# External Call History (ECH) Handler

## Call Management System Add-On Software

Release Independent
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**Contents**

# Chapter 1. Description

External Call History (ECH) is the external version of the Avaya Call Management System (CMS) Call Records feature, which has been referred to as Internal Call History (ICH) in older CMS documentation

ECH is a feature of CMS that needs to be enabled and turned on for files to be generated. This is a service-affecting operation that must be schedule at an appropriate downtime as to minimize data loss. Also, the call record buffer configuration in CMS must be set so that each ACD collects call records. See Appendix 1 for details.

ECH Handler is an add-on software package that manages ECH binary files generated by the Avaya CMS.

ECH and ICH are mutually exclusive. When the ECH feature is activated on the CMS, the storage of Internal Call Records is deactivated.

## Operation

The ECH Handler software:

- Converts the binary data file, generated by CMS, into ASCII format and sends it to a customer-provided server or Contact Analyzer
- And/or sends the binary data file to a Contact Analyzer
- And/or copies the binary data file to a special directory for Operational Analyst (OA)
- And/or copies the binary data file to a special directory for retrieval by Aspect DataMart
- Makes a backup copy of the binary ECH files on the CMS's file system.
- Can also send CMS synonyms (dictionary) files once per day.

**High Level Design:**

1) When CMS determines that an ECH binary file is ready for processing, it calls ECH Handler which moves the ECH binary file to a queue directory on the file system.

2) ECH Handler calls additional programs to generate the CMS synonyms files and links the binary file to queue directories (one per configured session) as needed. ECH Handler also links the binary file to the staging directories for OA and/or DataMart. It then performs the actual conversion from binary into ASCII.

3) A Unix cron job runs every 10 minutes to check for the presence of files in the various queue directories. If files are found, an attempt is made to SFTP them to the configured destination. If that fails, the files are left in the queue directory. Files older than 24 hours are deleted from the queue directory to prevent them from filling up the file system.

4) Once a day, ECH Handler consolidates the previous day's binary data files into a single, compressed file for archiving. The archived files are retained for 90 days (configurable). The customer is provided with instructions, recovery.txt, for recovering missed files that are over 24 hours old and the user menu helps facilitate this process.

# Number of Feeds Supported

ECH Handler supports up to:

- 32 ASCII data feeds for Avaya Contact Analyzer (CA), third-party, or customer systems
- 2 binary data feeds for Aspect DataMart or a third-party solution
- 1 binary data feed for Avaya OA

# Support for Third-Party Applications

Third-party applications typically do not support CMS High Availability (both Primary and Secondary CMS). They treat each CMS in an HA CMS pair as a standalone CMS.

It is not possible to merge the ECH data from an HA CMS pair due to small differences in timing, callid's, and data file names.

**Avaya Contact Analyzer (CA)**

CA is an ECH data reporting and analytics application that supports CMS R12 (Extended data format) and higher. ECH Handler sends ECH data files to Contact Analyzer via the ASCII conversion option. NICE Analyzer customers looking for an ECH reporting system that supports CMS R16 (and higher) are strongly encouraged to consider Avaya's Contact Analyzer.

**Avaya Operational Analyst (OA)**

OA is an Avaya data reporting product that supports CMS ECH data and CMS Interval data feeds. ECH Handler looks for the presence of the OA Forwarder software on the CMS. When an ECH data file is ready to be processed ECH Handler places a copy of the binary ECH file into the OA Forwarder's queue.

**Aspect DataMart**

DataMart is a reporting product from Aspect. ECH Handler creates a copy of each binary ECH data file on the CMS's hard drive for retrieval by Aspect DataMart**.** ECH Handler supports up to two Aspect DataMart feeds.

# ASCII Conversion

The main functionality of ECH Handler is to convert the binary ECH data files into delimited ASCII data files suitable for loading into a customer-provided database. The ASCII ECH data files are then securely transferred to the receiving server.

Optionally, the file transfer can be disabled for cases where the customer chooses to 'pull' the files rather than having CMS 'push' the files. Files left in the queue directory will be removed from the CMS when the file becomes over 24 hours old.

The following ASCII data format configuration options are available per session:

1. Pipe or comma field delimiter

   Includes a terminating delimiter
2. 2 Date-time formats

   type 2 - |YYYY-MM-DD hh:mm:ss| (one field - the standard format)

   type 1 - |MM/DD/YYYY|hh:mm:ss| (two fields)
3. Append the UNIX host name to the end of each record

   Example: |r3abcde|
4. Include a header line in each file, in this format:

   version|sequence number|
5. Custom file name, in this format:

   chrYYYYMMDDhhmmss

Sample database schema files are posted on:

https://support.avaya.com/products/P1647

The schema files can be used as a guide for creating the receiving database tables. It is the customer's or third-party vendor's responsibility to create the receiving tables in their database system.

The ECH data file format is not directly tied to the release of CMS and only sometimes changes between major releases of CMS. See the CMS Call History Interface documentation for additional information on the differences between ECH formats (Appendix B in the CMS R19 documentation).

| ECH Format | Call Record Fields |
|---|---|
| R18.1, R19 – R19.x | 93 |
| R18 | 89 |
| R17 | 88 |
| R16.3 | 85 |
| R16 – R16.2 | 83 |
| R12 – R15 Extended | 77 |
| R11 – R15 Standard | 65 |

Each ASCII data record is terminated with a field delimiter and end-of-line marker. For some database import tools, this can cause an issue where it thinks there is an additional null field at the end.

### CMS Upgrades & ECH Filter

To ease the challenges & disruptions that come with a CMS upgrade, ECH Handler includes "filters" for converting the current ECH data format to the ECH data format of the previous CMS version. These filters are intended to be used temporarily, until the customer can update their receiving ECH reporting application with support for the newer CMS ECH data format.

The filters cannot be used in combination and ECH Handler can filter back only one CMS release.

### Included Filters

| Filter Name | Description |
|---|---|
| R16 Filter | Converts R16-R16.3 binary ECH data to R12-R15 Extended format (ASCII) |
| R16.3 Filter | Converts R16.3 ECH binary data to R16-R16.2 format (ASCII) |
| R17 Filter | Converts R17 ECH binary data to R16.3 format (ASCII) |
| R18 Filter | Converts R18 ECH binary data to R17 format (ASCII) |
| R18.1 Filter | Converts an R18.1 ECH binary data to R18 format (ASCII, standard or Contact Analyzer format) |

**Note:**

Previous CMS version dial plan limits must be adhered to for the filter to work correctly. For example, an Extended Dial Plan (EDP) must not be implemented when the R16FILTER will be used. **The filters do not modify the content or format of the data fields, just the selection of data fields**.

For cases not covered by the included filters (e.g. converting R18 ECH format back to R15 format) please contact APS for a quote for the add-on software called ECH Filter. The ECH Filter add-on allows for many additional filter use cases, including data format conversions and filtering of the ECH data by ACD, Skill, VDN, location id, tenant, etc.

### ASCII Conversion - Miscellaneous

The CMS Call History product manual for each CMS version is available on:

https://support.avaya.com/products/P0030

1. The manual includes a description for each ECH data item, in alphabetical order.
2. The manual contains sample call segments, **in delimited field order**, for the Standard call record format

**Note:**

The CMS ECH manual states that "-1" in a data field means Not Applicable.

**ASCII Conversion Option – Synonyms Files**

ECH Handler can optionally transfer **synonyms** files (CMS dictionary items) for Agents, Splits/Skills, VDN's, ACD's, AUXREASON codes, CWC's, trunk groups, vectors, and location IDs. The synonyms file transfer is performed once per day to the same destination as the ASCII data files.

The synonym format is:

**ACD|value|synonym|**

The synonyms files are named agname.dat, split.dat, vdn.dat, acd.dat, aux_rsn.dat, cwc.dat, tkgrp.dat, vector.dat, loc_id.dat, and tenant.dat (R18 and newer).

**Sample synonym file data:**

| agname.dat | split.dat |
|---|---|
| 1\|8888\|Jones, Ken\| | 1\|1\|Split 1\| |
| 1\|8889\|MaryG\| | 1\|2\|Split 2\| |

**ASCII Conversion Option - SAL Alarming**

If INADS alarming is active on the CMS and the SFTP file transfer fails, then a SAL alarm will be raised upon a file transfer failure.

# ASAIUUI Field

The **ASAIUUI** field (R12-R15 Extended Record Format and later) contains data recorded in the form of a **hexadecimal** value. When the 97-byte binary ASAIUUI field (96 bytes plus a terminating null byte) is converted to ASCII characters, the ASAIUUI hexadecimal value is expressed in hexadecimal notation. When expressed in hexadecimal notation the ASAIUUI field has a maximum width of **192 characters** (2 hex characters per binary byte).

As an example, the 1-byte decimal value "255" is expressed in hex as "FF". Likewise, the 1-byte decimal value "2" is expressed in hex as "02". Thus, the hex value "0202" (decimal 514) does not get incorrectly expressed as "22" (decimal 34).

The ASAIUUI field value is specifically recorded in hexadecimal format. The original binary ASAIUUI value is commonly not an ASCII character string when it is encoded. It could be an encrypted string, a machine language routing statement, or something as diverse as an IBM EBCDIC character string. It depends on what was inserted by the originating application.

The ASAIUUI value can also contain the ECH field delimiter character. A comma or pipe symbol is used as the field separator in the ASCII converted ECH files. A comma or pipe embedded in an ASAIUUI value thus can cause the field count to be incorrect and subsequently the record to be rejected by the receiving application's load routine.

Beginning with ECH Handler version 1.7.6 (July 2013) the ASAIUUI field can optionally be converted to ASCII notation (as opposed to the original hex notation). When the ASCII notation option is utilized, the customer should ensure that all data inserted into the ASAIUUI field is in the form of printable ASCII characters.

When the ASCII notation option is utilized, the ECH Handler ASCII conversion program will pre-scan the entire ASAIUUI value (up to UUI_LEN bytes). If a non-printable byte is found (e.g. # ? * . \n) then the output character will be replaced with a character that can be defined in the ECH Handler configuration file (by default this is an “N” or a blank character). The configured field separator will also be treated as a non-printable character.

# CALLID Field

The CALLID field is generated by the CMS (not by the PBX) on a per-ACD, per-CMS basis. Thus, **in an HA CMS pair the CALLID will not be the same on the HA/Secondary as on the Primary CMS**.

The CALLID is intended to be unique for a given day, although vary large call volumes could cause it to repeat. The CALLID number is not a configurable item.

The combination of CALLID + ACD does not guarantee ECH record uniqueness.

> **Note:**
>
> See the ECH Whitepaper for information on how to guarantee record uniqueness:
>
> https://downloads.avaya.com/css/P8/documents/101058206

# UCID Field

The UCID field is generated by the Communication Manager (CM).

> **Note:**
>
> UCID details can be found in this guide:
> https://downloads.avaya.com/css/P8/documents/100009961

The UCID is an 8-byte data element that displays as a 20-character number.

See Appendix 3 for additional details regarding UCID.

**How does UCID work?**

Every trunk seizure in Communication Manager generates a new UCID and a new call segment. If a UCID exists for an incoming call segment, CM stores the UCID without any modification. For incoming call segments without UCID, CM generates a new UCID for that call segment. For calls spanning multiple switches, the UCID is sent along with call information during call setup across the network. The optional “CDR Enhancements for Network” feature (SA8702) will attempt to keep the same UCID across multiple call segments in conference and transfer

scenarios. Depending on the call scenario, the UCID will either remain unique to that call or merge with other UCIDs.

### UCID Troubleshooting

The following troubleshooting hints should be reviewed when UCIDs are not transmitted, even though you received no error messages while administering the UCID feature, and all software and connections meet the minimum requirements:

- A tandem communication server has the option set to y for all trunk groups that AAR/ARS or station users may use to tandem an incoming call.
- If DCS is used, make sure all ISDN trunks between the communication servers used for DCS or remote AUDIX are configured in the D-channel mode.
- For CMS tracking purposes, make sure all trunks, VDN, and split/skills that handle calls for which UCIDs are tracked are administered as “measured” (either “both” or “external”).

# Data File Information

ECH Handler stores a compressed copy of each ECH data file on the CMS hard disk in its original binary format for 90 days by default starting with version 1.9.9. The stored binary data files serve as **backups** in case of an extended outage (over 24 hours) of the receiving server or network.

ECH data files that are queued up for transfer are removed once they are successfully transmitted or after being **left in queue for 24 hours**. ECH Handler thus automatically addresses short-duration problems on the receiving server and network outages with no user intervention. User intervention is required to resend ECH data files that are over 24 hours old.

For general planning purposes these calculations can be used for sizing:

1. One call segment will generate a little less than 1KB of data.
2. Each conference or transfer will generate a new call segment.
3. A 50K BHCC call center will, on average, generate a 1MB ECH data file approximately every 10 minutes.
4. ECH binary data files do not normally exceed 1MB in size (approx.1,000 call segments) and may be significantly smaller (depending on the call volume and configuration).

# Common Misconceptions Explained

1. In an HA CMS environment, the ECH data from the Primary CMS cannot be synchronized or merged with the ECH data from the Secondary CMS due to time-stamp differences. Think of it like two separate, redundant CMS servers processing the same messages at slightly different times. The resulting records are different enough to prevent automatically synchronizing ECH data.

2. ECH data is not a subset of CMS interval data and vice versa. The ECH process in CMS and the Interval Archiver process in CMS both listen to messages from the CM but each applies its own algorithm for determining metrics.

3. For currently available ECH reporting applications there is no correlation or relationship of any kind between other CMS Connectors and ECH Handler.

# Chapter 2. Downloading

The ECH Handler software is available via Avaya's Product Licensing and Delivery System (PLDS), accessible from this link for CMS R18 and later:

**https://plds.avaya.com**

In order to access PLDS, you must be an Avaya registered user.

**General download instructions:**

1. Log into PLDS using your Avaya username and password.
2. Once logged in, select **Assets** and **View Downloads** from the main menu.
3. Search for your **Company Name** using the magnifying glass button.
4. Once your company is chosen, select **APS CMS Connectors** from the **Application** drop down list.
5. Click **Search Downloads** to show a list of all software your company is entitled to download.
6. Click the **Download** button next to the name of the software and a pop-up box will appear asking for the location to save a zip file.

If the download you need is not available in the list, this usually means that your company **Sold To**, or **Parent Customer ID** does not have the associated entitlement.

Software must be ordered vi **Avaya One Source (A1S)** before entitlements are loaded into PLDS.

.

# Chapter 3. Installation

Implementation is usually handled by Avaya Professional Services or an Authorized Business Partner, and is typically an extra cost item.

Once downloaded, the zip file will contain any combination of these files:

| File Name | Description |
|---|---|
| software_version.tar.bz2 | The packaged software to copy to CMS |
| checksums.txt | Checksums in MD5 and SHA256SUM format |
| Installation.txt | Detailed installation instructions |
| RelNotes.txt | Summarized release notes |
| EULA.txt | End user license agreement |
| OpenSourceSoftwareLicenses.txt | A listing of open source software licenses |
| Secure_Connection_Setup.txt | Instructions for secure connections for real-time connectors |
| Troubleshooting.txt | Troubleshooting information |
| Configure.txt | Configuration information |

Additional software-specific files may also be included in the package.

Be sure to read all the .txt files with specific attention to the Instructions.txt and RelNotes.txt before beginning the installation.

**General installation instructions:**

1. Download the zip file to a local directory on your Windows, Mac, or Linux system.
2. Unzip the file via the appropriate method:
    a. On Windows, right click and choose **Extract All…**
    b. On Mac, double click the file to extract.
    c. On Linux, the command is **unzip filename.zip**.
3. Read all the *.txt files and follow the **Installation.txt** instructions.

# Chapter 4. Licensing

## WebLM Licensing

CMS Connectors use WebLM as the default licensing method for installation on CMS R18 and newer Linux servers.

In addition, this requires the installation of the weblm connector on the CMS server.

On https://plds.avaya.com, the weblm connector is identified by the Download ID **ACMS0000000002** and is available for download regardless of entitlements.

Documentation for the weblm connector is available here:

https://downloads.avaya.com/css/P8/documents/101058210

## Grace Period

CMS Connectors require a WebLM license for initial installation and configuration.

Once that process is complete, a 30-day grace period is allowed for situations where communication with the WebLM server is interrupted.

If the CMS Connector is in the grace period, warning messages will be written to the log file.

After 30 days of being unable to communicate with the WebLM server, the CMS Connector will enter ERROR mode and will stop functioning until the license error is corrected.

If the CMS Connector is in the error mode, error messages will be written to the log file.

## Legacy Licensing

All CMS Connectors also support legacy licensing, where a local license file can be installed in place of a WebLM license.

This is for customers who cannot use WebLM for some reason or are installing on an older release of CMS.

When using legacy licensing, Avaya Professional Services must perform the implementation so that the legacy license can be created and installed.

# Chapter 5. Security

## Secure by Default

CMS Connectors are secure by default when installed and configured in accordance with the provided instructions.

Some security considerations that have been taken:

1. Only processes with a specific need are run as the root user. The remaining processes are run as the cms or cmssvc user.
2. Permissions are set by default to not allow world write or execute at the UNIX filesystem level. A normalize script is provided to set permissions back to this level.
3. Umask is set so that any temporary files that are created are not world writable or executable.
4. Activities are logged for auditing, including all WARN and ERROR messages.
5. File and data transfers to locations off the CMS server are done in a secure, encrypted manner. This is typically via Secure File Transfer Protocol (SFTP) for historical connectors and Stunnel encryption for real-time connectors.

Some customers may need to configure less secure communications in order to be backwards compatible (e.g. FTP or raw TCP sockets). This functionality is supported but must be manually enabled. If enabled, it is recommended that the customer separate insecure network traffic into a VLAN or subnet.

## SSH Compatibility

By default, this software uses SFTP (SSH) in lieu of FTP for data file transfers. To utilize SFTP the customer is required to ensure that SSH is configured for non-interactive SFTP authentication (i.e. **Public Key Authentication**) on the receiving server. It is solely the customer's responsibility to provide and configure compatible SSH software on their receiving server.

**If the customer is unable to provide non-interactive, compatible SFTP functionality between the CMS and the receiving computer, FTP can be used for file transfers. Required Environment for SSH support:**

- R12 CMS or later
- SSH Server (e.g. Tectica, WRQ, F-Secure) on receiving Windows server
- ECH Handler version 1.18 (02/Mar/06) or later.

Other SSH environment combinations may be possible. If another combination is workable it will most likely require extra cost and custom modifications to ECH Handler. If the customer does not have the necessary in-house SSH expertise, consulting services (billable) are available from Avaya Professional Services.

# Chapter 6. User Guide

ECH Handler runs continuously on the CMS server while the CMS application is running.

It uses the UNIX cron utility to schedule jobs to run periodically at fixed times throughout the day. This is for items like transmitting files and log management.

Startup scripts will be installed (where applicable) by the installation program so that when the CMS server is rebooted, this software will also start automatically.

No maintenance is required as data files are archived every 24 hours, and logs automatically roll over after a certain size is reached.

Archived data files are kept for a minimum of 90 days (configurable) so they can be resent manually via the user menu if necessary.

## User Menu

A CMS Terminal Main Menu Addition is provided with ECH Handler. The user menu is accessible via the CMS Terminal interface (not via CMS Supervisor or CMS Web). To access the user menu, log in to CMS via Terminal emulation with the “cms” user ID.

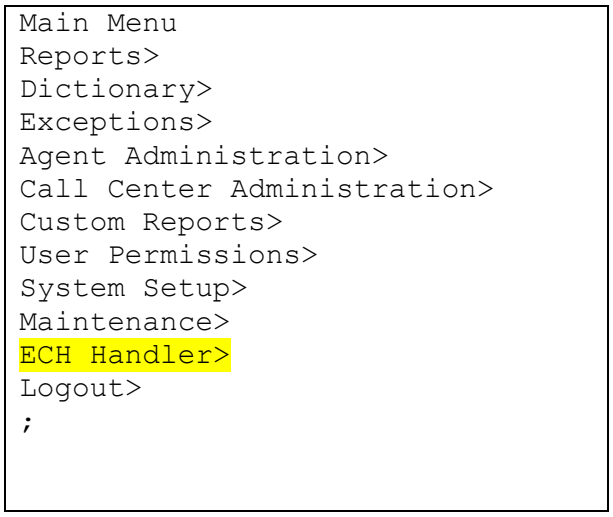



**Figure 1: Sample Main Menu Addition**

Logging in as “cms” and selecting the “ECH Handler>” menu choice from the CMS Main Menu will produce a sub-menu that is similar to what is shown below.

```
--- ECH Handler Menu ---
1) Show Version
2) List Data Feeds
3) View Maintenance Log
4) Display License Info
5) ASCII Data File Recovery
0) Exit
===============
 Choice ==>
```

**Figure 2: ECH Handler Menu**

The most common use case for this menu is to resend missing data files.

When resending missing data files, best practice is to send one day at a time and then process the files on the receiving system. This is to prevent issues that can happen when resending multiple days at a time (like having the same file name for different days).

# File Recovery Menu

Please note that the ASCII Data Feed File Recovery process cannot be used for binary data feeds. Binary data feeds must be recovered manually. See the Recovery.txt document for details.

At 03:10 each morning all the ECH files collected from the previous day are combined into a single compressed daily archive file and stored in the **/cms/ech_data/archive** directory. This recovery feature will uncompress the selected daily archive file, extract all the individual ECH data files contained in the decompressed daily archive file, and then resend one or all of the ECH files extracted from the selected daily archive file.

To begin the process of resending ECH data files, use the Main Menu addition labeled ECH> accessible using CMS Terminal or another terminal emulator with the cms login. As desired, additional logins can have access to the ECH> menu.

To start the recovery process, select option 5:

```
5) ASCII Data File Recovery
```

It will ask you for the session number to recover:

```
Enter a single ASCII data feed session number [1-32 or all]:
```

To determine the ASCII data feed session number run the ECH Handler Administration Menu and select option:

```
2) List Data Feeds
```

If desired, feeds can be recovered for all active ASCII sessions. Enter **all** in response to the session number request.
A listing of available daily archive files will be displayed next. Each line will contain the date-time that the file was created. You will need to make a note of the file name (right most column) for the daily archive file that you wish to use for recovery.

After viewing the list of available daily archive files, you will then be prompted for the name of the daily archive file that you wish to recover individual ECH data files from. For example:

```
-rw-r--r--. 1 cms  cms  401859 Dec  8 03:10 2020343.bz2
-rw-r--r--. 1 cms  cms  392829 Dec  9 03:10 2020344.bz2
-rw-r--r--. 1 cms  cms  391124 Dec 10 03:10 2020345.bz2
-rw-r--r--. 1 cms  cms  396845 Dec 11 03:10 2020346.bz2
-rw-r--r--. 1 cms  cms  365916 Dec 12 03:10 2020347.bz2
-rw-r--r--. 1 cms  cms  369742 Dec 13 03:10 2020348.bz2
-rw-r--r--. 1 cms  cms  364234 Dec 14 03:10 2020349.bz2
-rw-r--r--. 1 cms  cms  395425 Dec 15 03:10 2020350.bz2
-rw-r--r--. 1 cms  cms  393916 Dec 16 03:10 2020351.bz2
-rw-r--r--. 1 cms  cms  394244 Dec 17 03:10 2020352.bz2
-rw-r--r--. 1 cms  cms  395972 Dec 18 03:10 2020353.bz2
-rw-r--r--. 1 cms  cms  371883 Dec 19 03:10 2020354.bz2
-rw-r--r--. 1 cms  cms  367729 Dec 20 03:10 2020355.bz2
-rw-r--r--. 1 cms  cms  372728 Dec 21 03:10 2020356.bz2
-rw-r--r--. 1 cms  cms  390654 Dec 22 03:10 2020357.bz2
```

It will ask you for the file name:

```
Enter the daily archive file name (example: 2012061.bz2):
```

When a valid file name is entered, the following messages will be displayed:

```
using file <filename> for recovery (session: <session number>)
copying <filename> to recovery directory
uncompressing <filename>
extracting the files from the daily archive
```

Next, the list of ECH data files extracted from the daily archive file will be displayed. The next to last column is the time stamp for when the file was created. Make a note of the exact time stamp (e.g. 01:15) for the file that marks the first file to recover and the time stamp of the last file you wish to recover:

```
-rw-rw-rw-. 1 root cms 158408 Mar  8 00:13 chr1905.649
-rw-rw-rw-. 1 root cms 136808 Mar  8 00:45 chr1906.650
-rw-rw-rw-. 1 root cms 138248 Mar  8 01:15 chr1907.651
-rw-rw-rw-. 1 root cms  12968 Mar  8 01:17 chr2001.652
-rw-rw-rw-. 1 root cms 154088 Mar  8 01:50 chr2002.653
```

```
-rw-rw-rw-. 1 root cms 148328 Mar  8 02:01 chr2006.657
-rw-rw-rw-. 1 root cms 162008 Mar  8 02:23 chr2003.654
-rw-rw-rw-. 1 root cms 151928 Mar  8 02:33 chr2007.658
-rw-rw-rw-. 1 root cms  66248 Mar  8 02:50 chr2008.659
-rw-rw-rw-. 1 root cms 170648 Mar  8 02:55 chr2004.655
-rw-rw-rw-. 1 root cms  62648 Mar  8 03:06 chr2101.660
```

Example: beginning file time stamp - 01:15, ending file time stamp - 02:50

Enter the beginning and ending file time stamps exactly as shown in the file listing. Please be aware that the list will probably be long, and you will need to page though it by following the prompt at the bottom of your screen. To resend all the files from the selected daily archive file, enter 'all' when prompted for the beginning file time stamp.

```
Enter beginning file time stamp (example: 06:28) or 'all':
Enter ending file time stamp (example: 14:28):
```

There will not be a prompt for the ending file time if **all** is entered for the beginning file time.

If the beginning file time or ending file time is not entered exactly as displayed, there will be a second opportunity to enter the time. After the second attempt fails, the recovery process will end and return to the ASCII Data Feed File Recovery menu.

After successfully entering the beginning file time and ending file time, the following messages will be displayed:

```
Building the list of files to resend
Calling the resend script for the selected files
Resending chr1905.649 ...
Resending chr1906.650 ...
Resending chr1907.651 ...
```

The selected files have been converted to ASCII and placed in the associated queue. They will be resent by the next scheduled run of the respective ftp/sftp cron job.

# Chapter 7. Upgrades

Customers that are entitled to Upgrade Advantage can download and install the latest version of the software at any time.

Implementation is typically performed by Avaya Professional Services or an authorized Business Partner (fee-based).

The installation script looks for existing, already installed copies of the software and will move them to a backup directory on the CMS server. This is so that old settings and configurations will be maintained for roll-back purposes. Old configuration files can be used for reference; however, avoid using old configuration files or other old files in the updated software. Configuration files in the new software should be reviewed and manually edited per the instructions.

# Chapter 8. Support

Customers that have purchased support advantage or a support contract from Avaya can open a request for assistance on the **https://support.avaya.com** website.

## Logging

Logs are maintained in the software home directory and are rolled over when a configured line size is reached.

These logs contain runtime and error messages in this format:

YYYY-MM-DD HH:MM:SS Level Program: Message

For example:

2020-11-02 03:10:05 INFO ech_archiver: Archive Completed

Warnings and Errors will have the appropriate level assigned to the log messages:

For example:

2020-11-05 23:58:11 WARN ech_copy: License VALUE_ACMS_ECH_HANDLER is in the 30-day grace period.

2020-11-09 07:28:06 ERROR ech_copy: License VALUE_ACMS_ECH_HANDLER has expired.

## Documentation

This document and additional CMS Connectors documentation can be downloaded from:

https://support.avaya.com/products/P1647

# Appendix 1. Frequently Asked Questions

**Q: Are there configurable parameters for controlling when the ECH files are transmitted?**

**A:** The ECH "buffer" size is configured per ACD in System Setup -> Data Storage Allocation -> Number of call records (0-99999). 99999 is the maximum number of call "segments" (not calls) that can be allocated across all ACDs combined (not per each ACD). Setting a smaller allocation/buffer size per ACD will result in the ECH files reaching their buffer size allocation sooner and, thus, ECH files being sent more frequently. Additionally, as long as there is call activity resulting in accumulated data, an ECH file will be created at the end of each CMS Storage Interval regardless of buffer size.

When the ECH files are created for transfer they are placed by ECH Handler into queues. The queues are checked and processed every 10 minutes by 'cron' jobs (configurable). The queue for Operational Analyzer (OA) is processed immediately. Queue processing (file pulling) by Aspect DataMart is determined by the third-party DataMart application.

**Q: Can ECH files be created at specific time intervals?**

**A:** ECH files are created solely based upon buffer size allocation (as explained in the previous answer) and at the end of each CMS Storage Interval.

**Q: Is there an ECH "buffer" for each ACD?**

**A:** All ACDs share a common buffer. When the size allocation for any individual ACD is reached the buffer (a file) is processed and placed in queue for transfer. Thus, the ECH file sizes can vary significantly from one file to the next.

**Q: Is all accumulated data in the buffer transmitted when the ECH transfer file is created?**

**A:** Unfortunately, no. The ECH feature commonly retains some data in its internal buffer (in memory). Only call chains that are complete are transmitted. This includes all segments (transfers/conferences) and any agent time associated with that call.

**Q: What is the file naming convention for the ECH files?**

**A:** By default, ECH Handler does not alter the file naming convention that is documented in the ECH product manuals. The files are named chrXXXX.YYY where XXXX is a non-representative four-digit number. “YYY” is a one to three-digit non-representative extension number. The numbers are generally, but not rigidly, sequential and are only guaranteed not to repeat for one day (midnight to midnight).

**Q: Are the ECH file names unique?**

**A:** The numbers used in the file names must roll over at some point. The ECH file names are typically unique for one day (midnight to midnight). However, in actual usage the files names are normally unique for much longer (several days or more).

If a truly unique filename is needed, ECH Handler can be configured to send files with this name format: chrYYYYMMDDhhmmss

**Q: What are the call rate limitations for ECH?**

**A:** Below are the observed ECH Call Rate Limits (aggregate total for all ACDs). The most up-to-date information can be found in the CMS Call History Interface documentation on https://support.avaya.com.

R18 – R19.x 1,200,000 call segments/hour
300,000 call segments/20-minute span

R16.3-R17 – 600,000 call segments/hour
200,000 call segments/20-minute span

R14-R16.2 – 400,000 call segments/hour
133,000 call segments/20-minute span

R13/R13.1 – 300,000 call segments/hour
100,000 call segments/20-minute span

R12 – 99,000 call segments/hour
33,000 call segments/20-minute span

**Q: What are the call rate limitations for Internal Call History (ICH)?**

**A:** See the CMS Call History documentation on https://support.avaya.com.

**Q: How can you determine if the ECH Data was really sent by the OA Forwarder?**

**A:** Run the following commands to check if the data was really sent:

```
su - biadmin
. /opt/BI/.profile
```

(Make sure there is a space between the first "`.`" and the first "`/`" characters.)

```
dcstat -n forwarder –a
```

(Substitute the appropriate forwarder name in for the `forwarder` in the command above.) The following command provides a list of the forwarders.

```
pa list all
```

**Q: What ECH file should I use for the new ECD feature?**

**A:** The initial release of ECD was in CMS R18.1. If using the ECD feature, you should refer to the "R18_ecd_sample" and "R18_ecd_schema" files.

# Appendix 2. Additional Information

The following documents on **https://support.avaya.com** describe ECH Data Formats and differences between versions.

Use the search feature and enter the below text.

- “Avaya Call Management System Call History Interface”
- “ECH White Paper”
- “Contact Analyzer User Guide”

# Appendix 3. UCID Instructions

## UCID - Universal Call Identifier

UCID details can be found in this guide:
https://downloads.avaya.com/css/P8/documents/100009961

The UCID is an 8-byte data element that displays as a 20-character number.

**How does UCID work?**

Every trunk seizure (call segment) in Communication Manager generates a new UCID. If a UCID exists for an incoming call segment, CM stores the UCID without any modification. For incoming call segments without UCID, CM generates a UCID for the call segment. For calls spanning multiple switches, the UCID is sent along with call information during call setup across the network. The optional “CDR Enhancements for Network” feature (SA8702) will attempt to keep the same UCID across multiple call segments in conference and transfer scenarios. Depending on the call scenario, the UCID will either remain unique to that call or merge with other UCIDs.

**What creates UCIDs?**

Both the CM and the Experience Portal can create UCIDs once the capability has been enabled. In other words, neither product automatically creates UCIDs until the feature is enabled.

**UCID Format:**

1. Node ID (N)

   A unique number between 1 and 32767 that identifies the switch in the network.

2. Sequence number (S)

   A number between 1 and 65535 that uniquely identifies the call in a given node.

3. Timestamp (T)

   The number of seconds since epoch (midnight 1 Jan, 1970) at the time of the call origination.

The format of UCID is: NNNNNSSSSSTTTTTTTTTT

For example, if a call segment has the following information:

Node ID: 21; Sequence Number: 5; Timestamp: 946085673

The generated UCID in ASCII format will be:

00021000050946085673

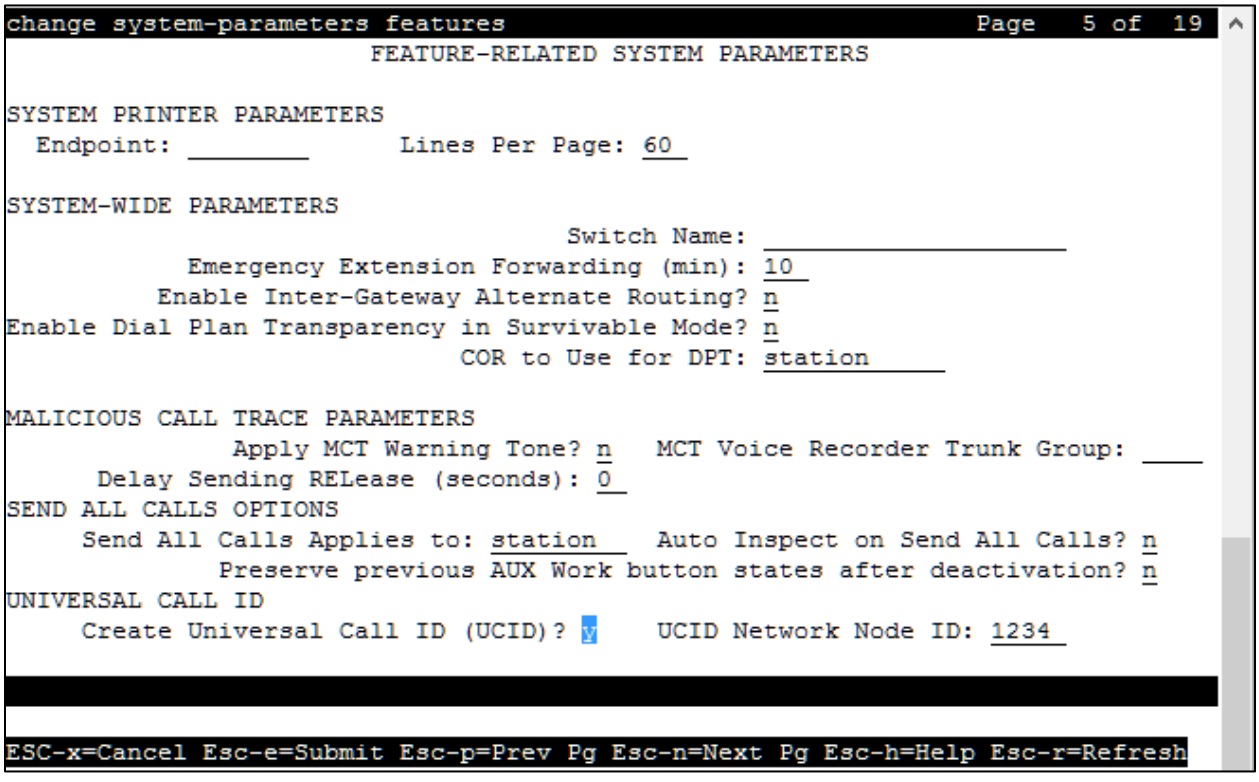
**To enable the optional UCID feature:**

UCID also needs to be administered in all Experience Portals in the network:

https://downloads.avaya.com/css/P8/documents/100146867

This feature enables UCID for each call segment in CM. All CM's in the network should be configured to create Universal Call ID's and have a unique Network Node ID.

1. Login into CM (terminal, ProVision, Site Administration, etc.).
2. Type **change system-parameters features**.
3. Go to page 5. This page may be different for other versions of CM but not much.
4. At the bottom of the window in the prompt "Create Universal Call ID (UCID)", change to yes.
5. Be sure to assign a unique node number across all CM's that will be used for reporting. The number doesn't matter just so it's unique.
6. Save.



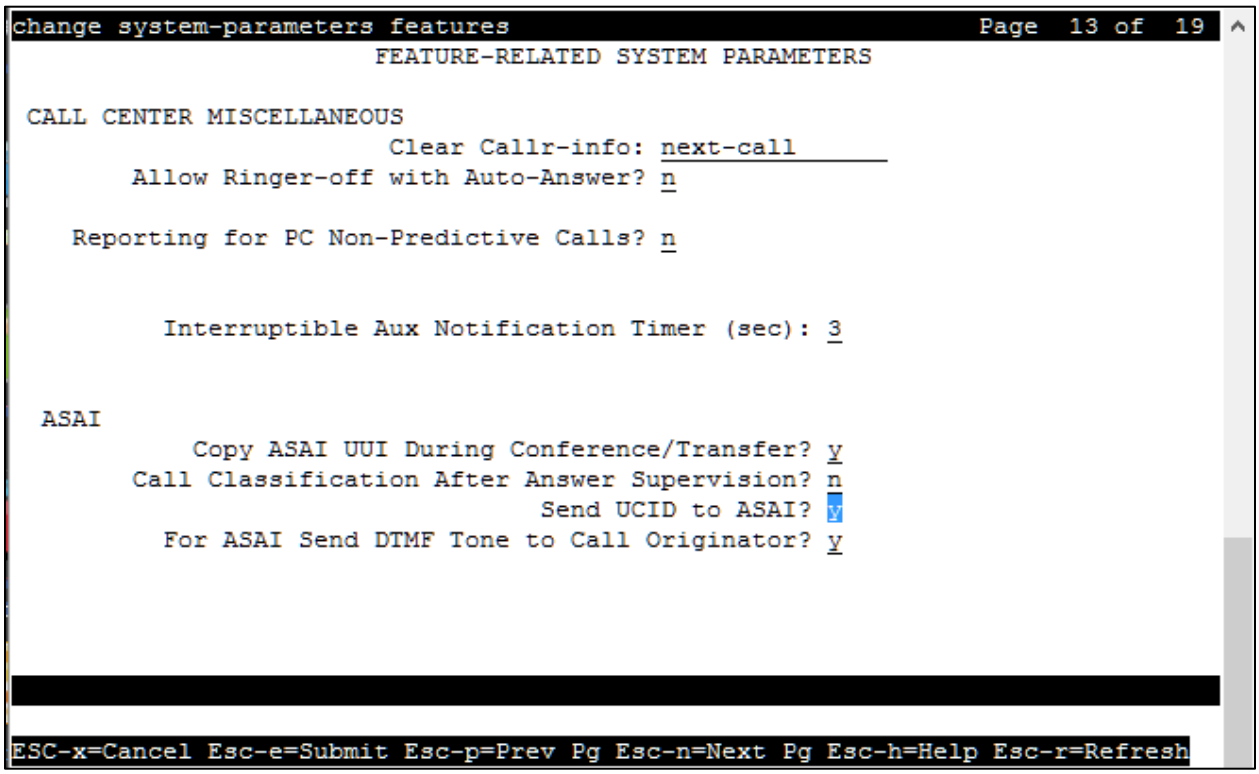
**To enable the optional "send UCID to ASAI" feature:**

This feature will send the UCID of a call to adjuncts.

See this PSN before enabling this feature:

https://downloads.avaya.com/elmodocs2/PSN/PSN1015u.pdf

1. Login into CM (terminal, ProVision, Site Administration, etc.).
2. Type **change system-parameters features**.
3. Go to page 13. This page may be different for other versions of CM but not much.
4. In the prompt "Send UCID to ASAI?" change to y.
5. Also be sure the "Copy ASAI UUI During Conference/Transfer" is set to y.
6. Save.



**To enable the optional "Send UCID" for ISDN trunks:**

This feature is related to BSR (Best Service Routing) and/or ELAI (Enhanced Look Ahead Interflow) sending the UCID in the UUI IE field for interflows on IDSN trunks. Universal Call Identification (UCID) relay over ISDN trunks depends on this setting. If BSR or ELAI is being used, this feature should be set to yes.

If using Avaya IQ, see this PSN:

https://downloads.avaya.com/css/P8/documents/100154085

1. Login into CM (terminal, ProVision, Site Administration, etc.).
2. Type **change trunk-group x** (replace x with the trunk group number).
3. Go to page 3. This page may be different for other versions of CM but not much.
4. In the prompt "Send UCID to ASAI?" change to y.
5. Save.

```
change trunk-group 1                                        Page   3 of  21
TRUNK FEATURES
          ACA Assignment? n            Measured: both       Wideband Support? n
                                                          Maintenance Tests? y
                                Data Restriction? n     NCA-TSC Trunk Member:
                                       Send Name: n      Send Calling Number: n
            Used for DCS? n                             Send EMU Visitor CPN? n
   Suppress # Outpulsing? n
 Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

                                              Replace Restricted Numbers? n
                                             Replace Unavailable Numbers? n
                                                   Send Connected Number: n
Network Call Redirection: none                  Hold/Unhold Notifications? n
              Send UUI IE? y
                Send UCID? y
 Send Codeset 6/7 LAI IE? n                        Ds1 Echo Cancellation? n

    Apply Local Ringback? n                US NI Delayed Calling Name Update? n
 Show ANSWERED BY on Display? y
                             Network (Japan) Needs Connect Before Disconnect? n
 DSN Term? n

ESC-x=Cancel Esc-e=Submit Esc-p=Prev Pg Esc-n=Next Pg Esc-h=Help Esc-r=Refresh
```

If attempting to cross reference UCID between two ACD's, ensure the trunks on both CM's are using the same codesets and supplementary service protocol settings (page 2).

Also, be sure that "Send UUI IE" is set to y.

**To enable the optional "CDR Enhancements for Network" (SA8702) feature:**

This feature preserves the UCID of a call for the second call legs associated with station call conference/drop and station call transfer operations on a system wide basis.

This feature is not compatible with SIP Elite Agents.

This feature is not compatible with Avaya IQ reporting.

This feature is not needed if the destination reporting system for External Call History is Contact Analyzer. CA has a cradle-to-grave algorithm that will tie all the segments of a call together regardless of this setting.

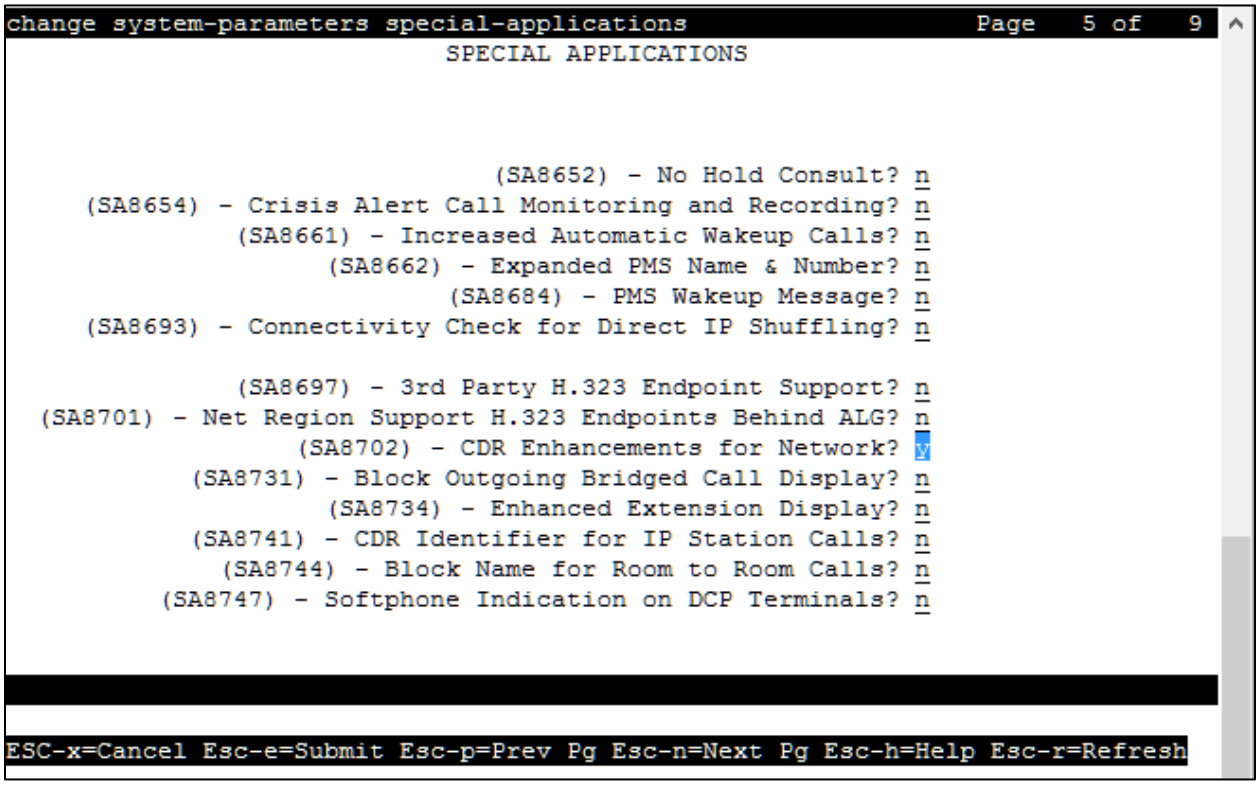
Additional information on special applications can be found here:

https://downloads.avaya.com/css/P8/documents/100121721

See this PSN before enabling this feature:

https://downloads.avaya.com/css/P8/documents/100180148

1. Login into CM (terminal, ProVision, Site Administration, etc.).
2. Type **change system-parameters special-applications**.
3. Go to page 5. This page may be different for other versions of CM but not much.
4. In the prompt "(SA8702) - CDR Enhancements for Network?" change to y.
5. Save.



6. After the 8702 feature is enabled you have to also enable the “Copy UCID for Station Conference/Transfer”
7. Type **change system-parameters features**.
8. Go to page 5. This page may be different for other versions of CM but not much.
9. At the bottom of the window in the prompt "Copy UCID for Station Conference/Transfer”, change to yes.
10. Save