Administering Avaya Aura® Communication Manager Server Options

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Contents

Chapter 1: Introduction

Purpose

This document provides procedures for configuring Avaya Aura® Communication Manager as a feature server, an evolution server, a trunk gateway, or a combination feature server and trunk gateway. This document also provides a sample configuration for a network that uses Avaya Aura® Session Manager to connect Communication Manager as a feature server or an evolution server.

Intended audience

The primary audience for this document is:

- Avaya field technicians
- Technical support personnel
- Solution architects
- Implementation engineers
- Support personnel
- Technical support representatives
- Authorized Business Partners

Discontinued support for IP Server Interface (TN2312, commonly known as “IPSI”)

With Release 10.2, Communication Manager does not support the IP Server Interface (IPSI). As a result, access and functionality are removed. This means, the IPSI connected cabinets and gateways do not work with Communication Manager Release 10.2. Examples of IPSI connected cabinets and systems include G3cfs, G3csi, G3i, G3r, G3s, G3si, G3vs, G3x, G600, G650, MCC, SCC, CMC, IPSI, IP Server Interface, and IP port network.

Discontinued support also includes the TN8412, which previously paired with the TN8400 blade server. TN8412 was last supported with Communication Manager Release 5.x.

For more information, see the End of sale G650 document published on the Avaya Support website.

Chapter 2: Overview

You can configure Communication Manager as the feature server.

The Communication Manager supports Avaya 96xx series and J1xx series IP deskphones that are configured as SIP endpoints. The deskphones use the User Registration feature of Avaya Aura® Session Manager.

For more information about the supported servers and supported gateways, see *Avaya Aura® Communication Manager Hardware Description and Reference*.

Feature server

A feature server provides Communication Manager features to the SIP endpoints registered with Session Manager. The feature server uses the half-call model of IP Multimedia Subsystem (IMS).

The feature server supports full application sequencing.

The feature server has the following limitations:

- The feature server does not support routing of PSTN calls directly to ISDN trunks for IMS users. You must administer the dial plan to route all PSTN calls to Session Manager over the IMS trunk group.
- The feature server does not support traditional endpoints, such as DCP, H.323, ISDN, and analog.
- The feature server does not support call reconstruction.

Full-call model

The full-call model processes a call request in a single step and performs the origination and the termination phase without a break. The traditional Communication Manager server follows the full-call model.

Application sequencing works only when all servers support the half-call model. Therefore, do not provision other sequenced applications with the evolution server.

Application sequencing in the evolution server

The evolution server supports a limited form of application sequencing:

- Non-SIP users receive implicit application sequencing.
- SIP users receive explicit application sequencing with the following conditions:
  - Origination sequencing: The sequenced applications must be before Communication Manager in the sequence vector.
  - Termination sequencing: The sequenced applications must be after Communication Manager in the sequence vector.

Chapter 3: Communication Manager configured as a feature server or an evolution server

This section defines the connection and routing between Session Manager and Communication Manager configured as a:

- Feature server
- Evolution server

Prerequisites for administering feature server or evolution server

Procedure

1. Deploy Communication Manager.
2. Install the required Communication Manager patches by using the Solution Deployment Manager.
3. On Communication Manager SAT interface, run the **`add ip-int procr`** command, and enable interface .
4. Add the following resources:
   a. Media Gateway – Configure Media gateway mgc list and then add media gateway to Communication Manager using **`Add media-gateway x`** command
   b. Media-server – run **`Add media-server x`** command to add media server in Communication Manager
5. Install third-party trusted certificates using the Communication Manager SMI interface.

   For more information, see the “Certificate Management” chapter in *Administering Avaya Aura® Communication Manager*
6. Ensure that System Manager and Session Manager are active in the existing SIP routing deployment.

7. Configure the SSH client, such as PuTTy to gain access to the command line interface of the Communication Manager server.
8. Install and administer the Session Manager server.
9. Install the appropriate service packs if applicable.

Recommendations

- Use the adaptation modules only on the entry and exit points of the Avaya Aura® network. Do not use the modules on the interface to the sequenced applications.
- Use only existing public numbers. The number must always be Enterprise Canonical. Numbers without a public representation must be in the Private Long format to be Enterprise Canonical.
- Use Automatic Alternate Routing (AAR) or Automatic Routing Selection (ARS) to call the extensions on another Communication Manager.

Feature server or evolution server administration checklist

Use this checklist to administer Communication Manager as a feature server or an evolution server.

No.	Task	Link	✔
1	Administer the dial plan.	Administering the dial plan on page 19	
2	Add the feature access codes for AAR and ARS.	Administering feature access codes on page 20	
3	Add the appropriate SIP domain in the network region.	Administering an IP network region on page 20	
4	Assign a node name to the IP address of the security module of Session Manager.	Adding a node name on page 20	
5	Add a SIP signaling group.	Adding a SIP signaling group on page 21	
6	Add trunk groups for each Session Manager.	Adding a SIP trunk group on page 22	
7	Configure the appropriate route patterns.	Administering a route pattern on page 23	

Table continues…

No.	Task	Link	✔
8	Administer the uniform dial plan for non-SIP calls.	Administering the uniform dial plan on page 23	
9	Administer AAR.	Administering the AAR analysis table on page 24	
10	Administer ARS for non-SIP calls.	Administering the ARS analysis table on page 25	
11	Add the appropriate route pattern as the proxy route.	Administering the proxy route on page 26	
12	Administer the incoming call handling treatment.	Administering the incoming call handling treatment on page 26	
13	If applicable, add a Survivable Remote server.	Adding a Communication Manager Survivable Remote Processor on page 26	
14	Modify the public unknown numbering so that a deskphone displays a number in the E.164 format.	Administering the public or unknown numbering format on page 27	
15	If applicable, validate the minimum time of network stability for gateways to failback to Communication Manager when Communication Manager becomes available.	Validating the minimum time of network stability on page 28	
16	If applicable, validate the gateway recovery rule.	Validating the gateway recovery rule on page 29	
17	Save translations.	Saving translations on page 29	
18	Add a privileged administrator for System Manager.	Adding a privileged administrator account on page 31	
19	Administer Communication Manager as a managed element.	Creating a Communication Manager managed element on page 32	
20	Synchronize the Communication Manager data.	Synchronizing Communication Manager data on page 33	
21	Add the Communication Manager feature server or Communication Manager evolution server as a SIP Entity.	Adding a Communication Manager server as a SIP entity on page 33	
22	If adding Survivable Remote Session Manager, add as a SIP entity.	Adding a Branch Session Manager as a SIP entity on page 34	
23	Create entity links between Session Manager and Communication Manager.	Creating entity links on page 34	

Table continues…

No.	Task	Link	✔
24	Verify the connection between Session Manager and Communication Manager.	Checking the connections on page 35	
25	Administer Communication Manager as an application.	Administering Communication Manager as an application on page 35	
26	Administer Communication Manager in an application sequence.	Administering Communication Manager in an application sequence on page 36	
27	Add users.	Checklist for adding users on page 36	
28	Verify the users.	Verifying a new SIP user on page 40	
29	Test the calls between Session Manager and the Communication Manager feature server or evolution server.	Testing Session Manager and Communication Manager calls on page 41	

Chapter 4: Communication Manager configured as a trunk gateway

This section defines the connection and routing between Session Manager and Communication Manager configured as a trunk gateway.

Trunk gateway administration checklist

No.	Task	Link	✔
!	Assign a node name to the IP address of the security module of Session Manager.	Adding a node name on page 20	
2	Administer an IP network region in the SIP signaling group connected to Session Manager.	Administering an IP network region on page 20	
3	Add a non-IMS SIP signaling group.	Adding a SIP signaling group on page 21	
4	Add a SIP trunk group to the SIP signaling group.	Adding a SIP trunk group on page 22	
5	Administer the dial plan.	Administering the dial plan on page 19	
6	Administer the AAR analysis table.	Administering the AAR analysis table on page 24	
7	Add Communication Manager as a SIP entity.	Adding a Communication Manager server as a SIP entity on page 33	
8	Administer a routing policy with the trunk gateway as the destination.		
9	Administer the dial pattern that uses the routing policy defined earlier.		

Chapter 5: Communication Manager configured as a feature server and trunk gateway

This section defines the connection and routing between Communication Manager and Session Manager.

You must configure two SIP signaling groups between Communication Manager and Session Manager:

- A non-IMS signaling group to gain access to the trunk gateway.
- An IMS-enabled signaling group for connection to the feature server.

For IMS users, Communication Manager must route all calls to Session Manager. For example, Communication Manager routes an incoming public trunk call to an IMS user to Session Manager on a non-IMS SIP signaling group. The signaling group routes the call back to the Communication Manager trunk gateway by using the IMS-enabled signaling group connected to the feature server part of Communication Manager.

Feature server and trunk gateway administration checklist

No.	Task	Link	✔
1	Assign a node name to the IP address of the security module of Session Manager.	Adding a node name on page 20	
2	Administer an IP network region in the SIP signaling group connected to Session Manager.	Administering an IP network region on page 20	
3	Add an IMS-enabled SIP signaling group from the Communication Manager procr server to the Session Manager security module.	Adding a SIP signaling group on page 21	

Table continues…

No.	Task	Link	✔
4	Add a SIP trunk group to the SIP signaling group.	Adding a SIP trunk group on page 22	
5	Administer the dial plan to route the external numbers through AAR to the non-IMS signaling group and trunk to Session Manager.		
6	Administer Communication Manager on System Manager.	Adding a Communication Manager server as a SIP entity on page 33	
7	Add a non-IMS SIP signaling group and allow Incoming Dialog Loopbacks.	Adding a SIP signaling group on page 21	
8	Set up routing from the trunk gateway to the feature server.	Checklist for setting up routing from the trunk gateway to the feature server on page 29	
9	Set up routing from the feature server to the trunk gateway.	Checklist for setting up routing from the feature server to the trunk gateway on page 30	
10	Administer public numbering.	Public numbering on page 17	
11	Set up routing on System Manager.	Checklist for administering routing for the feature server and trunk gateway on System Manager on page 41	

Public numbering

Calls to the public network:

The call from the endpoint routes to the Communication Manager feature server, Session Manager, Communication Manager trunk gateway, and then to the public network.

Even though the feature server is administered for Private Enterprise Canonical numbers, you can change the P-Asserted-Identity (PAI) header to a public long number. To change the PAI header, select a public call type in the respective Route Pattern. For example, pubu in the **Call Type** field on the ARS DIGIT ANALYSIS TABLE screen.

To adapt the PAI header, use Incoming Call Handling Treatment (ICHT) on the Communication Manager trunk gateway or the number adaptation module in Session Manager. Ensure that you do not have overlaps with the entries for the called number.

Calls from the public network:

The call from the public network routes to the Communication Manager trunk gateway, Session Manager, Communication Manager feature server, Session Manager, and then to the endpoint.

In Session Manager, all public numbers must be international numbers with the leading plus (+) sign. The number adaptation module in Session Manager receives the national numbers from the public network and adapts the national numbers to international numbers on the SIP trunk.

Chapter 6: Administration procedures

Administration procedures on Communication Manager

Administering the dial plan

Procedure

1. On the Communication Manager SAT interface, type `change dialplan analysis`, and press `Enter`.

   The system displays the DIAL PLAN ANALYSIS TABLE screen.
2. In the **Dialed String** field, type a digit string for trunks.
3. In the **Total length** field, type the length of the digit string.
4. In the **Call Type** field, type the appropriate call type.

   For administering Communication Manager as a trunk gateway, type `aar`.
5. Save the changes.

   The following table specifies the values that you can enter in the fields.

Dialed String	Total length	Call Type	Reason
9	1	fac	Feature Access Code (FAC) for ARS or PSTN calling
*	4	dac	Trunk access code
*	2	fac	FAC for AAR feature
3	5	ext	SIP station extension
2, 4, 5, 6, 7	5	udp	Uniform Dial Plan (UDP) for Non-SIP extensions on a PBX connected to Session Manager

Administering feature access codes

Procedure

1. On the Communication Manager SAT interface, type `change feature-access-codes`, and press `Enter`.

   The system displays the FEATURE ACCESS CODE (FAC) screen.

2. In the **Auto Alternate Routing (AAR) Access Code** field, type the AAR access code.

   For example, `#83`.

3. In the **Auto Route Selection (ARS) - Access Code 1** field, type the ARS access code.

   For example, `9`.

4. Save the changes.

Administering an IP network region

About this task

Use this procedure to assign appropriate IP addresses to the node names. For more information about the administration of IP network regions, see *Administering Network Connectivity on Avaya Aura® Communication Manager*

Procedure

1. On the Communication Manager SAT interface, type `change ip-network-region x`, where *x* is an IP network region number, and press `Enter`.

   The system displays the IP NETWORK REGION screen.

2. In the **Authoritative Domain** field, type the domain name.

   For example, `MyCompany.com`.

3. In the **Name** field, type a descriptive name.

   For example, `Main_SM_NR`.

4. Save the changes.

Adding a node name

About this task

Use this procedure to define a node name for the IP address of the Session Manager security module. **procr** is the node name for the IP address of Communication Manager Processor Ethernet.

Procedure

1. On the Communication Manager SAT interface, type `change node-names ip`, and press `Enter`.

The system displays the IP NODE NAMES screen.

2. In the **Name** field, type a name for the IP address of the Session Manager security module.

   For example, `SM1HostName`.

3. In the **IP Address** field, type the IP address of the Session Manager security module.
4. Save the changes.

Adding a SIP signaling group

Procedure

1. On the Communication Manager SAT interface, type `add signaling-group` *`next`*, and press `Enter`.

   The system displays the SIGNALING GROUP screen.

2. Note the value of the **Group Number** field.
3. In the **Group Type** field, type `sip`.
4. In the **IMS Enabled** field, type one of the following:
   - Type `y` to configure Communication Manager as a feature server.
   - Type `n` to configure Communication Manager as an evolution server.
5. In the **Transport Method** field, type one of the following:
   - Type `tls` if the calls are secure calls.
   - Type `tcp` if the calls are not secure calls.
6. In the **Peer Detection Enabled** field, type `y`.

   Note:

   This setting results in Communication Manager and the connected SIP server exchanging messages. The value for **Peer Server** changes to `SM` when the SIP signaling group is activated.

7. For the trunks connected to Session Manager, perform the following steps:
   a. Set the value of the **Peer Detection** field to `n`.
   b. Set the value of the **Peer Server** field to `SM`.
8. In the **Near-end Node Name** field, type `procr`.
9. In the **Far-end Node Name** field, type the name of the Session Manager security module.
10. In the **Far-end Network Region** field, type the IP network region number used in the *Administering an IP network region* procedure.
11. In the **Near-end Listen Port** field, type a port number other than the port number defined in the IMS signaling group.

    For example, `5070`.

12. In the **Far-end Listen Port** field, type the port number that you typed in the **Far-end Listen Port** field on the IP NETWORK REGION screen.
13. In the **Far-end Domain** field, type the domain name associated with Session Manager.
14. To enable incoming dialog loopbacks, in the **Incoming Dialog Loopbacks** field, type `allow`.
15. In the **Enable Layer 3 Test** field, type `y`.

    The system displays the **Enable Layer 3 Test** field when you type a value in the **Far-end Node Name** field.

    Important:

    If the value of **Enable Layer 3 Test** field is `n`, Communication Manager does not monitor the links. This test is required for the trunks connected to Session Manager. If you disable this test, maintenance software removes the trunks out of service.
16. In the **Initial IP-IP Direct Media** field, type `y` or `n`, depending on the requirement of the **Direct Media** feature.
17. To configure Communication Manager as an evolution server, in the **H.323 Station Outgoing Direct Media** field, type `y`.
18. Save the changes.

Adding a SIP trunk group

About this task

Use this procedure to add a SIP trunk group to the SIP signaling group for call routing from Communication Manager to Session Manager.

Procedure

1. On the Communication Manager SAT interface, type `add trunk-group` *`next`*, and press `Enter`.

   The system displays the TRUNK GROUP screen.
2. Note the value of the **Group Number** field.
3. In the **Group Type** field, type `sip`.
4. In the **Group Name** field, type a name for the trunk group.
5. In the **TAC** field, type a dial access code (DAC).

   For example, `*110`.
6. In the **Direction** field, type `two-way`.
7. In the **Service Type** field, type `tie`.
8. In the **Signaling Group** field, type the SIP signaling group number that you added using the *Adding a SIP signaling group* procedure.

9. In the **Number of Members** field, type the number of trunk group members.

   The maximum number of members that you can add is 255.

10. In the **Numbering Format** field, type one of the following:
    - Type `unk-pvt` for a private network.
    - Type `public` for a trunk that receives ARS calls.
    - Type `private` for a trunk that receives SIP calls.
11. Save the changes.

Administering a route pattern

Procedure

1. On the Communication Manager SAT interface, type `change route-pattern x`, where *x* is the route pattern number, and press `Enter`.
2. In the **Pattern Name** field, type a name for the route pattern.
3. In the **Grp No** field, type the trunk group number used in the *Adding a SIP trunk group* procedure.

   For administering Communication Manager as a feature server and trunk gateway, type the group number of the non-IMS trunk group.
4. In the **FRL** field, type `0`.
5. In the **No. Del Dgts** field, type the number of digits that Communication Manager must delete in the non-IMS trunk.
6. To allow Communication Manager to prepend a plus (+) sign to the number, in the **Inserted Digits** field, type `p`.
7. Save the changes.

Administering the uniform dial plan

About this task

Use the following procedure to modify digits in the number so that Communication Manager can route non-enterprise calls through the AAR table.

Procedure

1. On the Communication Manager SAT interface, type `change uniform-dialplan x`, where *x* is the dial plan number, and press `Enter`.

   The system displays the UNIFORM DIAL PLAN TABLE screen.
2. Type the appropriate values in the fields.

   The following table specifies the values that you can enter in the fields.

Matching Pattern	Len	Del	Inserted Digits	Net	Conv
2	5	0	120983	aar	n
4	5	0	120983	aar	n
5	5	0	120983	aar	n
6	5	0	120983	aar	n
7	5	0	120983	aar	n

Administering the AAR analysis table

About this task

Use the following procedure to add the entries for SIP and non-SIP station calls. AAR routes calls within a company over the private network of the company.

Procedure

1. On the Communication Manager SAT interface, type `change aar analysis x`, where *x* is a digit string, and press `Enter`.

   The system displays the AAR DIGIT ANALYSIS TABLE screen.

2. In the **Dialed String** field, type `xxyy`, where `xx` are the digits that you entered for the **Replacement String** field on the ARS DIGIT CONVERSION TABLE screen, and `yy` are the first two digits of the extension of the IMS user.
3. In the **Min** field, type the minimum number of allowed digits.
4. In the **Max** field, type the maximum number of allowed digits.
5. In the **Route Pattern** field, type a route pattern number to the trunk group for the dialed string digits.

   For administering Communication Manager as a feature server and trunk gateway, type a route pattern to the IMS-trunk group.

6. In the **Call Type** field, type `pubu`.
7. In the **ANI Req** field, type `n`.

   The following table specifies the values that you can enter in the fields.

Dialed String	Total Min	Total Max	Route Pattern	Call Type	ANI Reqd
1	11	11	10	aar	n
3	5	5	11	aar	n

   In the table, two entries are used:

   - For non-SIP station calls, Communication Manager sends the 11-digit numbers starting with 1 to route pattern number 10. Communication Manager prepends a plus (+) sign before routing the call to Session Manager.

- For SIP station calls, Communication Manager sends the five-digit numbers starting with 3 route pattern 11. Communication Manager routes the call to Session Manager without prepending a plus (+) sign.

8. Save the changes.

Administering the ARS analysis table

Procedure

1. On the Communication Manager SAT interface, type `change ars analysis x`, where *x* is a digit string, and press `Enter`.

   The system displays the ARS DIGIT ANALYSIS TABLE screen.

2. In the **Dialed String** field, type the digits.
3. In the **Min** field, type the minimum number of allowed digits.
4. In the **Max** field, type the maximum number of allowed digits.
5. In the **Route Pattern** field, type the route pattern number.
6. In the **Call Type** field, type the appropriate call type.

   For administering Communication Manager as a feature server and trunk gateway, type `pubu`.

7. Save the changes.

   The following table specifies the values that you can enter in the fields.

Dialed String	Total Min	Total Max	Route Pattern	Call Type	ANI Reqd
1	11	11	10	natl	n
101xxxx0	8	8	deny	op	n
101xxxx0	18	18	deny	op	n
101xxxx01	16	24	deny	iop	n
101xxxx011	17	25	deny	intl	n
101xxxx1	18	18	deny	fnpa	n
10xxx0	6	6	deny	op	n
10xxx0	16	16	deny	op	n
10xxx01	14	22	deny	iop	n
10xxx011	15	23	deny	intl	n
10xxx1	16	16	deny	fnpa	n
1200	11	11	deny	fnpa	n
1209	11	11	10	natl	n
1300	11	11	deny	fnpa	n
1400	11	11	deny	fnpa	n

Administering the proxy route

Procedure

1. On the Communication Manager SAT interface, type `change locations`, and press `Enter`.

   The system displays the LOCATIONS screen.

2. In the **Name** field, type a name for the proxy route.

   For example, `main`.

3. In the **Proxy Sel Rte Pat** field, type the route pattern number.

4. Save the changes.

Administering the incoming call handling treatment

About this task

Use this procedure to delete the number of digits to match the length of the SIP extension in the Communication Manager feature server or evolution server.

Procedure

1. On the Communication Manager SAT interface, type `change inc-call-handling-trmt trunk-group n`, where *n* is the trunk group number, and press `Enter`.

   For example, `change inc-call-handling-trmt trunk-group 10`.

   The system displays the INCOMING CALL HANDLING TREATMENT screen.

2. In the **Number Len** field, type the length of the extension.

   For example, `12`.

3. In the **Number Digits** field, type the digits.

   For example, `+1209833`.

4. In the **Del** field, type the number of digits to be deleted.

   For example, `7`.

5. Save the changes.

Adding a Communication Manager Survivable Remote Processor

Procedure

1. On the Communication Manager SAT interface, type `add survivable-processor node-name`, where *node-name* is the name of the remote server, and press `Enter`.

   For example, `add survivable-processor lsp6`.

   The system displays the SURVIVABLE PROCESSOR screen.

2. In the **Type** field, type `lsp`.
3. Ensure that the value of the **Cluster ID/MID** field on the SURVIVABLE PROCESSOR screen matches with the value of the field on the Web page.
4. Record the value of Cluster ID/MID field. You will need this value during the *Configure the Communication Manager* step in the *Survivable remote installation checklist*.
5. Save the changes.

Administering the public or unknown numbering format

About this task

Use this task to add the appropriate information so that the deskphone displays a number in the E.164 format.

Procedure

1. On the Communication Manager SAT interface, type `change public-unknown-numbering` *n*, where *n* is the extension length, and press `Enter`.

   For example, `change public-unknown-numbering` *10*.

   The system displays the NUMBERING - PUBLIC/UNKNOWN FORMAT screen.
2. In the **Ext Len** field, type the number of digits in the extension.
3. In the **Ext Code** field, type one or more starting digits in the extension.
4. In the **CPN Prefix** field, type the digits to be attached as a prefix to the digit string.

Connection type	Server	Numbering format	Country code required?	Plus (+) sign required?	Action
SIP	SM	Full international E.164 number	Yes	Yes	Communication Manager automatically inserts the plus (+) sign
SIP	other	Full international E.164 number	Yes	Yes	The system sets the **Prepend '+' to Calling Number** field on the Protocol Variation screen of the SIP trunk group to y
SIP	other	National E.164 number	No	No	Not applicable

Table continues…

Connection type	Server	Numbering format	Country code required?	Plus (+) sign required?	Action
Non-SIP	other	National E.164 number	No	No	Not applicable
Non-SIP	other	National E.164 number	Yes	No	The system sets the **Format** field on an ISDN trunk group to intl-pub

5. In the **Total CPN Len** field, type the total number of digits that Communication Manager must transmit.

   Note:

   Communication Manager combines the value of the **CPN Prefix** field with the extension that matches the entry on the NUMBERING - PUBLIC/UNKNOWN FORMAT screen. If the length of the number is longer than the length defined in the **Total CPN Len** field, Communication Manager deletes the leading digits from the extension until the length of the number is equal to the length defined in the **Total CPN Len** field.

6. Save the changes.

Validating the minimum time of network stability

About this task

Use this procedure to set the minimum time of network stability to three minutes. With the three-minute timer, the gateway can failback to the Communication Manager feature server or evolution server when it becomes available. The three-minute timer also prevents unnecessary failback and failover when the network is unreliable.

Procedure

1. On the Communication Manager SAT interface, type `change system-parameters mg-recovery-rule n`, where *n* is the rule number, and press `Enter`.

   For example, `change system-parameters mg-recovery-rule 1`.

   The system displays the SYSTEM PARAMETERS MEDIA GATEWAY AUTOMATIC RECOVERY RULE screen.

2. In the **Minimum time of network stability** field, type `3`.

3. Save the changes.

Next steps

Refer to the *Communication Manager Survivable Remote Processor administration checklist*.

Validating the gateway recovery rule

Procedure

1. On the Communication Manager SAT interface, type `change media-gateway x`, where *x* is the gateway number, and press `Enter`.

   The system displays the MEDIA GATEWAY x screen.

2. In the **Recovery Rule** field, type:

   - The recovery rule number of the gateway.
   - `none` to disable the recovery rule. The system does not accept any automatic fallback registrations.

   You can apply a single rule to all gateways, or each gateway can have a separate rule and any permutation in between. You can administer the recovery rule by using the **system-parameters mg-recovery-rule** command.

3. Save the changes.

Saving translations

Procedure

On the Communication Manager SAT interface, type `save translations`, and press `Enter`.

Checklist for setting up routing from the trunk gateway to the feature server

Use the following checklist to set up the routing for an incoming trunk call to an IMS user. Communication Manager prepends digits to the extension of the IMS user to route the call through a non-IMS trunk to Session Manager. Communication Manager deletes the prepended digits in the route pattern entry.

No.	Task	Link	✔
1	Administer the ARS digit conversion table.	Administering the ARS digit conversion table on page 30	
2	Administer the AAR analysis table.	Administering the AAR analysis table on page 24	
3	Administer the route pattern number that you entered in the **Route Pattern** field on the ARS DIGIT ANALYSIS TABLE screen.	Administering a route pattern on page 23	

Administering the ARS digit conversion table

Procedure

1. On the Communication Manager SAT interface, type `change ars digit-conversion x`, where *x* is a digit string, and press `Enter`.

   The system displays the ARS DIGIT CONVERSION TABLE screen.
2. In the **Matching Pattern** field, add an entry for the incoming trunk call number.
3. In the **Min** field, type the minimum number of digits that are allowed.
4. In the **Max** field, type the maximum number of digits that are allowed.
5. In the **Del** field, type the number of digits that Communication Manager must delete from the trunk call number.
6. In the **Replacement String** field, type the digits that Communication Manager prepends to the trunk call number.

   For example, `99`.
7. In the **Net** field, type `aar`.
8. In the **Conv** field, type `n`.
9. In the **ANI Req** field, type `n`.
10. Save the changes.

Checklist for setting up routing from the feature server to the trunk gateway

For calls from the feature server to the public network, you must administer routing for:

- Outgoing calls from the feature server to Session Manager through the IMS trunk.
- Incoming calls to the trunk gateway through the non-IMS trunk.

No.	Task	Link	✔
1	Administer the AAR analysis table.	Administering the AAR analysis table on page 24	
2	Administer route pattern 1.	Administering a route pattern on page 23	
3	Administer route pattern 2.	Administering a route pattern on page 23	

Table continues…

No.	Task	Link	✔
4	Administer route pattern 3. You must administer this route pattern only for countries where customers can dial subscriber numbers, for example, Germany. A subscriber number is a public number without the country code and the national destination code or city code.	Administering a route pattern on page 23	
5	On the trunk gateway, administer Incoming Call Handling Treatment (ICHT) for each non-IMS trunk to insert digits for routing to the public trunk. Public numbers can be of different lengths and you must administer the numbers accordingly.	Administering the incoming call handling treatment on page 26	

Adding a privileged administrator account

About this task

Use the following procedure to add a privileged administrator account that is a member of the **suser** group. You must use this account with System Manager.

Procedure

1. Log on to the Communication Manager server System Management Interface (SMI) Web page.
2. Click **Administration** > **Server (Maintenance)**.
3. In the navigation pane, in the **Security** section, click **Administrator Accounts**.
4. Select **Add Login**.
5. Select **Privileged Administrator**.
6. Click **Submit**.

   The system displays the Administrator Accounts -- Add Login: Privileged Administrator page.
7. In the **Login Name** field, type a login name.
8. In the **Password** field, type a password.

9. In the **Re-enter password** field, type the same password that you typed in the **Password** field.
10. In the **Force password/key change on next login** field, select `No`.
11. Click **Submit**.

Administration procedures on System Manager

Creating a Communication Manager managed element

Procedure

1. Log on to System Manager Web Console.
2. Click **Services** > **Inventory**.
3. In the navigation pane, click **Inventory** > **Manage Elements**.
4. Click **New**.
5. In the **Type** field, select **Communication Manager**.
6. In the **Name** field, type a name for the Communication Manager server.
7. In the **Hostname or IP Address** field, type the IP address of the Communication Manager server.
8. In the **Login** field, type the login name that you created earlier for the privileged administrator account.
9. In the **Password** field, type the password that you created earlier for the privileged administrator account.
10. In the **Confirm Password** field, type the same password that you typed in **Password** field.

    Note:

    Do not use services logins, such as craft, dadmin, and inads. To allow System Manager access to Communication Manager, in the **Login** and **Password** fields, you must type the same login information that you entered by using the *Adding a privileged administrator* procedure. System Manager and Communication Manager do not synchronize unless the Communication Manager login administration is complete.
11. Select the **SSH Connection** field.
12. In the **Port** field, type `5022`.
13. Click **Commit**.

Synchronizing Communication Manager data

About this task

After you add the Communication Manager managed element, System Manager automatically attempts to synchronize with Communication Manager. Use the following procedure if synchronization has not started.

Procedure

1. Log on to System Manager Web Console.
2. Click **Services** > **Inventory**.
3. In the navigation pane, click **Inventory** > **Synchronization** > **Communication System**.
4. Select the Communication Manager server.
5. Scroll down, and select the **Initialize data for selected devices** field.
6. Click **Now**.

   The system displays the status alert icon. The synchronization process might take several minutes to complete.
7. For the current synchronization status, click **Refresh**.

   When the synchronization is complete, the **Sync Status** field shows **Completed**.

Adding a Communication Manager server as a SIP entity

About this task

Use the following procedure to add the Communication Manager feature server or evolution server as a SIP entity. Do not use adaptation on the Communication Manager server, so that the system maintains proper application sequencing and routing for the SIP headers that the Communication Manager server creates.

Important:

For Communication Manager type entity, CRLF monitoring must be disabled.

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Routing** .
3. In the navigation pane, click **Routing** > **SIP Entities**.
4. Click **New**.
5. In the **Name** field, type a name for the Communication Manager server.
6. In the **FQDN or IP Address** field, type the IP address of the Communication Manager server.

For administering Communication Manager as a feature sever and trunk gateway, type the IP address for Processor Ethernet of Communication Manager. The IP address is the near end in the signaling group to Session Manager.

7. In the **Type** field, select **CM**.
8. In the **Notes** field, type a description for the Communication Manager server.
9. In the **Location** field, select the location of the Communication Manager server.
10. In the **Time Zone** field, select the time zone.
11. Click **Commit**.

Adding a Branch Session Manager as a SIP entity

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Routing**.
3. In the navigation pane, click **Routing** > **SIP Entities**.
4. Click **New**.
5. In the **FQDN or IP Address** field, type the IP address of the security module of the Branch Session Manager server.
6. In the **Type** field, select **Session Manager**.
7. Click **Commit**.

Creating entity links

If you use separate entities and entity links, such as for a feature server and trunk gateway configuration, you must administer two entity links for each entity on the Survivable Remote server. However, if you use only one entity and one entity link, such as for an evolution server configuration, you must administer only one entity link on the Survivable Remote server.

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Routing**.
3. In the navigation pane, click **Routing** > **Entity Links**.
4. Click **New**.
5. In the **Name** field, type a name for the entity link.
6. In the **SIP Entity 1** field, select the Branch Session Manager server.

   For administering the core Communication Manager as a feature server and trunk gateway, select the Session Manager entity.
7. In the **Protocol** field, select **tls**.

8. In the **Port** field, type the port number.
9. In the **SIP Entity 2** field, select the Communication Manager server.
10. In the **Port** field, type the port number.
11. In the **Connection policy** list box, select **Trusted**.
12. **(Optional)** In the **Notes** field, type a description for the entity link.
13. Click **Commit**.

Checking the connections

Procedure

1. On the Communication Manager SAT interface, type `list history`, and press `Enter`.

   The system displays the HISTORY screen.
2. Verify that you are logged in to Session Manager.
3. Verify that the initial data synchronization has begun.
4. On System Manager Web Console, click **Elements** > **Session Manager**.
5. Verify that the Session Manager server is active.
6. In the navigation pane, click **Session Manager** > **System Status** > **SIP Entity Monitoring**.
7. From the **All Monitored SIP Entities** list, select the Communication Manager server.
8. Verify that the value of the **Link Status** field is **Up**.

Administering Communication Manager as an application

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Session Manager**.
3. In the navigation pane, click **Session Manager** > **Application Configuration** > **Applications**.
4. Click **New**.
5. In the **Name** field, type a name for the application.
6. In the **SIP Entity** field, select the Communication Manager server.
7. **(Optional)** In the **Description** field, type a description for the application.
8. Leave the **Application Handle** and **URI Parameters** fields blank.
9. Click **Commit**.

Administering Communication Manager in an application sequence

About this task

Use the following procedure to create an application sequence for the Communication Manager server.

Important:

If you have configured Communication Manager as an evolution server, Communication Manager must be the last application in the origination vector and must be the first application in the termination vector. As an evolution server operates in the full-call model, you cannot change the position of the applications with regard to Communication Manager.

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Session Manager**.
3. In the navigation pane, click **Session Manager** > **Application Configuration** > **Application Sequences**.
4. Click **New**.
5. In the **Name** field, type a name for the application sequence.
6. In the **Description** field, type a description for the application sequence.
7. In the **Available Applications** section, click the plus (+) icon beside the Communication Manager server.

   The system selects the **Mandatory** field.
8. Click **Commit**.

Checklist for adding users

If there is a secondary Session Manager for a user, the route pattern in Communication Manager must have the following trunks:

- A trunk associated with the primary Session Manager server.
- A trunk associated with the secondary Session Manager server.

  The second signaling group must be connected to the secondary Session Manager.

No.	Task	Link	✔
1	Log on to System Manager Web Console.		
2	Administer the **Identity** section.	Administering the Identity section of a user on page 37	

Table continues…

No.	Task	Link	✔
3	Administer the **Communication Profile** section.	Administering the Communication Profile section of a user on page 38	
4	Verify that the data synchronization is complete.	Checking the synchronization status on page 39	
5	Assign the user to a Communication Manager station.	Assigning the user to a Communication Manager station on page 39	

Administering the Identity section of a user

Procedure

1. On System Manager Web Console, click **Users** > **User Management**.
2. In the navigation pane, click **User Management** > **Manage Users**.
3. Click **New**.

   The system displays the New User Profile page.
4. Click the **Identity** tab.
5. In the **Last Name** field, type the last name of the user.
6. In the **First Name** field, type the first name of the user.
7. In the **Middle Name** field, type the middle name of the user.
8. **(Optional)** In the **Description** field, type a description for the user.
9. In the **Login Name** field, type the login name using the SIP domain in Session Manager.

   The login name must be in the following format: `name@domain.com`.
10. In the **Authentication Type** field, type `Basic`.
11. In the **Password** field, type a password that starts with a lower case or an upper case alphabet.
12. In the **Confirm Password** text box, type the password that you entered in the **Password** field.
13. In the **Localized Display Name** field, type a name that the system must display to the calling party.
14. In the **Endpoint Display Name** field, type the full text name of the user.
15. In the **Language Preference** field, select a language.
16. In the **Time Zone** field, select a time zone.

Next steps

Administer the **Communication Profile** section. See *Administering the Communication Profile section of a user*.

Administering the Communication Profile section of a user

Before you begin

Administer the **Identity** section. See *Administering the Identity section of a user*.

About this task

A user can have more than one communication profile.

Procedure

1. On the New User Profile page of System Manager Web Console, click the **Communication Profile** tab.
2. In the **Communication Profile Password** field, type a communication profile password that contains only numbers.

   Note:

   You must use this password in the Endpoint Profile security code and to log in to a deskphone.
3. In the **Confirm Communication Profile Password** text box, type the same password that you typed in the **Communication Profile Password** field.
4. Click **New**.
5. In the **Type** field, select **Avaya SIP**.
6. In the **Fully Qualified Address** field, type the extension number of the SIP deskphone.
7. Select the correct domain from the drop-down list that follows the **@** sign.
8. Click **Add**.
9. Select the added entry.
10. Click **New**.
11. In the **Type** field, select **Avaya E.164**.
12. If you are using private numbering, administer **Fully Qualified Address**, which is a private handle.

    The private handle depends on the numbering format.
13. Select the appropriate domain from the drop-down list that follows the **@** sign.
14. Click **Add**.
15. Click the **Session Manager Profile** arrow.
16. Select **Session Manager Profile**.

17. If applicable, in the **Secondary Session Manager** field, select the Session Manager server as the backup server.

    As soon as you select primary Session Manager and secondary Session Manager, the system displays the count in a table, which is on the right side of the fields.
18. **(Optional)** In the **Origination Application Sequence** field, select the appropriate application sequence name that the system must use when calls are routed from the user.
19. **(Optional)** In the **Termination Application Sequence** field, select the appropriate application sequence name that the system must use when calls are routed to the user.
20. **(Optional)** In the **Survivability Server** field, select the entity that the system must use for survivability.

    For a Survivable Remote Session Manager, select the Survivable Remote Session Manager SIP entity.
21. In the **Home Location** field, select the Communication Manager server SIP entity that the system must use as the home location for call routing.

Next steps

Check the synchronization status. See *Checking the synchronization status*.

Checking the synchronization status

Before you begin

Administer the **Communication Profile** section. See *Administering the **Communication Profile** section of a user*.

Procedure

1. On System Manager Web Console, click **Services** > **Inventory**.
2. In the navigation pane, click **Inventory** > **Synchronization** > **Communication System**.
3. The system displays the synchronization status in the **Sync Status** column of the table.

Next steps

Assign the user to a Communication Manager station. See *Assigning the user to a Communication Manager station*.

Assigning the user to a Communication Manager station

Before you begin

Check the synchronization status. See *Checking the synchronization status*.

Procedure

1. On the New User Profile page of System Manager Web Console, click the **Communication Profile** tab.
2. Click the **CM Endpoint Profile** arrow.
3. Select **Endpoint Profile**.

4. In the **System** field, select the Communication Manager server.
5. In the **Profile Type** field, select the profile type.
6. Do not select the **Use Existing Endpoints** field.
7. In the **Extension** field, type the extension that is administered on the Communication Manager server for the existing or new station.
8. In the **Template** field, select the appropriate template.

   For a Session Manager server, use the SIP version of the template, for example, `DEFAULT_9640SIP_CM_6_0`
9. In the **Set Type** field, type the deskphone set type.
10. You can leave the **Security Code** field blank.

    The value in the **Security Code** is not used to log in to the deskphone.
11. In the **Port** field, select **IP**.
12. In the **Voice Mail Number** field, type the voice mail number.
13. Select the **Delete Endpoint on Unassign of Endpoint from User** field.
14. Select the **Override Endpoint Name** field.

Verifying a new SIP user

Procedure

1. Log in to the SIP deskphone with the values in the **Extension** and **Password** fields of Endpoint Profile.
2. Log on to System Manager Web Console.
3. Click **Elements** > **Session Manager**.
4. In the navigation pane, click **Session Manager** > **System Status** > **User Registrations**.
5. In the **User Registrations** table, in the row that displays the details of the user, click **Show**.
6. Click the **Registration Detail** tab, and verify that the information is correct.
7. On Communication Manager SAT interface, type `display station n`, where *n* is the deskphone extension of the user, and press `Enter`.

   The system displays the STATION screen.
8. Verify that the value of the **Type** field is SIP.
9. Verify that the value of the **SIP Trunk** is **aar**.
10. Press `CANCEL` to return to the command prompt.
11. Type `display off-pbx-telephone station-mapping n`, where *n* is the deskphone extension of the user, and press `Enter`.

The system displays the STATIONS WITH OFF-PBX TELEPHONE INTEGRATION screen.

12. For the deskphone extension, verify that the value of the **Trunk Selection** field is aar.

Testing Session Manager and Communication Manager calls

Procedure

1. Place five-digit calls from one SIP deskphone to another.
2. Place 20-digit calls from one SIP deskphone to another.
3. To validate routing, place five-digit calls to a non-SIP deskphone on another Private Branch Exchange (PBX) on the Session Manager server.
4. To validate routing, place 20-digit calls to a non-SIP deskphone on another PBX on the Session Manager server.

Checklist for administering routing for the feature server and trunk gateway on System Manager

Although the feature server functionality and the trunk gateway functionality are within the same Communication Manager server, you must configure both as separate SIP entities by using the System Manager routing .

No.	Task	Link	✔
1	Define the entity and the entity link for the feature server and the trunk gateway as a TCP connection with the ports defined in the Communication Manager signaling groups. For example, TCP port 5060 for the feature server and TCP port 5070 for the trunk gateway.		
2	For routing calls from the feature server to the trunk gateway, define a dial pattern and a routing policy to route an incoming plus (+) sign to the trunk gateway. For more information, see the Routing Policy Details screen of System Manager.		
3	Add the SIP domains of the Communication Manager server.	Adding a Communication Manager SIP domain on page 42	

Table continues…

No.	Task	Link	✔
4	Administer Communication Manager as a SIP entity.	Adding a Communication Manager server as a SIP entity on page 33	
5	Create an entity link from the Session Manager entity to the Communication Manager entity.	Creating entity links on page 34	
6	Administer Communication Manager as an application.	Adding a Communication Manager application on page 42	

Adding a Communication Manager SIP domain

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Routing**.
3. In the navigation pane, click **Routing** > **Domains**.
4. Click **New**.
5. In the **Name** field, type the domain name for Communication Manager.
6. In the **Type** field, select **CM**.
7. Click **Commit**.
8. Click **New**.
9. In the **Name** field, type the domain name for Session Manager.
10. In the **Type** field, select **sip**.
11. Click **Commit**.

Adding a Communication Manager application

Procedure

1. Log on to System Manager Web Console.
2. Click **Elements** > **Inventory**.
3. In the navigation pane, click **Inventory** > **Manage Elements**.
4. Click **New**.
5. In the **Type** field, select **CM**.
6. In the **Application** section, type the name of the Communication Manager server.

   The system deactivates the selected type.

   To change the value of the **Type** field, click **Reset**.

7. In the **Node** field, type the management IP address to gain access to the Communication Manager SAT interface.
8. In the **Attributes** section, in the **Login** field, type the SSH SAT login name.
9. In the **Attributes** section, in the **Password** field, type the SSH SAT password.
10. Select the **Is SSH Connection** field.
11. In the **Port** field, type `5022`.
12. Click **Commit**.

    The system schedules the Communication Manager entity for data synchronization on an hourly basis initially and by an increment of one hour later.

Chapter 7: SIP deskphone administration

Administering 96xx SIP deskphones

About this task

A deskphone can use settings from a file server if you set up the environment for the deskphone.

Procedure

1. To go to the **Configuration** menu, perform one of the following steps:
   - On the physical deskphone, press the **Mute** button, and type `CRAFT#` by using the keypad.
   - On the soft telephone, type `admin options`, and press `Enter`.
2. In the **SIP Global Settings** section, perform the following steps:
   a. In the **SIP Domain** field, type the domain name of the Session Manager server.
   b. In the **Avaya Environment** field, select **auto**.
   c. In the **Reg. Policy** field, select **simultaneous**.
   d. Leave the **Avaya Config Server:** field blank.
3. In the **SIP Proxy Settings** section, perform the following steps:
   a. In the **SIP Proxy Server** field, type the IP address of the primary Session Manager server.
   b. If applicable, type the IP address of the secondary Session Manager server.
   c. In the **Transport** field, select **TCP** or **TLS**.
   d. In the **SIP Port** field, type the port number defined in the Session Manager SIP entity.

      For example, type `5060` for TCP.
4. In the **SSON** field, type the appropriate SSON number for the deskphone to gain access to the file server.

Note:

For more information on administering 96xx SIP deskphones, see *Administering Avaya 9601/9608/ 9608G/9611G/9621G/9641G IP Deskphones SIP*.

Chapter 8: Feature name extension administration

This section describes how to administer feature name extensions. You must administer feature name extensions first on Communication Manager by using the Communication Manager SAT interface and then on Session Manager by using System Manager Web Console.

Administering feature name extensions on Communication Manager

Procedure

1. On the Communication Manager SAT interface, type `change feature-access-codes`, and press `Enter`.

   The system displays the FEATURE ACCESS CODE (FAC) screen.
2. Type the appropriate codes for the features that you want to enable.
3. Save the changes, and go to the command prompt.
4. Type `change off-pbx-telephone feature-name-extensions set 1`, and press `Enter`.

   The system displays the EXTENSIONS TO CALL WHICH ACTIVATE FEATURES BY NAME screen.
5. Type the extension that you want to use for the feature.
6. Save the changes.

Administering feature name extensions on System Manager

Procedure

1. Log on to System Manager Web Console.

2. Click **Elements** > **Session Manager**.
3. In the navigation pane, click **Session Manager** > **Application Configuration** > **Implicit Users**.
4. Click **New**.
5. In the **Pattern** field, type the deskphone extension.
6. In the **Min** field, type the minimum number of digits to be matched.
7. In the **Max** field, type the maximum number of digits to be matched.
8. In the **Description** field, type a description.

   For example, `Turn on EC500`.
9. In the **SIP Domain** field, select the SIP domain.
10. In the **Origination Application Sequence** field, select the originating feature server name.
11. In the **Termination Application Sequence** field, select the terminating feature server name.
12. Click **Commit**.

Chapter 9: Resources

Communication Manager documentation

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

Title	Description	Audience
Design		
Avaya Aura® Communication Manager Overview and Specification	Provides an overview of the features of Communication Manager.	Sales Engineers, Solution Architects
Avaya Aura® Communication Manager Security Design	Describes security-related issues and security features of Communication Manager.	Sales Engineers, Solution Architects
Avaya Aura® Communication Manager System Capacities Table	Describes the system capacities for Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects
LED Descriptions for Avaya Aura® Communication Manager Hardware Components	Describes the LED for hardware components of Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects
Avaya Aura® Communication Manager Hardware Description and Reference	Describes the hardware requirements for Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects
Avaya Aura® Communication Manager Survivability Options	Describes the system survivability options for Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects
Avaya Aura® Core Solution Description	Provides a high level description for the solution.	Sales Engineers, Solution Architects
Maintenance and Troubleshooting		
Avaya Aura® Communication Manager Reports	Describes the reports for Avaya Aura® Communication Manager.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Maintenance Procedures for Avaya Aura® Communication Manager, Branch Gateways and Servers	Provides procedures to maintain Avaya servers and gateways.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel

Table continues…

Title	Description	Audience
Maintenance Commands for Avaya Aura® Communication Manager, Branch Gateways and Servers	Provides commands to monitor, test, and maintain Avaya servers and gateways.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Avaya Aura® Communication Manager Alarms, Events, and Logs Reference	Provides procedures to monitor, test, and maintain Avaya servers and describes the denial events listed on the Events Report form.	Sales Engineers, Solution Architects, Implementation Engineers, Support Personnel
Administration		
Administering Avaya Aura® Communication Manager	Describes the procedures and screens for administering Communication Manager.	Sales Engineers, Implementation Engineers, Support Personnel
Administering Network Connectivity on Avaya Aura® Communication Manager	Describes the network connectivity for Communication Manager.	Sales Engineers, Implementation Engineers, Support Personnel
Avaya Aura® Communication Manager SNMP Administration and Reference	Describes SNMP administration for Communication Manager.	Sales Engineers, Implementation Engineers, Support Personnel
Administering Avaya Aura® Communication Manager Server Options	Describes server options for Communication Manager.	Sales Engineers, Implementation Engineers, Support Personnel
Avaya Aura® Communication Manager Data Privacy Guidelines	Describes how to administer Communication Manager to fulfill Data Privacy requirements.	Sales Engineers, Implementation Engineers, Support Personnel
Implementation and Upgrading		
Deploying Avaya Aura® Communication Manager in Virtualized Environment	Describes the implementation instructions while deploying Communication Manager on VMware.	Implementation Engineers, Support Personnel, Solution Architects
Deploying Avaya Aura® Communication Manager in Software-Only and Infrastructure as a Service Environments	Describes the implementation instructions while deploying Communication Manager on a software-only environment and Amazon Web Service, Microsoft Azure, and Google Cloud Platform.	Implementation Engineers, Support Personnel, Solution Architects

Table continues…

Title	Description	Audience
Upgrading Avaya Aura® Communication Manager	Describes instructions while upgrading Communication Manager.	Implementation Engineers, Support Personnel, Solution Architects
Understanding		
Avaya Aura® Communication Manager Feature Description and Implementation	Describes the features that you can administer using Communication Manager.	Sales Engineers, Solution Architects, Support Personnel
Avaya Aura® Communication Manager Screen Reference	Describes the screens that you can administer using Communication Manager.	Sales Engineers, Solution Architects, Support Personnel
Avaya Aura® Communication Manager Special Application Features	Describes the special features that specific customers request for their specific requirement.	Sales Engineers, Solution Architects, Avaya Business Partners, Support Personnel

Finding documents on the Avaya Support website

Procedure

1. Go to https://support.avaya.com.
2. At the top of the screen, type your username and password and click **Login**.
3. Click **Support by Product** > **Documents**.
4. In **Enter your Product Here**, type the product name and then select the product from the list.
5. In **Choose Release**, select the appropriate release number.

   The **Choose Release** field is not available if there is only one release for the product.
6. In the **Content Type** filter, click a document type, or click **Select All** to see a list of all available documents.

   For example, for user guides, click **User Guides** in the **Content Type** filter. The list only displays the documents for the selected category.
7. Click **Enter**.

Accessing the port matrix document

Procedure

1. Go to https://support.avaya.com.
2. Log on to the Avaya website with a valid Avaya user ID and password.
3. On the Avaya Support page, click **Support by Product** > **Documents**.

4. In **Enter Your Product Here**, type the product name, and then select the product from the list of suggested product names.
5. In **Choose Release**, select the required release number.
6. In the **Content Type** filter, select one or both the following categories:
   - **Application & Technical Notes**
   - **Design, Development & System Mgt**

   The list displays the product-specific Port Matrix document.
7. Click **Enter**.

Avaya Documentation Center navigation

For some programs, the latest customer documentation is now available on the Avaya Documentation Center website at https://documentation.avaya.com.

Important:

For documents that are not available on Avaya Documentation Center, click **More Sites** > **Support** on the top menu to open https://support.avaya.com.

Using the Avaya Documentation Center, you can:

- Search for keywords.

  To filter by product, click **Filters** and select a product.
- Search for documents.

  From **Products & Solutions**, select a solution category and product, and then select the appropriate document from the list.
- Sort documents on the search results page.
- Click **Languages** ( ) to change the display language and view localized documents.
- Publish a PDF of the current section in a document, the section and its subsections, or the entire document.
- Add content to your collection using **My Docs** ( ).

  Navigate to the **Manage Content** > **My Docs** menu, and do any of the following:
  - Create, rename, and delete a collection.
  - Add topics from various documents to a collection.
  - Save a PDF of the selected content in a collection and download it to your computer.
  - Share content in a collection with others through email.
  - Receive collection that others have shared with you.
- Add yourself as a watcher using the **Watch** icon ( ).

Navigate to the **Manage Content** > **Watchlist** menu, and do the following:

- Enable **Include in email notification** to receive email alerts.
- Unwatch selected content, all content in a document, or all content on the Watch list page.

As a watcher, you are notified when content is updated or deleted from a document, or the document is removed from the website.

- Share a section on social media platforms, such as Facebook, LinkedIn, and Twitter.
- Send feedback on a section and rate the content.

Note:

Some functionality is only available when you log in to the website. The available functionality depends on your role.

Training

The following courses are available on the Avaya Learning website at http://www.avaya-learning.com. After logging in to the website, enter the course code or the course title in the **Search** field and press **Enter** or click **>** to search for the course.

Course code	Course title
20460W	Virtualization and Installation Basics for Avaya Team Engagement Solutions
20980W	What's New with Avaya Aura®
71201V	Integrating Avaya Aura® Core Components
72201V	Supporting Avaya Aura® Core Components
61131V	Administering Avaya Aura® System Manager Release 10.1
61451V	Administering Avaya Aura® Communication Manager Release 10.1

Viewing Avaya Mentor videos

Avaya Mentor videos provide technical content on how to install, configure, and troubleshoot Avaya products.

About this task

Videos are available on the Avaya Support website, listed under the video document type, and on the Avaya-run channel on YouTube.

- To find videos on the Avaya Support website, go to https://support.avaya.com/ and do one of the following:
  - In **Search**, type `Avaya Mentor Videos`, click **Clear All** and select **Video** in the **Content Type**.

- In **Search**, type the product name. On the Search Results page, click **Clear All** and select **Video** in the **Content Type**.

  The **Video** content type is displayed only when videos are available for that product.

In the right pane, the page displays a list of available videos.

- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and do one of the following:
  - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.
  - Scroll down Playlists, and click a topic name to see the list of videos available for the topic. For example, Contact Centers.

Note:

Videos are not available for all products.

Support

Go to the Avaya Support website at https://support.avaya.com for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

Using the Avaya InSite Knowledge Base

The Avaya InSite Knowledge Base is a web-based search engine that provides:

- Up-to-date troubleshooting procedures and technical tips
- Information about service packs
- Access to customer and technical documentation
- Information about training and certification programs
- Links to other pertinent information

If you are an authorized Avaya Partner or a current Avaya customer with a support contract, you can access the Knowledge Base without extra cost. You must have a login account and a valid Sold-To number.

Use the Avaya InSite Knowledge Base for any potential solutions to problems.

1. Go to http://www.avaya.com/support.
2. Log in to the Avaya support website with a valid Avaya user ID and password.

   The system displays the Avaya Support page.

3. Click **Support by Product** > **Product-specific Support**.
4. In **Enter Product Name**, enter the product, and press `Enter`.
5. Select the product from the list, and select a release.
6. Click the **Technical Solutions** tab to see articles.
7. Select relevant articles.

Appendix A: Numbering configuration

Numbering

The following are the types of numbering:

- **Enterprise Canonical Number (ECN)**: ECN is unique to Session Manager and can be a public long number, a private long number, or a short or internal number.
- **Public number**: A public number must begin with a plus (+) sign.
- **Private alias**: A private alias is required for public numbering when telephones, such as Avaya deskphones, are unable to register with a plus (+) sign.
- **Off-PBX Telephony Integration and Mobility (OPTIM) table**: This table converts a registration number to a short number. The registration number can be an ECN.
- **Public numbering table**: This table converts a short number to a public long number. Communication Manager adds the short number as an avext parameter to the PAI header and the Contact header for messages to the deskphone.
- **Private numbering table**: This table converts a short number to a private long number. Communication Manager adds the short number as an avext parameter to the PAI header and the Contact header for messages to the deskphone.
- **Incoming Call Handling Treatment (ICHT)**; ICHT converts a public or a private long number to a short number.

Numbering administration

You can administer numbering in Communication Manager by using different tables to adapt the calling number and the called number. The numbering type settings, such as AAR, route pattern, and trunk, have an assigned priority. Ensure that you administer the users and handles in Session Manager by matching the numbering form in Communication Manager.

Communication Manager Release 6.0 and later uses the trunk numbering setting to adapt the calling party number. The entries in AAR, Route Pattern, and ARS adapt the called party number. Communication Manager uses the following fields for the numbering adaptation:

- **Numbering Format** field on the TRUNK GROUP screen:
  - public: The calling number adapts to the entry in the **public-unknown-numbering** table.

- unk-pvt: The calling number adapts to the entry in the **private-numbering** table.

Although the trunk is set to private, the calling number adapts to a public number when the settings of the AAR and route pattern determine the called number as public. For this adaptation, you must administer a matching entry for the calling number in the **public-unknown-numbering** table.

- **Call type** field on the AAR DIGIT ANALYSIS TABLE screen:
  - aar: The called number is determined as a public number. The calling number adapts to a public number.
  - pubu: The called number is determined as a public number. The calling number adapts to a public number.
  - unku: The called number is determined as a private number.

  The value of the **Call type** field has a higher priority than the value of the **Numbering Format** field, if the **Numbering Format** is private. When the calling party number adapts to a public number, you must administer a matching entry in the **public-unknown-numbering** table.
- **Numbering Format** field on the ROUTE PATTERN screen:
  - pub-unk: The called number is determined as a public number. The calling number adapts to a public number.
  - unk-unk: The called number is determined as a private number.
  - blank: The numbering setting from AAR and trunk group are used.

  The value of the **Numbering Format** field has a higher priority than the value of the **Call type** field. When the calling party number adapts to a public number, you must administer a matching entry in the **public-unknown-numbering** table.

Administration settings for the numbering types

The numbering type used for registration must be different from the numbering type signaled to the network.

The settings on the routing and the numbering forms depend on the numbering type.

Registration numbering type	Signaled numbering type	Administration
private short	private short	Private short numbering on page 56.
private long	private long	Private long numbering on page 57.
private long	public	Long private numbering and public signaling on page 58.
public plus (+) sign	public	Public numbering on page 60.
private short or long (variation 1)	call to public number	Call to public extension variation 1 on page 62.

Table continues…

private short or long (variation 2)	call to public number	Call to public extension variation 2 on page 63.

Private short numbering

Private short numbering uses the private extension. In Session Manager, you need to administer only the private short number. In Communication Manager, the administration does not change the internal extension.

The configuration for private short numbering is for the following numbering types:

- Registration numbering type: private short
- Signaled numbering type: private short

The following table describes the administration settings for private short numbering.

SAT screen	Page number	Field	Value	Notes
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION	1	**Phone Number**	Extension number	
	1	**Trunk Selection**	aar	For 90xx SIP station types, the **Trunk Selection** field is provided on the last page of the STATION screen.
TRUNK GROUP	3	**Numbering Format**	private	
AAR DIGIT ANALYSIS TABLE	1	**Dialed String**	Extension number	
NUMBERING - PRIVATE FORMAT	1	**Ext Code**	Extension number or pattern for extension numbers	
	1	**Trk Grp (s)**	blank	Blank means the setting applies to all trunks.
	1	**Private Prefix**	blank	
	1	**Total Len**	Extension length	
NUMBERING - PUBLIC/ UNKNOWN FORMAT				No entries.

Table continues…

SAT screen	Page number	Field	Value	Notes
ROUTE PATTERN	1	**Grp Num**	Trunk group number	Lists trunk groups with trunks to primary Session Manager listed first.
	1	**FRL**	0	
	1	**Numbering format**	blank	
INCOMING CALL HANDLING TREATMENT				No entries.

Private long numbering

Private long numbering uses the private extension with a prefix. In Session Manager, only the private long number is administered. In Communication Manager, the administration shortens and extends the long number to the Communication Manager internal extension.

The configuration for private long numbering is for the following numbering types:

- Registration numbering type: private long
- Signaled numbering type: private long

The following table describes the administration settings for private long numbering.

SAT screen	Page number	Field	Value	Notes
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION	1	**Phone Number**	Long private extension number	
	1	**Trunk Selection**	aar	For 90xx SIP station types, set the value of the **Trunk Selection** field on the STATION screen.
TRUNK GROUP	3	**Numbering Format**	private	
AAR DIGIT ANALYSIS TABLE	1	**Dialed String**	Long private extension number	The value of the **Dialed String** field is an extension or a pattern of extensions.
	1	**Route Pattern**	Pattern to route to Session Manager	
	1	**Call Type**	unku	

Table continues…

SAT screen	Page number	Field	Value	Notes
NUMBERING - PRIVATE FORMAT	1	**Ext Len**	Extension length	
	1	**Ext Code**	Extension number or pattern for extension numbers.	
	1	**Trk Grp (s)**	blank	Blank means the setting applies to all trunks.
	1	**Private Prefix**	Private prefix	
	1	**Total Len**	Extension length and prefix	
NUMBERING - PUBLIC/ UNKNOWN FORMAT				No entries.
ROUTE PATTERN	1	**Grp Num**	Trunk group number	Lists trunk groups with the trunks to primary Session Manager listed first.
	1	**FRL**	0	
	1	**Numbering format**	blank	
INCOMING CALL HANDLING TREATMENT	1	**Len**	Length of private long number.	
	1	**Number Digits**	Private prefix	
	1	**Del**	Length of private prefix	
	1	**Insert**	blank	

Long private numbering and public signaling

Long private numbering uses the private extension with a prefix. In Session Manager, you must administer the private long number and the public number are administered. In Communication Manager, the administration changes the private long number to the extension and changes the outgoing direction to the public number.

The configuration for long private numbering and public signaling is for the following numbering types:

- Registration numbering type: private long

- Signaled numbering type: public

The following table describes the administration settings for the long private numbering.

SAT screen	Page number	Field	Value	Notes
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION	1	**Phone Number**	Long private extension number	
	1	**Trunk Selection**	aar	For 90xxSIP station types, set the value of the **Trunk Selection** field is on the STATION screen.
TRUNK GROUP	3	**Numbering Format**	public	
AAR DIGIT ANALYSIS TABLE	1	**Dialed String**	Long private extension number	The value of the **Dialed String** field is an extension or a pattern of extensions.
	1	**Route Pattern**	Pattern to route to Session Manager	
	1	**Call Type**	unku	
NUMBERING - PRIVATE FORMAT	1			No entries.
NUMBERING - PUBLIC/ UNKNOWN FORMAT	1	**Ext Len**	Extension length	
	1	**Ext Code**	Extension number or pattern for extension numbers	
	1	**Trk Grp (s)**	Trunk number or blank	Blank means the setting applies to all trunks.
	1	**CPN Prefix**	Public prefix to the extension without the plus (+) sign. The system adds the plus (+) sign.	
	1	**Total Len**	Extension length and CPN prefix	

Table continues…

SAT screen	Page number	Field	Value	Notes
ROUTE PATTERN	1	**Grp Num**	Trunk group	Lists trunk groups with the trunks to primary Session Manager listed first.
	1	**FRL**	0	
	1	**Numbering format**	unk-unk	
INCOMING CALL HANDLING TREATMENT	1	**Len**	Length of public long number	
	1	**Number Digits**	Public prefix	
	1	**Del**	Length of public prefix	
	1	**Insert**	blank	
INCOMING CALL HANDLING TREATMENT	1	**Len**	Length of private long number	
	1	**Number Digits**	Private prefix	
	1	**Del**	Length of private prefix	
	1	**Insert**	blank	

Public numbering

The public numbering format requires a plus (+) sign as a login character. Therefore, only soft telephones can use the public numbering format. For all other telephones, this numbering is realized with a private alias by using the private long and the public signalling configuration.

Session Manager uses two different numbering plans for analysis and routing:

- E.164 Public numbering plan
- Enterprise canonical (Private numbering plan)

In Communication Manager, the administration shortens and extends the public number to the Communication Manager internal extension.

The configuration for the public numbering format is for the following numbering types:

- Registration numbering type: public (+)
- Signaled numbering type: public

The following table describes the administration settings for public numbering.

SAT screen	Page number	Field	Value	Notes
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION	1	**Phone Number**	Public number without a leading plus (+) sign	
	1	**Trunk Selection**	aar	For 90xx SIP station types, set the value of the **Trunk Selection** field on the STATION screen.
TRUNK GROUP	3	**Numbering Format**	public	
AAR DIGIT ANALYSIS TABLE	1	**Dialed String**	Public number without a leading plus (+) sign	The value of the **Dialed String** field is an extension or a pattern of extensions.
	1	**Route Pattern**	Pattern to route to Session Manager	
	1	**Call Type**	pubu	
NUMBERING - PRIVATE FORMAT				No entries.
NUMBERING - PUBLIC/ UNKNOWN FORMAT	1	**Ext Len**	Extension length	
	1	**Ext Code**	Extension number or pattern for extension numbers	
	1	**Trk Grp (s)**	Trunk number or blank.	Blank means the setting applies to all trunks.
	1	**CPN Prefix**	Public prefix to the extension without the plus (+) sign. The system adds the plus (+) sign.	
	1	**Total Len**	Extension length and CPN prefix	
ROUTE PATTERN	1	**Grp Num**	Trunk group number	Lists trunk groups with the trunks to primary Session Manager listed first.
	1	**FRL**	0	

Table continues…

SAT screen	Page number	Field	Value	Notes
	1	**Numbering format**	unk-unk	
INCOMING CALL HANDLING TREATMENT	1	**Len**	Length of public long number.	
	1	**Number Digits**	Public prefix	
	1	**Del**	Length of public prefix	
	1	**Insert**	blank	

Call to public extension variation 1

Although private numbering is used for registration and signaling, the calling private number adapts to a public number when the called number is identified as a public number. For example, a call to a public network.

In Communication Manager, you must perform the additional administration for the private numbering. You must administer the public number as a secondary Session Manager server.

The configuration is for the following numbering types:

- Registration numbering type: private short or long
- Signaled numbering type: call to public number

The following table describes the administration settings for Call to public extension variation 1.

SAT screen	Page number	Field	Value	Notes
TRUNK GROUP	3	**Numbering Format**	private	
AAR DIGIT ANALYSIS TABLE	1	**Dialed String**	Private long or short number	The value of the **Dialed String** field is an extension or a pattern of extensions.
	1	**Route Pattern**	Pattern to route to Session Manager	
	1	**Call Type**	unku	
NUMBERING - PRIVATE FORMAT	1	**Ext Code**	Extension number or pattern for extension numbers	

Table continues…

SAT screen	Page number	Field	Value	Notes
	1	**Trk Grp (s)**	blank	Blank means the setting applies to all trunks.
	1	**Private Prefix**	blank	
	1	**Total Len**	Extension length	
NUMBERING - PUBLIC/ UNKNOWN FORMAT	1	**Ext Len**	Extension length	
	1	**Ext Code**	Extension number or pattern for extension numbers	
	1	**Trk Grp (s)**	Trunk number or blank	Blank means the setting applies to all trunks.
	1	**CPN Prefix**	Public prefix to the extension without the plus (+) sign. The system adds the plus (+) sign.	
	1	**Total Len**	Extension length and CPN prefix	
ROUTE PATTERN	1	**Grp Num**	Trunk group number	Lists trunk groups with the trunks to primary Session Manager listed first.
	1	**FRL**	0	
	1	**Numbering format**	pub-unk	
INCOMING CALL HANDLING TREATMENT				No entries.

Call to public extension variation 2

Although private numbering is used for registration and signaling, the calling private number adapts to a public number when the called number is identified as a public number. For example, a call to a public network.

In Communication Manager, you must perform the additional administration for the private numbering.

The administration for this numbering requires an adaptation in Session Manager for the public number of a user.

The configuration is for the following numbering types:

- Registration numbering type: private short or long
- Signaled numbering type: call to public number

The following table describes the administration settings for Call to public extension variation 2.

SAT screen	Page number	Field	Value	Notes
TRUNK GROUP	3	**Numbering Format**	private	
AAR DIGIT ANALYSIS TABLE	1	**Dialed String**	Private long or short number	The value of the **Dialed String** field is an extension or a pattern of extensions.
	1	**Route Pattern**	Pattern to route to Session Manager	
	1	**Call Type**	unku	
NUMBERING - PRIVATE FORMAT	1	**Ext Code**	Extension number or pattern for extension numbers	
	1	**Trk Grp (s)**	blank	Blank means the setting applies to all trunks.
	1	**Private Prefix**	blank	
	1	**Total Len**	Extension length	
NUMBERING - PUBLIC/ UNKNOWN FORMAT				No entries. The adaptation to public numbering is performed in Session Manager.
ROUTE PATTERN	1	**Grp Num**	Trunk group number	Lists trunk groups with the trunks to primary Session Manager listed first.
	1	**FRL**	0	
	1	**Numbering format**	unk-unk	
INCOMING CALL HANDLING TREATMENT				No entries.

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