Call Vectoring, CallVisor ASAI, and CMS features.
- CallVisor ASAI/OCM: Only includes the impact due to ASAI/OCM applications.

Note:

A particular configuration can have a traffic load that consists of any combination of the three defined applications.

Depending on your specific application, the calling traffic can be simple or complex. A simple calling traffic includes a single switch with only CO trunks and analog sets. A complex calling traffic includes a switch in a multinode private network that uses both DCS and ISDN features and is configured with digital sets. You can define the traffic range in the following four call categories:

- Intercom (INTCOM): Locally made and completed station-to-station calls.
- Incoming (INC): Calls which come into the switch over trunks from a CO. CO, DID, FX, WATS, and ISDN-PRI with a public network service type are trunk types considered public network incoming.
- Outgoing (OUT): Calls which exit the switch on trunks that terminate in a CO. CO, WATS, FX, and ISDNPRI with a public network service type are trunk types considered public network outgoing.
- Private Network (PNET) :Incoming and outgoing calls made over private network trunks. Access, CPE, DMIBOS, RLT, Tandem, Tie, APLT, and ISDN-PRI with a private network service type are private network trunk types.

Your usage profile is defined as the percent mix of traffic from each of the four call categories.

Once the traffic application, usage profile, and certain feature use loading factors are determined you can then calculate the Busy Hour Call Capacity (BHCC). The BHCC is a

measure of the configuration's capacity and is defined as the maximum number of completed calls the configuration can support in an hour without degradation of service.

As a part of the RFP process, Avaya marketing can calculate the theoretical maximum BHCC for the specified application when provided with the following information:

- Description of your usage profile
- Description of the traffic application
- Certain feature use loading factors for the proposed configuration

Avaya marketing can now determine whether the proposed configuration can accommodate the traffic load. This number, the theoretical maximum BHCC, is an estimate and is referred to as the *predicted maximum BHCC*.

Summary command

The main function of this command is to answer the question, *How much of the system is being used*?

Use this commend to:

- Monitor resource usage
- Validate your usage profile, for example, once the configuration is installed and calling traffic is normal, use the summary reports to determine if the actual usage profile is the same as the estimated usage profile.
- Determine the idle occupancy and how much is available for growing the configuration.
- Determine the processor occupancy and call levels on an hourly basis for the last 24 hours.

Occupancy Summary Measurements report

Related topics:

Displaying the processor Occupancy Summary Measurements report on page 270
Occupancy Summary Measurements field descriptions on page 270

Displaying the processor Occupancy Summary Measurements report

Procedure

Type **`list measurements occupancy summary [schedule]`** and press `Enter`.

Result

Options: The schedule option is available for this command.

Occupancy Summary Measurements field descriptions

Name	Description
Meas Hour	Measurement hour. The starting time, using 24-hour clock of the hour, during which the data is recorded. Data is listed beginning with the most recently completed hour in the preceding 24-hour interval. For additional details, see the *Avaya Aura® Communication Manager Hardware Description and Reference.*
Meas Minute	Measured minute. (Last-Hour Report) The end-time of the 3-minute interval for which the measurement is taken. The data takes the form hh:mm, where “hh” is the hour and “mm” is the end-time for the 3-minute interval.
Date of Occurrence	Busiest-Interval report. The date and end-time of the 3-minute interval for which the data is collected. The data takes the form MM/dd/mm:hh, where “MM” is the month, “dd” is the day, “hh” is the hour, and “mm” is end of the 3-minute interval.
Stat Occ	Static occupancy. The percentage of occupancy used by high priority background processes in support of call processing, maintenance, and administration functions. Examples of this activity are high level sanity

Name	Description
	checks, system timing, polling of adjuncts, and operating system support. This also includes some call processing occupancy for BX.25 and ISDN-PRI traffic. **Note:** Static occupancy remains fairly consistent in an idle configuration. However, it increases as traffic is introduced into the system.
CP Occ	Call Processing occupancy. The percentage of occupancy used by call processing-level processes. The processing of CDR, DCS, ISDN, and other adjunct interfaces is also included in this level. Note that some occupancy due to BX.25 and ISDN-PRI call traffic is counted as static occupancy instead of CP Occ. **Note:** It is not desirable for any system to function at 100 percent processor occupancy. Rather, the CP Occ and Stat Occ fields should total no more than a maximum of 75 percent. By maintaining this 75 percent maximum limit, other system functions can be performed and bursts of caller activity can also be accommodated. Suggested actions: If the 75 percent maximum limit is exceeded, take one or more of the following steps to lower call processing occupancy: • If the users do not get a dial tone immediately, users must wait 10 to 15 seconds before going on-hook and off-hook again. • If the system is part of a private network and receives a large amount of traffic from another system in the private network, consider reconfiguring the network. • Check the administration translation and verify all digital sets, administered with display modules, actually have display modules. For sets without display modules, change the administration

Name	Description
	translations to indicate that the digital sets are without a display module. • Check the hardware error log for high levels of maintenance activity.
Sm Occ	System Management occupancy. The time taken by lower priority activities, such as administration and maintenance command processing, maintenance activity, error logging, and Light-Emitting Diode (LED) audits. For additional details, see the *Avaya Aura® Communication Manager Hardware Description and Reference.*
Idle Occ	Idle occupancy. The amount of time the processor is unused. Several factors drive down this number including the following: • A large offered load increases CP occupancy. • A switch with many stations and trunks requires a high level of background maintenance and increases SM occupancy. • Frequent demand testing or administration increases SM occupancy. These factors may reduce the idle occupancy to almost 0 percent during several 3-minute intervals. On a heavily loaded configuration with frequent demand testing, the idle occupancy may drop to low levels for longer periods (perhaps 1–2 hours). These situations are normal and do not indicate a problem with the configuration. However, a lightly-loaded configuration with few stations translated and little demand maintenance or administration should not experience long periods of low idle occupancy (less than 15 percent). If this is the case, a problem is likely.
Total Calls	Total calls. The total number of calls connected during the listed hour. Calls are counted in the time interval the calls are answered and not in the time interval the calls are dropped. Therefore, a call that starts in one time interval and ends in another is

Name	Description
	counted only in the time interval where it originates.
Tandem Calls	Tandem calls. The number of trunk-to-trunk calls connected during the last hour.
Total Conn	Total connections. The number of call attempts made during the measurement interval. The following occurrences count as an attempt: • A user lifts the station handset and hangs up before dialing any digits (off-hooks). • A user lifts the station handset, dials the destination number, but the far end is busy, and the user hangs up (no answer). • A user lifts the station handset, dials the destination number, the far end is busy. • A user places a call, and the dialed number answers. • A user adds a second party onto the call. • An incoming trunk seizure. • Maintenance requests an outgoing trunk be seized. • Tandem calls (either pnet or public network) result in 2 attempts, but only one total call. • AUDIX audits of message waiting lamps. • AUDIX Leave Word Calling activations. **Note:** Mathematically, the **Total Conn** field is the total of the **Intcom Atmpts**, **Inc Atmpts**, **Out Atmpts,** and **Pnet Atmpts** fields.
Intcom Atmpts	Intercom attempts. This field includes the sum of two types of calls. The first type is extension-to-extension calls on the same configuration. The second type is partially completed calls where a local extension goes off-hook and then hangs up before the call is answered. The second type of call includes includes both busy and unanswered calls.

Name	Description
Inc Atmpts	Incoming attempts. The number of incoming trunk seizures from public network facilities.
Out Atmpts	Outgoing attempts. The number of outgoing trunk seizures made from public network facilities.
Pnet Atmpts	Private network attempts. The number of incoming and outgoing seizures made over private network facilities. Note that a tandem call is counted as two private network attempts, since tandem includes both incoming and outgoing trunk seizures. **Note:** The determination of whether a call is over public network or over private network facilities depends on the trunk type. For ISDN-PRI facilities, the type of call also depends on the service type.

Last-hour command

The main function of the **last-hour** command is to:

- Provide a detailed view of the occupancy levels for the last-hour.
- Identify potential load related problems that may have occurred during the last hour.

Occupancy Last-Hour Measurements report

Related topics:

[Displaying the Occupancy Last-Hour Measurements report](#) on page 275
[Occupancy Last-Hour Measurements field descriptions](#) on page 275
[Using the last-hour report to resolve problems](#) on page 275

Displaying the Occupancy Last-Hour Measurements report

Procedure

Type **`list measurements occupancy last-hour [schedule]`** and press `Enter`.

Result

Options: The schedule option is available for this command.

Occupancy Last-Hour Measurements field descriptions

The fields on this report are the same as the summary report, but the data is calculated over a 3-minute time interval. The **Meas Minute** field represents the end of the time interval.

Using the last-hour report to resolve problems

About this task

Use the following list to identify some areas pursued, when you investigate a processor occupancy (load) related problem .

Procedure

1. Multiply the number in the **Total Calls** field by 20 for the identified 3-minute time interval or the time when the problem occurred.

   If the product exceeds the advertised BHCC of the configuration, the load for this time interval is the problem. If the product does not exceed the BHCC for the configuration, this load is not the problem.

2. Compare the number in the **Total Atmpts** field with the **Total Calls** field for the identified 3-minute time interval (the time when the problem occurred).

   If the number of attempts is significantly greater than the number of calls, a significant percent of the occupancy is due to call processing stimuli that do not result in completed calls.

3. Examine the hardware error log for an excessive amount of maintenance activity (for example, a high number of errors).

4. Refer to the list measurements communication links report to determine if any of the links are receiving an abnormal amount of traffic.

5. Check with the users to determine if a certain feature(s) is used heavily during the identified time interval.
6. Request the maintenance personnel to check the software error log.

Busiest-interval command

The main function of the **busiest-interval** command is to provide a long-term history report of potential performance-related problems.

Note:

This report provides a collection of the 20 busiest 3-minute intervals within the last two months. Therefore, this command is most useful to the service technician for investigating habitual performance problems or those problems not reported exactly when they occurred.

Occupancy Busiest 3-Minute-Intervals Measurements report

Related topics:

Displaying the Occupancy Busiest 3-Minute Intervals Measurements report on page 276
Occupancy Busiest 3-Minute Intervals Measurements field descriptions on page 277
Using the busiest-interval report to resolve problems on page 277

Displaying the Occupancy Busiest 3-Minute Intervals Measurements report

Procedure

Type **list measurements occupancy busiest-intervals [schedule]** and press Enter.

Result

Options: The schedule option is available for this command.

Occupancy Busiest 3-Minute Intervals Measurements field descriptions

A typical output for the Occupancy Busiest 3-Minute Intervals Measurements report displays the requested time and date in the upper right side of the report. The **Date of Occurrence** field identifies the month, day, and time of day for 20 of the busiest intervals (that is, the sum of Stat Occ + CP Occ).

All other fields are described in Occupancy Summary Measurements report on page 269.

Note:

The fields on this report are the same as on the summary report. However, the data is calculated over 3-minute intervals rather than 1-hour intervals.

Using the busiest-interval report to resolve problems

About this task

The following list identifies some areas that may be pursued when investigating a problem that is believed to be processor occupancy (load) related.

Procedure

1. Multiply the number in the Total Calls field by 20 for the identified 3-minute time interval (the time when the problem occurred).

   If the product exceeds the advertised BHCC of the configuration, it is the load for this time interval causing the problem. If the product does not exceed the BHCC for the configuration, this load is not the problem.

2. Compare the number in the **Total Atmpts** field with the **Total Calls** field for the identified 3-minute time interval (the time when the problem occurred).

   If the number of attempts is significantly greater than the number of calls, a significant percent of the occupancy is due to processing off-hook and on-hook stimuli that do not result in a completed call.

3. Examine the hardware error log for an excessive amount of maintenance activity (for example, a high number of errors).

4. Refer to the list measurements communications-links report to determine if any of the links are receiving an abnormal amount of traffic.

5. Check with the users to determine if a certain feature(s) is used heavily during the identified time interval.
6. Refer the problem to maintenance personnel with the suggestion they check the software error log.

Result

After a serious performance problem is detected and corrected, use the **clear measurements occupancy busiest-intervals** command and clear the log of busiest entries. You can then focus on current performance problems.

Note:

You must only use the **clear measurements occupancy busiest-intervals** command to clear data from resolved problems.

Communications links command

Using the **communications links** command, you can:

- Obtain a report that facilitates the monitoring of traffic over the processor interface links.
- Determine if it is necessary to perform load balancing.
- Identify defective processor interface links.

Note:

The three processor occupancy commands described earlier may (depending upon the application) indicate the configuration is running at capacity, in keeping with user perceptions. However, these commands, with the exception of pointing to a call overload, do not provide any extra information as to why the configuration is running at capacity. This command provides additional insight into how the processor interface links affect occupancy, for example, link overload, link transmission problems, and so on.

Communication Link Measurements report

Related topics:

Displaying the processor occupancy Communication Link Measurements report on page 279

Communication Link Measurements field descriptions on page 279

Displaying the processor occupancy Communication Link Measurements report

Procedure

Type `list measurements communications-links x [schedule]`, where *x* is *1-8*, *9-16*, *17-24*, *25-32*, or *33*.

Communication Link Measurements field descriptions

The processor occupancy Communication Link Measurements reports for each of your applications varies significantly since a particular link on one configuration may serve a different function than the same link for another configuration. Furthermore, what is considered to be normal link traffic for one service, for example, DCS, may vary widely from what is considered to be normal link traffic for another service, for example, CMS. Therefore, you must obtain a printed report of what is deemed to be normal traffic for each configuration and use that report for comparison purposes.

This report is of significant value in determining the long term impact processor link traffic has on processor occupancy. You can also use the report to identify certain types of link failure. However, since the report summarizes data at 1-hour time intervals, some types of intermittent problems are not easily recognized with this report. You can more easily identify intermittent transmission problems by reviewing the software error log.

Name	Description
Meas Hour	Measurement hour. The starting time (using 24-hour clock) of the hour during which the data is recorded. Data is listed beginning with the most recently completed hour and extending back for 24-hour intervals.
Link #	Link number. The links are identified by numbers 1 through 8, 9 through 16, 17 through 24, or 25. The numbers in each column represent the number of messages traversing the link. Once the system establishes a link and the traffic begins flowing over the link, the system counts the messages automatically and needs no command .

Mapping links to applications

Related topics:

Displaying the applications running on the links on page 280
Interface Links field descriptions on page 280
Data analysis guidelines on page 281
Analyzing the data on page 281

Displaying the applications running on the links

Procedure

Type `display communication-interface links`, and press Enter.

Interface Links field descriptions

Name	Description
Link	Indicates the interface link number that connects to another node in a DCS network, a message server, CMS, ISDN gateway, or AUDIX. Interface links always terminate on a port in a PGATE circuit pack for R5r and later configurations or on the PI circuit pack for R5si configurations
Enable	Indicates whether the link is enabled.
Est Conn	Establish connection. Displays a `y` when the system is responsible for any part of the call setup required for the link between the system and the far-end data module.
Ext	Extension. Data extension assigned on the Processor Interface Data Module screen. If the data module has not been administered, this field is blank.

Name	Description
Type	Displays the protocol type that is to be established on the link. Valid entries are BX25 and isdn.
Destination Number	Displays either external, switched, TAC, or eia if the system is involved in establishing any part of the connection.
DTE DCE	Specifies either DTE or DCE to define the type of interface. This field only contains information if the **Type** field is BX25. If one endpoint of a link is DTE, then the other must be DCE, and vice-versa.
Conn Mod.	Connected Data Module. This is the data module extension to which the link connects.
Name	Displays the 15-character name for the link. The system uses this field for identification purposes only. You can use the name to identify the destination computer.

Data analysis guidelines

The following guidelines are intended to show an easy method for determining whether currently-reported data is acceptable. These guidelines represent the minimum you should do to verify the recorded measurement values are consistent with expected and historic values. Perform additional checks as necessary.

To check the acceptability of hourly data, verify the system clock was not changed during the measurement hour. If the system clock was changed, the **Minutes** field displays double asterisks (for example,11**).

During a partial system reset (for example, 1 or 2 or Cold 1 or Cold 2) the measurement data is retained for the affected time interval. However, during a full system reset (for example, 3, 4, or 5) the measurement data is not retained for the affected time interval.

Analyzing the data

Before you begin

Before you record the data, review the day or week that you select to record data from and ensure that the following conditions are met:

- The peak hour of the day is not the result of an abnormality. For example, caused by a snow storm. If you determine the peak hour is the result of an abnormality, ignore the data of that day.
- The weeks must not be times of slack business activity.
- The weeks must not be four consecutive weeks.
- The weeks must be from two or more months of normal business activity.

About this task

Use the summary report to collect measurement data and calculate the measured Busy Hour Call Completions (BHCC).

Procedure

1. Record the data for the identified peak hour in the Processor Occupancy Summary Data worksheet. For more information about worksheets, see Blank worksheets on page 301.

   Processor Occupancy Summary Data worksheet on page 306 provides space to record seven-day-per-week data. If your application is a five-day operation, you must record the data only for five days from Monday through Friday. When you calculate the average of the data, ensure that you only divide by the number of days that data was actually recorded, for example, 20 or 28.

2. Calculate the column averages and record the averages in the appropriate row and column at the bottom of the worksheet.

   To calculate the processor occupancy:

3. Verify if you can increase the Processing Occupancy further. Calculate the sum of the **Call Processing Occupancy** and **Static Occupancy**.
   - If the sum is less than 70 percent, proceed with step 4.
   - If the sum is greater than 70 percent, do not go to Step 4 because you cannot increase the Processing Occupancy further.
4. Calculate the usage profile using the four-week average data that you obtained from your Worksheet 5.

$$\%\ INTCOM = \frac{Int\ Atmpt}{Total\ Atmpt} \times 100$$

$$\%\ INC = \frac{Inc\ Atmpt}{Total\ Atmpt} \times 100$$

$$\%\ OUT = \frac{Out\ Atmpt}{Total\ Atmpt} \times 100$$

$$\%\ PNET = \frac{Pnet\ Atmpt - Tandem\ Calls}{Total\ Atmpt} \times 100$$

5. Determine whether the traffic application is ICM/Call Management System or CallVisor ASAI/OCM.

   You can determine traffic application type based on the type of business served by the configuration, the percentages of incoming and outgoing traffic, and personal knowledge of features in use.

   - A General Business application has a more even distribution of traffic in terms of incoming, outgoing, and intercom traffic.
   - An ICM/Call Management System application has a high percentage of incoming calls and also provides features that are specific to ACD or Call Vectoring. Some of these include agent and trunk tracking capability (for example, Call Management System or BCMC), recurring announcements.

   If the configuration supports more than one traffic application (for example, ICM/ Call Management System as the primary and General Business as the secondary), then the processor occupancy required for the primary application must be determined first. The remainder is available for the secondary application.

   Note:

   This document describes the method for calculating the BHCC for a simple General Business traffic application. The configurations that provide the DCS, Call Management System, BCMS, and/or ISDN-PRI feature(s) are termed complex. You must consult the Design Center to calculate their BHCC. All ICM (ACD and Call Vectoring), ASAI/OCM. Vectoring and interflow/traffic applications are also termed complex and are currently only evaluated by the Design Center. For more information, contact your Account Team.

6. Determine the maximum number of calls the configuration should be able to complete in one hour.

   To determine the maximum number of calls, see the configuration guidelines.

7. Determine the normal calling rate for the given level of occupancy.

   a. Calculate the number of calls the configuration completes for a given level of occupancy. This number is referred to as Calls Predicted

   $$Calls\ Predicted = \frac{Static\ Occ + CP\ Occ}{70} \times BHCC$$

   The divisor, 70, is the constant from Step 3 and refers to the percentage of the processor used by call processing. The variable BHCC is the value you obtained in Step 6.

b. Compare the value in the **Calls Predicted** field with the four-week average value in the **Total Calls** field on the worksheet.

$$Calls\ Predicted\ <\ Total\ Calls$$

or

$$Calls\ Predicted\ >\ Total\ Calls$$

- If **Calls Predicted** are less than **Total Calls**, then either you have a low feature usage rate or the system is completing more than 70 percent of calls. Therefore, if additional capacity is used in the same way, the following predictions should provide reliable results.
- If **Calls Predicted** are greater than **Total Calls**, then either you have a high feature usage rate or the system is completing fewer than 70 percent of calls. Therefore, you must take care while deciding how many additional calls can be supported.
- If **Calls Predicted** are equal or approximately equal to the **Total Calls**, then you are using the configuration in a typical manner.

8. Determine the number of additional calls the configuration can complete. Use the following equation to calculate the number of additional calls:

$$Number\ of\ Additional\ Calls\ =$$

$$\frac{Total\ Calls\ (4\ Week\ Avg)}{Static\ Occ\ +\ CP\ Occ}\ \times\ (Idle\ Occ\ -\ 15)$$

9. Determine the number of additional extensions that can be added.

$$Additional\ Extensions\ =\ \frac{Number\ of\ Additional\ Calls}{Average\ Number\ of\ Calls\ per\ Extension}$$

Note:

The **Average Number of Calls per Extension** depends on the traffic application and other customer-specific operating techniques. If you do not know this value, use the default value for General Business traffic application, 4.05.

Chapter 6: Security violations reports

Security violation reports show attempts to use station security codes, authorization codes, and remote access barrier codes. Security violation reports comprise a summary report and three status reports.

Security Violations Summary report

The system generates a Security Violations Summary report which displays:

- valid and invalid attempts to access the system
- security violations in each of the following categories measured
  - authorization code
  - barrier code
  - station security code

Related topics:

Displaying the summary report on page 285
Reset all counters of the Security Violations Summary report on page 286
Security Violations Summary field descriptions on page 286

Displaying the summary report

Procedure

Type `list measurements security-violations summary [schedule]` and press `Enter`.

Use the schedule option to print the report at a later time.

The system displays the Security Violations Summary report.

Reset all counters of the Security Violations Summary report

About this task

The Security Violations Summary report accumulates data and the report overflows. Therefore, review and clear the data at least once a month.

Procedure

Type `clear measurements security-violations` and press `Enter`.
The system resets all counters of the Security Violations Summary report to zero.

Security Violations Summary field descriptions

The table describes the data presented in the Security Violations Summary report.

Name	Description
Counted Since	The last time you cleared the counts and the counts started accumulating again or the time when the system is initialized.
Barrier Codes	The total number of times a user entered a valid or invalid remote access barrier code, and the number of resulting security violations. Barrier codes are used with remote access trunks. An inexplicable, significant increase in valid barrier code use could indicate the barrier code has been compromised. A marked increase in this number of invalid codes may indicate someone is attempting to break into your system. If you have just administered a new barrier code, or if a barrier code has expired recently, the barrier code may indicate people are making honest mistakes. Delete or change the barrier code if you suspect it has been compromised.
Station Security Code Origination/ Total	The number of calls originating from either stations or trunks that generated valid or invalid station security codes, the total number of such calls, and the number of resulting security violations.

Name	Description
	A dramatic increase in the number of either valid or invalid attempts may be cause for alarm. The history log displays these alarms if you do not turn off the recording of TTI/PSA events. If usage does not seem legitimate, change the security codes or classes of service or both.
AuthorizationCodes	The number of calls, by origination, that generated valid or invalid authorization codes, the total number of such calls, and the number of resulting security violations. Calls are monitored based on the following origination types: • Station • Trunk (other than remote access) • Remote Access • Attd (Attendant) If valid authorization code usage increases dramatically, the reason might be: Someone obtained valid codes. A number of new, legitimate users have come onto the system. If invalid authorization code usage increases dramatically, the reason might be : Someone tried breaking into your system. However, a legitimate explanation may be that authorization codes have recently been changed and users are making some honest mistakes. If you suspect authorization codes have been compromised, change them.
Total	Measurements totaled for all the above port types.

Security violations status reports

The security violations reports provide current status information for login, remote access (barrier code), or authorization code or station security code violation attempts. The data displayed in these reports is updated every 30 seconds. A total of 16 entries are maintained for each type of violation. The oldest information is overwritten by new entries at each 30-second update.

Security violations status reports include:

- Security Violations Status - Security Violations
- Security Violations Status - Remote Access Barrier Code Violations
- Security Violations Status - Authorizations Code Violations
- Security Violations Status - Station Security Code Violations

Related topics:

Security Violations Status - Remote Access Barrier Code Violations field descriptions on page 288
Security Violations Status - Authorization Code Violations field descriptions on page 289
Security Violations Status - Station Security Code Violations field descriptions on page 290

Security Violations Status - Remote Access Barrier Code Violations field descriptions

Field name	Description
Date	The date the attempt occurred.
Time	The time the attempt occurred.
TG No	Trunk group number. The number of the remote access trunk group over which the barrier code is sent.
Mbr	Trunk group member. The number of the remote access trunk group member over which the barrier code is sent.
Ext	Extension. The extension used to interface with the Remote Access feature.
Bar-Cd	Barrier code. The incorrect barrier code that resulted in the invalid attempt.
CLI/ANI	Calling Line Identifier (CLI) or Automatic Number Identification (ANI). The calling line identifier or automatic number identification, when available on the incoming message, of the party making the invalid attempt.

Security Violations Status - Authorization Code Violations field descriptions

Name	Description
Date	The date the attempt occurred.
Time	The time the attempt occurred.
Originator	The type of resource from which the invalid access attempt originated. Originator types include: • station • remote access (when the invalid authorization code is associated with an attempt to invoke the Remote Access feature) • attendant
Auth-Cd	Authorization code. The invalid authorization code entered.
TG No	Trunk group number. The trunk group number of the trunk where the attempt originated. The system displays the trunk group number only when the originator type is “trunk” or “remote access” and an invalid authorization code is entered.
Mbr	Trunk group member. The number of the trunk in the trunk group where the attempt originated.
Bar-Cd	Barrier code. The valid barrier code entered with the invalid authorization code. The system displays the barrier code only when an authorization code is required to invoke Remote Access, following entry of the barrier code.
Ext	Extension. The extension associated with the station or attendant from where the call originated. The system displays the extension only when authorization code is entered from the station or attendant console.
CLI/ANI	Calling Line Identifier (CLI) /Automatic Number Identification (ANI). The calling line

Name	Description
	identifier or automatic number identification, when available on the incoming message, of the party making the invalid attempt.

Security Violations Status - Station Security Code Violations field descriptions

Name	Description
Date	The date the attempt occurred.
Time	The time the attempt occurred.
TG No	Trunk group number. The trunk group number associated with the trunk where the attempt originated.
Mbr	Trunk group member. The trunk group member number associated with the trunk where the attempt originated.
Port/Ext	Port/extension. The port or extension associated with the station or attendant originating the call.
FAC	Feature Access Code. The feature access code dialed that required a station security code.
Dialed Digits	The digits the caller dialed when making this invalid attempt. With the dialed digits, you can judge whether the caller is actually trying to break into the system or the caller is a legitimate user making typographical mistakes.

Chapter 7: History reports

This chapter describes the History (recent changes) and Malicious Call Trace History reports.

You can view a History report of the most recent administration and maintenance changes. The History report also lists each time a user logs in or off the system. This report is used for diagnostic, information, or security purposes.

The system maintains a log in a software buffer of the most recent administration and maintenance commands. This log is called the transaction log. The system saves only those commands in the transaction log that affect data and are entered successfully.

The transaction log displays as the History report when you enter the **list history** command at the management terminal or a remote terminal. This report can be generated by any login with display administration and maintenance-data permissions.

You can also view a Malicious Call Trace History report showing all session establishment and rejection events associated with users accessing the system administration and maintenance interface.

The system displays or prints the Access Security Gateway Session History report when you enter the **list asg-history** or **list asg-history [print/schedule]** command. This report can only be generated by a login with the super-user permissions.

Data commands

With the exception of login and logoff, the transaction log maintains only those administration and maintenance commands that change the data state associated with any object and qualifier.

For example, the **list change station 3600** command changes the state of the translation data and so is classified as a data command and entered in the log. However, the command **display station 3600** does not change the state of the translation data and is not entered in the log.

The following commands are data commands that are saved in the transaction log:

- **add, change, remove, duplicate**
- **backup**
- recycle
- refresh

- **busyout, release**
- **cancel**
- **clear**
- **configure**
- **enable, disable**
- **format**
- **login/logoff**
- **mark**
- restart
- save
- set, reset
- start
- test
- upgrade
- wp (write physical)

The following commands are not classified as data commands and are not saved in the transaction log:

- **copy**
- **download**
- **list, display, status**
- **get**
- **load, restore**
- **monitor**
- **rp (read physical**
- **upload**

History report

The History report contains associated data saved in the transaction log for every data command. This data includes:

- Date and time
- Port
- Login
- Action, object, and qualifier

Note:

If the **Log IP Registrations and events** field is enabled on the Logging-levels screen, the system records the following events in the history log:

- ip registration
- ip-a H.323 association or registration
- ip-u H.323 unregistration
- ip-d H.323 registration attempt denied
- psa-a - psa associate
- psa-d - psa disassociate
- tti-m - tti merge
- tti-s - tti separate
- actr-a - actr associate
- actr-d - actr denied
- actr-u - actr disassociate

The History report displays or prints data commands in last in, first out (LIFO) order.

Related topics:

Parsing capabilities for the History report on page 293
Displaying the History report on page 294
History field descriptions on page 294

Parsing capabilities for the History report

The history report provides details about every data command. You can use parsing options to limit the data returned in this report. To display these options, enter the command **`list history`** and click `HELP`.

The following parsing options available:

Option	Description
date	Specify the month (MM) or day (MM/DD) for which you require the history data.
time	Specify the hour (HH) or minute (HH/MM) for which you require the history data.
login	Specify the login for which you require the history data.
action	Specify the command action (the first word of the command string) for which you want to display history data.

Option	Description
	To view the list of available command actions, click `HELP` or press F5 on the command line.
object	Specify the command object for which you require the history data.
qualifier	Specify the command qualifier for which you require the history data.

To limit the data displayed in the history report, enter the command `list history <parser>`. If applicable, provide the format for the data. The report displays only the data for the specified parsers.

You can include multiple parsers but only a single instance of any parser. For example, you can parse for date, time, and login. However, you cannot parse for date, time, and two different logins.

Displaying the History report

Procedure

Type `list history`, and press Enter.

History field descriptions

Field	Description
Date of Loaded Translation	The time and date when you save a translation. When you save the translation, the system logs the time and date of the save action. Whenever you reboot the system, the system loads the transaction log and includes the time and date in the history report.
Date	The date of the administration and maintenance commands. The format of the date is mm/dd.
Time	The time of the administration and maintenance commands. The format of the date is mm/dd.

Field	Description
Port	The type of port to which the system is connected when you run the **`list history`** command. For example, • MGR1: Direct system access port connection • INADS : Dial up port • EPN: Expansion Port Network connection • NET: Network Controller incoming/ outgoing system access port • TELEPHONE: local extension • SYSAM-LCL: Direct system access port connection • SYSAM-RMT: Dial up port • MAINT: Maintenance board RS-232 connection • SYS-PORT: Incoming/outgoing system access port • TELEPHONE: Local extension
Login	The system login of the user entering the data command. For example, • actr for ACTR moves • cta for Customer Telephone Activation (CTA) transactions • psa for Personal Station Activation (PSA) transactions • tti for Terminal Translation Initialization (TTI) transactions • ip-a or ip-u for IP registrations and events • pms for Property Management System (PMS) events • ad for Abbreviated Dialing events • reboot for system reboot • chgsta when the Enhanced Call Forwarding feature is administered
Action	The action part of the command, specifying the operation that was performed.

Field	Description
	For example, the system displays: • cha when the Enhanced Call Forwarding feature is administered. • logn when a user logs in to the System Access Terminal (SAT) interface • rese when a user runs the reset command • logf when a user logs out of the SAT interface
Object	The object of the command. If the object is multiple words in length, the system displays only the first word in the object field.
Qualifier	The characteristics of the Action/Object pair. This field is truncated after 31 characters.

Access Security Gateway Session History report

The Access Security Gateway Session History report logs all session establishment and rejection events associated with users accessing the system administration and maintenance interface through Access Security Gateway (ASG). This report emulates the data provided in the History report and also contains information on whether ASG accepted or rejected the session, and if rejected, the reason for the rejection.

To gain access to this report, on the System-Parameters Customer-Options screen, ensure that you set the **Access Security Gateway (ASG)** field to y.

Related topics:

Displaying the Access Security Gateway Session History report on page 296
Access Security Gateway Session History field descriptions on page 297

Displaying the Access Security Gateway Session History report

About this task

Type **`list asg-history`** and press `RETURN`.

To print the Access Security Gateway Session History report:

Type **`list asg-history [print/schedule]`** and press `RETURN`.

Options: The schedule option is available with this command.

Access Security Gateway Session History field descriptions

Name	Description
Date	Indicates the date of the session establishment or rejection. The date is displayed in the mm/dd format, where mm is the month and dd is the day.
Time	Indicates the time of the session establishment or rejection. The time is displayed in the hh:mm format, where hh is the hour and mm is the minute.
Port	Indicates the port mnemonic associated with the port on which the session was established or rejected. The port mnemonics for G3r systems are SYSAM-LCL, SYSAM-RMT, MAINT, and SYS-PORT. For G3si systems, they are MRG1, INADS, NET, and EPN.
Login	Indicates the alphanumeric login string entered by the user and associated with the session establishment or rejection.
Status	Indicates the code showing whether the session was established or rejected and, if rejected, the reason for the rejection. The following is a list of the possible status values: • AUTHENTICATED: User authentication and session establishment. • REJECT-BLOCK: User rejected because the Blocked field associated with the login ID is set to `y`. • REJECT-EXPIRE: User rejected because access restriction based on the Expiration Date criteria detected. • REJECT-INVALID: User rejected because the user-supplied login ID did not match any of the administered login IDs. • REJECT-RESPONSE: User rejected because the user-supplied response to the system challenge was not valid. • REJECT-RESTRICT: User rejected because access restriction based on either

Name	Description
	the Day of Week or Time of Day criteria detected. • REJECT-SESSIONS: User rejected because access restriction based on the Number of Sessions criteria detected.

Malicious Call Trace History report

Using the Malicious Call Identification (MCID) feature, you can connect to an ETSI ISDN network and request the network to identify and record the source of an incoming call. If you are connected to a public ISDN that has the MCID feature enabled for you, then a Communication Manager server can notify the public network about the malicious call. The public ISDN uses one of the following protocols:

- ETSI: EN 300 130
- Australia: TPH1856

The MCT History form records in the **ISDN Notification** field whether the public ISDN was notified, and whether an acknowledgement was received. Recording a malicious call requires an Aux trunk, which can only be configured in a Port Network.

Related topics:

Displaying the Malicious Call Trace History report on page 298
Malicious Call Trace History field descriptions on page 299

Displaying the Malicious Call Trace History report

About this task

Type **`list mct-history`** and press `Enter`

Options: The schedule option is available with this command.

Malicious Call Trace History field descriptions

Name	Description
Date	Indicates the date of the session establishment or rejection. The date is displayed in the mm/dd format, where mm = month and dd = day.
Time	Indicates the time of the session establishment or rejection. The time is displayed in the hh:mm format, where hh = hour and mm = minute.
Contr Ext	Indicates the extension of the station that took control of the malicious call.
Active Ext	Indicates the extension of the station that activated MCT. This may or may not be the station that received the malicious call.
Recorder Port	Indicates the port on which the session was recorded. A port enables recording of a malicious call.
Redir From	If the call was redirected or transferred, this field indicates the extension of the station from which the call arrived at the Activating Extension.
Actual Party	Indicates the extension of the station that received the malicious call.
Parties on Call	Indicates the caller IDs or extensions of the other parties on the call.
ISDN Notification	Indicates whether the public ISDN was notified, and whether an acknowledgement was received.

Chapter 8: Blank worksheets

Worksheets

Use the worksheets to collect data for the purpose of historical comparison. To obtain information on how to use these forms, see Data analysis guidelines for trunk groups on page 263 for the corresponding measurements report. Make as many copies of these forms as you need for your data collection and analysis.

Related topics:

Attendant Group Data worksheet on page 302
ARS/AAR Routing Pattern Data worksheet on page 303
Hunt Group Data worksheet on page 304
Trunk Group Data worksheet on page 305
Wideband Trunk Group Data worksheet on page 306
Processor Occupancy Summary Data worksheet on page 307

Attendant Group Data worksheet

ATTENDANT GROUP DATA WORKSHEET

System ID: **Location:**
Group Size:

Day of Week	Report Type*	Meas Hour	Calls Ans	Calls Aband	Calls Queued	Calls H-Abd	Calls Held	Time Avail	Time Talk	Time Held	Time Abd	Speed of Answer	Week No. and Date
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													

* Report Type: LH for last hour, TP for today's peak, or YP for yesterday's peak.

ARS/AAR Routing Pattern Data worksheet

ARS/AAR ROUTING PATTERN DATA WORKSHEET

System ID: **Location:** **Report Type = Yesterday ***

Route-Pattern No: **Queue Size:**

Day of Week	Total Calls Offered	Calls Carried	Calls Blocked	Calls Queued	Queue Overflow	% of Calls Carried						Week No. and Date
						Pref 1	Pref 2	Pref 3	Pref 4	Pref 5	Pref 6	
M												
T												
W												
T												
F												
S												
S												
M												
T												
W												
T												
F												
S												
S												
M												
T												
W												
T												
F												
S												
S												
M												
T												
W												
T												
F												
S												
S												

* Use ‘‘Yesterday’s report’’ for the full day route-pattern measurement.

Hunt Group Data worksheet

HUNT GROUP DATA WORKSHEET

System ID: **Location:** **Group Name:**
Group ID: **Group Size:** **Group Type:**
Queue Size:

Day of Week	Report Type*	Meas Hour	Total Usage	Calls Answered	Calls Abandoned	Calls Queued	Speed of Answer	Week No. and Date
M								
T								
W								
T								
F								
S								
S								
M								
T								
W								
T								
F								
S								
S								
M								
T								
W								
T								
F								
S								
S								
M								
T								
W								
T								
F								
S								
S								

* Report Type: LH for last hour, TP for today's peak, or YP for yesterday's peak

Trunk Group Data worksheet

TRUNK GROUP DATA WORKSHEET

System ID: **Location:** **Group Type:**
Group No: **Group Size:** **Group Dir:**
Queue Size:

Day of Week	Report Type*	Meas Hour	Total Usage	Total Seize	Inc. Seize	Grp Ovfl	Calls Qued	Que Ovfl	Que Abd	Out Serv	% ATB	% Out Blk	Week No. and Date
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													

* Report Type: LH for last hour, TP for today's peak, or YP for yesterday's peak

Wideband Trunk Group Data worksheet

WIDEBAND TRUNK GROUP DATA WORKSHEET

System ID:				**Location:**						**Service Type:**
Group No:				**Group Size:**						**Group Dir:**
Day of Week	Report Type*	Meas Hour	Total Usage	Total Seize	Inc. Seize	Grp Ovfl	Out Serv	% ATB	% Out Blk	Week No. and Date
M										
T										
W										
T										
F										
S										
S										
M										
T										
W										
T										
F										
S										
S										
M										
T										
W										
T										
F										
S										
S										
M										
T										
W										
T										
F										
S										
S										

* Report Type: LH for last hour, TP for today's peak, or YP for yesterday's peak

Comments? infodev@avaya.com

Processor Occupancy Summary Data worksheet

PROCESSOR OCCUPANCY SUMMARY DATA WORKSHEET

System ID: **Location:**

Day of Week	Peak Hour	Stat Occ	CP Occ	SM Occ	Idle Occ	Total Calls	Tandem Calls	Total ATMPT	INTCOM ATMPT	INC ATMPT	OUT ATMPT	PNET ATMPT	Week No. and Date
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
M													
T													
W													
T													
F													
S													
S													
4 Week Avg	NA												

''NA'' means that the field () should not be calculated. It is not applicable.

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