



CHAPTER 13

Service Inventory Common Format

Cisco HCM-F provides the Service Inventory application to periodically query the Cisco Unified Communications Domain Manager server and report the current operating state of the underlying Unified Communications applications. It provides information about customers, subscribers, devices, and other details that are currently provisioned in Cisco HCS. This data is ultimately used by the service provider (SP) customer to generate appropriate billing records for end customers as part of a regular business processes.

To address the many and disparate requirements of various SP customers, a common SI file format is required. This chapter specifies Version 8.6(2)ES1 of a “Cisco Service Inventory Common Format” designed to contain and report all appropriate service fulfillment data currently provisioned in Cisco HCS. This common format is not specifically designed to meet any single Cisco HCS customer’s requirements. The format helps you address the collective needs of multiple SP customers. During deployment, the SP has the option of accepting the output of the SI process in the Cisco SI Common Format as presented, or engaging with Cisco Advanced Services organization for the development of technologies to translate the Cisco SI Common Format into a custom output.

This chapter outlines the requirements for the Service Inventory Common Format, the data contained within the output files, and finally, the formal specification of the format and data types.



Note

This chapter describes the format of the final output files but does not describe how data is collected by the Service Inventory application.

This chapter contains information on the following topics:

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Service Inventory Data

This section provides an outline of the types of data that are collected during the Service Inventory process. The purpose of the format specification is to represent the information in a common format that is not specifically tied to any single customer's format requirements. The data points listed comprise elements required by current customers, elements required by Cisco, and additional fields that are reserved for future use. This section is a summary of the types of data that are collected and is not a complete list. See the format definitions and example files in “[Filename Specifications](#)” section on [page 13-4](#) for a complete listing of fields and data.

Data Points

**Note**

This listing does not specify the order or arrangement of data in the files. This section provides a summary of the types of data that are presented.

Report Summary Information

The following data points are included in the Report Summary Information:

- Filename
- Domain Manager Hostname
- Domain Manager IP Address
- Reporting Period Start Date/Time (reporting period)
- Reporting Period End Date/Time (reporting period)

Report Statistical Information

The following data points are included in the Report Statistical Information:

- Total Provider Count
- Total Reseller Count
- Total Customer Count
- Total Site Count
- Total Subscriber Count
- Total Unassigned Device Count
- Total MACD Row Count

Service Inventory Report Data

The following data points are found in the Service Inventory Report Data:

- Customer Information
 - Name
 - Address

- Contact Information
 - Additional Details
- Customer Details
 - Customer Device Information
 - Device Make
 - Device Model
 - Site Information
 - Customer Name
 - Site Name
 - Site Address
 - Additional Details
- Subscriber Information
 - Customer Name
 - Site Name
 - Subscriber Username
 - <Additional Details>
- Subscriber Feature Information
 - Customer Name
 - Feature Name/Identifier
 - Feature State Details
- Device/Line Information
 - Device identifiers, Device MAC addresses
 - Device Line Associations
- Move/Add/Change/Delete (MACD) Information
 - Reseller MACD Events
 - Customer MACD Events
 - Site MACD Events
 - Subscriber MACD Events
 - Feature Group MACD Events
 - Device MACD Events
 - Line MACD Events

Viewing Layout and Format

This section outlines the layout and format of data points in the Cisco Service Inventory output file. In general, the data stored in the files is displayed by customer with some additional processing information included where necessary. The following section gives an overview of the format, a description of the file layout, a listing of the various row formats and data types that are in the output files, and finally, examples of Cisco Service Inventory output files.

File Extensions and Output

The Cisco SI Common Format presents all necessary data in a human-readable format while keeping output file size to a minimum. The format is an ASCII-based file with the “.si” file extension. Files delivered by the CUCDM server (or any other Domain Manager) before final output are identified by the “.dsi” file extension (“Domain Manager Service Inventory”). The Domain Manager server delivers files in a single-file output. The Service Inventory application also maintains additional intermediate file formats that follow a similar naming convention; however these file formats are for internal use only and are not the focus of this document.

The output is arranged into the following sections:

- Report Summary Information
- Report Definition Information
- Service Inventory Data
 - Provider Data > Reseller Data > Customer Data > Site Data > Subscriber Data (+Subscriber Feature Data, +Subscriber Device Data)
- MACD Data
 - Reseller, Customer, Site, Subscriber, Device, Line, and Feature Group MACD Data
- Report Statistical Information

MACD Data

MACD data in the file is represented as a row indicating the updated state of whatever entity is currently being added, changed, or deleted. Unlike a change notification, which shows a “before” and “after” state of the entity, the MACD representation shows only the “after” state. For a delete operation, the “before” state is shown fully in and in most cases precisely the information being deleted. This information may differ depending on the Domain Manager and the use case. Where necessary, the parsing applications must interpret intermediate states based on the combination of static service inventory data and MACD data.

Filename Specifications

The format of the service inventory filenames are critical to the proper operation of the SI applications. The following parameters apply to filenames in this format:

- The filename follows this format:

```
<date><time><timezone>+<domainManagerSequenceID>+<domainManagerType>+<fileNumber>+<fileCount>.<extension>
```

Formats	Example
File:	20110528032327GMT+NewYork001+CUCDM+1+1.dsi
1 File:	110528032329GMT+Chicago45+CUCDM+1+1.csi
3 Split Files:	20110528032329GMT+Chicago45+CUCDM+1+3.si 20110528032329GMT+Chicago45+CUCDM+2+3.si 20110528032329GMT+Chicago45+CUCDM+2+3.si

- The standard field delimiter in the filename is “+”. This avoids UNIX/Linux escape character issues and minimizes character escape when writing Java applications against the format.
- The <domainManagerSequenceID> field is mandatory and identifies the specific Domain Manager that is used to generate the output file. This field must be unique across Domain Managers within a data center.

General Format Specifications

Additional general format specifications include:

- Data elements in the file are stored in text, integer, and standard date/time formats where appropriate.
- The standard end-of-line character “\n,” while not typically visible in common text-editing applications, is used and available for parsing applications to use for line tokenization.
- The data element delimiter is the pipe symbol (|). Each line starts and ends with a pipe symbol, with a pipe symbol between each data point on the line.
- The pipe symbol “|” is not a valid character within fields in the format.
- An empty (null) field is represented by a tilde symbol (~). Empty fields/columns are not skipped.
- Data rows that are entirely or partially inaccurate are appended with an asterisk (*) at the end. This notation is *not* applied to Report Summary or Report Definition rows. See “[Data Accuracy Handling](#)” section on page 13-5 for more information.
- All MACD rows in the file are listed in the MACD section defined by the starting tag |MACDSTART| and by the closing tag |MACDEND|. (See “[MACD Row Format](#)” section on page 13-19 for more information.)

Data Accuracy Handling

Certain scenarios exist in which the data provided is not entirely accurate or does not even exist while Service Inventory data is processed. To effectively handle such scenarios while still preserving the overall integrity of a service inventory file, the format provides the asterisk (*) symbol for proper notation.



Note

You cannot apply this notation to Report Summary rows. Use caution with parsing applications that handle and process data in the report.

Usage conventions and scenarios

If a single data element is known to be invalid, an asterisk is placed at the end of the field itself.

Example: Use of asterisk at the end of a field

```
|CUST|1011|333|236|XYZ, Inc.|~| ~*|~*|~*|~*|~*|~*|~*|
```

**Note**

The * after the ~ in the preceding example indicates that the fields are empty but are shown as empty because the actual values for the data field in question cannot be provided for some reason. See [“Customer Data Row” section on page 13-14](#) for an explanation of fields.

If an entire row is known to be inaccurate, place the asterisk at the end of the row outside the final pipe symbol.

Example: Use of asterisk at the end of a row

```
|DEF|FGROUP|CompanyXYZ|27|Basic Feature Group|10|11|19|17|*
```

**Note**

The * in the preceding example indicates here that the list of features in this feature group are not guaranteed to be accurate at report generation time. See [“Report Definition Row” section on page 13-10](#) for an explanation of the feature group definition row fields.

Global Data Formats

This section outlines the data formats that are used throughout the row formats. Deviation from these global formats is not permitted in the scope of this SI Common Format definition.

Telephone Number (Internal TN)

This format describes the representation of an internal telephone number (TN) or line (terms used interchangeably) throughout the specification.

Format	Example
<internalTN>	810100001

**Note**

Anywhere internal TNs are reported, the format is changed to report the IPPBX-configured full internal number.

Telephone Number (External TN)

This format describes the representation of an external E.164-compliant telephone number (TN) or line (terms used interchangeably) throughout the specification.

Format	Example
+<countryCode><areaCode><localNumber>	+19195552600

**Note**

External TNs that are listed in the report must adhere to the standard E.164 format specification. Typically, a list of external E.164 telephone numbers is associated with an internal TN. The first E.164 number listed (if there is more than one) is the primary E.164 number.

Device Identifier Fields

This format describes the representation of a device name and, where applicable, the device type, the Media Access Control (MAC) address number throughout the specification.

Format	Examples
<deviceName> <16DigitHexMACAddress>	SEP044553abf49C 044553abf49C
	TCPNAME ~

**Note**

No colon (:) is needed between the HEX digits in the MAC address element.

Date/Time Element

This format definition describes the way in which Date/Time elements are represented in information rows. All dates/times are represented in Greenwich Mean Time. All times are represented in 24-hour format. No separate definition row is required in the file to describe the date elements.

The following describes the characters that are used to construct the format:

- **yyyy** = Year
- **MM** = Month
- **dd** = Day
- **HH** = Hours
- **mm** = Minutes
- **ss** = Seconds
- **z** = Time Zone

Format	Example
<yyyyMMddHHmmssz>	20110423163455GMT

Time Zone Element

This format describes the representation of a Time Zone throughout the report. The Time Zone format is <"Region/City">.

Format	Examples
<timeZone>	Africa/Pretoria Europe/London Pacific/Fiji Indian/Maldives

Row Format Specifications

This section outlines the various secondary row formats that are used in the Cisco SI Common Format. Each type specification provides a format definition and an example usage.

File Header

File Header is the first line of each output file.

Format	Example
FSTART	FSTART



Note

This is a *required* row.

File Footer

File Footer is the last line of each output file.

Format	Example
FEND	FEND



Note

This is a *required* row.

Report Summary Header

Format	Example
INFOSTART	INFOSTART


Note

This is a *required* row.

Report Summary Row

This format definition describes how summary information is presented in the output files. An example of each data element is described.

Format	Examples
INFO <fieldName> <fieldValue>	INFO formatVersion 8.6.1.1 INFO filename 20110528032329GMT+12345+CUCDM+1+1.si INFO dmVerPlatform 4.1.6+0.4.47 INFO dmVerSoftware 7.3.0+er15 INFO dmHostname nelco-cucdm4 INFO dmDomain cisco.com INFO dmIP 172.18.200.200 INFO reportStartDT 06012011000000GMT INFO reportEndDT 06012011235959GMT

These fields can appear in any order, except the “formatVersion” row *must* be the first row and the “filename” row *must* be the second row in the Report Summary section.

Note

- The “reportStartDT” and “reportEndDT” fields are used to describe the reporting period covered by a report. These values do not indicate the time when the report is generated, nor the amount of time taken to generate the report.
- These are *required* rows. All fields are *required* in all rows.

Report Summary Footer

Format	Example
INFOEND	INFOEND


Note

This is a *required* row.

Report Definition Header

Format	Example
DEFSTART	DEFSTART


Note

This is a *required* row.

Report Definition Row

These row definitions specify which interpreted fields later on in the format are defined specific to the file. For instance, you need to define the list of features that are available on the system before specifying feature inclusion in a feature group. By encapsulating these definitions in the output, a parsing application can programmatically, at runtime, determine how to interpret information that is presented later in the output file.

Format

```
|DEF|<definitionName>|{additional column definitions here}|
```

Country Code Definition

Format	Example
DEF COUNTRY <country[1]ID> <country[1]Name> <country[1]Code> ... <country[N]ID> <country[N]Name> <country[N]Code>	DEF COUNTRY 15 United States USA 16 United Kingdom UK

Note

- This definition format permits the country code data to be displayed in either a two-character representation or a three-character representation. Parsing applications may use the definition row to map “country_X_id” to the appropriate names and abbreviations.
- All fields are *required* in this row.

Domain Manager Global Feature List Definition

Format	Example
DEF FEATURES <feature_1_ID> <feature_1_Name> ... <feature_N_ID> <feature_N_Name>	DEF FEATURES 10 Voice 11 Voicemail 19 Mobility

Note

- This row defines all possible features that are available on the current version of the Domain Manager server. Both **<featureID>** and **<featureName>** are *required* to properly map these features to subscribers and devices through the Feature Group Definition Row later in the file format.
- The CUCDM server provides a list of more than 50 features. In this case, the definition row for a report from that Domain Manager would have defined the same number of **<featureID>-<featureName>** pairs.
- The **<featureID>** values in this row are merely integers used for cross-reference within the current file. There is no guarantee of consistency for these IDs between different physical files. The integers are generated at runtime.
- The actual list of **<feature>** values corresponds to the supported features on the current version of the CUCDM server, regardless of the report format version being generated. For example, it is possible to generate an 8.6.1.1 SI report version using an 8.0 CUCDM application. In this case, the 8.6.1.1 report may contain features that did not exist on a 7.4 CUCDM application serving as the source of data for the same report version. Parsing applications import the features list at runtime to ensure data integrity and not simply validate features or feature groups based on **<featureID>** values. Each **<featureID>** value is still guaranteed to be a unique integer within the space of all **<featureID>** values.
- All fields are *required* in this row.

Customer Feature Group Definition

Format	Examples
DEF FGROUP <customerName> <featureGroupID> <featureGroupName> <feature[1]ID> <feature[2]ID> ... <feature[N]ID>	DEF FGROUP CompanyXYZ -1 Basic Feature Group 10 11 19 17 DEF FGROUP CompanyXYZ -1 Advanced Feature Group 10 11 19 17 22 34 35 36 53

Note

- This row defines all features that are assigned as part of a feature group.
- Features listed in the feature group definition row are “assigned” and available to those subscribers who have been placed in this group. A subscriber does not necessarily use these features.
- All fields are *required* in this row.

Customer Device Definition Row

Format	Example
DEF DEV <customerName> <device[1]ID> <device[1]Make> <device[1]Model> ... <device[N]ID> <device[N]Make> <device[N]Model>	DEF DEV CompanyXYZ 1 Cisco 7960 2 Cisco 7965 3 Cisco Cius_V1 4 Avaya Phone1000 5 Apple iPhone 3GS 11 Cisco CUPC8

Note

- The <deviceID> field is used to cross-reference the device make and model information in the [Device Data Row](#) for a particular device assigned to a subscriber.
- The device ID is a value provided by the CUCDM server that stores the device make and model information.
- Soft clients and Mobile devices are reported in this row.
- All fields are *required*.

Report Definition Footer

Format	Example
DEFEND	DEFEND



Note

This is a *required* row.

SI Report Header

Format	Example
SISTART	SISTART



Note

This is a *required* row.

Provider Data Row

Format	Example
PROV <providerID> <providerName>	PROV -1 Verizon



Note All fields are *required* in this row.



Note The <providerID> field is always “-1”.

Provider Footer Row

Format	Example
PEND	PEND



Note This is a *required* row if a |PROV| data row exists.

Reseller Data Row

Format	Example
RESELL <providerID> <resellerID> <resellerName>	RESELL -1 -1 ResellerXYZ



Note All fields are *required* in this row.

Reseller Footer Row

Format	Example
REND	REND

**Note**

This is a *required* row if a |RESELL| data row exists.

Customer Data Row

The <customerCountry> is within this field is represented by an ID that maps to the country definition row in this example.

Format	Example
CUST <providerID> <resellerID> <customerID> <customerName> <externalCustomerID> <customerAddress1> <customerAddress2> <customerAddress3> <customerCity> <customerState> <customerCountry> <customerPostalCode>	CUST -1 -1 -1 XYZ, Inc. ~ 7600 RTP Road ~ ~ Cary NC 15 27513

**Note**

All fields are *required* in this row.

Customer Footer Row

Format	Example
CEND	CEND

**Note**

This is a *required* row if a |CUST| data row exists.

Site Data Row

Format	Example
SITE <customerID> <siteID> <siteName> <externalSiteID> <siteAddress1> <siteAddress2> <siteAddress3> <siteCity> <siteState> <siteCountry> <sitePostalCode> <cityTimezone>	SITE -1 -1 RTP ~ 7600 RTP Road ~ ~ Cary NC 15 27513 EST SITE -1 -1 New York ~ 100 Broadway Ave ~ ~ New York NY 15 10101 EST

Note

- See the “[Time Zone Element](#)” section on page 13-8 for proper representation of the <cityTimezone> field for the site/location.
- All fields are *required* in this row.

Site Footer Row

Format	Example
SEND	SEND



Note

This is a *required* row if a |SITE| data row exists.

Subscriber Data Row

This section describes the format of the Subscriber Data Row.

Format	Example
SUB <customerID> <siteID> <subID> <subUsername> <subEmail> <subNameFirst> <subNameMiddle> <subNameLast> <subTitle> <subDepartment> <subDepartmentCode> <subContactTelephone> <featureGroupName>	Example 13-1 SUB -1 -1 -1 jsmith jsmith@xyz.com John Thomas Smith Manager Finance 99 +19198548001 Basic Services Example 13-2 SUB 236 001 156 jdoe jdoe@xyz.com Jane Mary Doe SeniorAccountant Finance 99 +19198548005 Basic Services

In [Example 13-1](#) and [Example 13-2](#) both John Smith and Jane Doe are a part of feature group “Basic Services.” The assignment determines the features available to John and Jane as defined in the feature group definition row with the corresponding <customerName> and <featureGroupName>.



Note

All fields are *required* in this row.

Subscriber Footer Row

Format	Example
SUBEND	SUBEND

**Note**

This is a *required* row if a |SUB| data row exists.

Device Data Row

This format defines how a single device is represented in the report. The device is registered and assigned to the subscriber when represented within a |SUB|/|SUBEND| pair. The device is registered to and functional at a site but is not assigned to a user when a device is placed outside a |SUB|/|SUBEND| pair in the report. Device examples include conference room phones, lobby phones, or Cisco Extension Mobility-enabled “empty” devices.

In these scenarios, the |DEV| row exists immediately following the |SITE| row and before |SUB| rows for that site. Device Data Rows cannot exist anywhere else in the report. Cisco Extension Mobility profiles are reported in the same way as traditional devices.

Format	Examples
DEV <customerID> <siteID> <subID> <deviceName> <deviceMAC> <phoneOrExtMobility> <deviceTypeID> <lineCount>	<p>Example 13-3</p> <pre> DEV -1 -1 -1 SEP0445687B8AAF 0445687B8AAF 0 3 1 </pre> <p>Example 13-4</p> <pre> DEV -1 -1 ~ SEP1143ADFE23FF 1143ADFE23FF 0 3 1 </pre> <p>Example 13-5</p> <pre> DEV -1 -1 -1 jsmith ~ 1 3 1 </pre>

In [Example 13-3](#), the **<deviceMAC>** field follows the MAC Address format definition above. The **<deviceTypeID>** field references the device type as defined in the Device Definition Row. The device type is “3” in this example. It shows a device assigned to a subscriber with ID “9865.” The **<phoneOrExtMobility>** parameter is set to 0 to indicate that it is a physical phone.

[Example 13-4](#) is a similar device, but in this case, the device is registered to a site/location but not assigned to an individual subscriber. The tilde (~) shows that there is no **<subID>** associated with this device. The **<phoneOrExtMobility>** parameter is set to 0 to indicate that it is a physical phone.

[Example 13-5](#) is an extension mobility profile assigned with profile name “jsmith,” **<deviceTypeID>** = “3”, and no **<deviceMAC>** field. The **<phoneOrExtMobility>** parameter is set to 1 to indicate that it is a Cisco Extension Mobility profile.

Note

- The **<phoneOrExtMobility>** field indicates whether it is a physical device (value of 0) or an Extension Mobility profile (value of 1).
- The **<lineCount>** field gives the number of lines, specifically Internal TNs, assigned to the device. External TNs are mapped to individual internal lines. The number of Line Data Rows that follows MUST match this **<lineCount>** value.
- If a single device is being shared by more than one user or device, you can list that device in more than one subscriber record. If a single device is shared or assigned to more than one user, the TOTAL device count is not affected in the Report Statistical section.
- All fields are *required* in this row. The following fields cannot be empty:
 - **<deviceName>** (if an EM Profile)
 - **<deviceMAC>** (if a physical device or soft client).

Device Line Data Row

This format definition describes how device lines are represented in the report. This format definition depends on the previous definitions of Telephone Number (Internal TN) and Telephone Number (External TN).

Format	Examples
LINE <internalTN> <contactCenterAgentLineService> <externalTNe164[1]> ... <externalTNe164[N]>	<p>Example 13-6</p> <pre> LINE 4761000 0 </pre> <p>Example 13-7</p> <pre> LINE 4761001 1 +19194761001 </pre> <p>Example 13-8</p> <pre> LINE 4761001 0 +19194761001 +19194761002 </pre>

[Example 13-6](#) describes a single internal TN only. [Example 13-7](#) describes a single internal TN with a mapped external TN (E.164 compliant) and the extension enabled as a contact centre agent line. [Example 13-8](#) describes two external TNs associated with a single line. The <contactCenterAgentLineService> field in all of these examples is a Boolean field indicating whether this particular device LINE has been activated for contact center agent usage. Availability of Contact Center features is described by the appropriate feature in the subscriber's assigned feature group. The <contactCenterAgentLineService> field indicates actual activation of the feature, rather than simply indicating availability of this feature.

Note

- If a single line is being shared by more than one user or device, the line number can be listed in more than one device record.
- All fields are *required* in this row. The following fields cannot be empty: <internalTN>, <contactCenterAgentLineService>.

SI Report Footer

Format	Example
SIEND	SIEND



Note

This is a *required* row.

MACD Report Header

Format	Example
MACDSTART	MACDSTART



Note

This is a *required* row.

MACD Row Format

This format definition describes the general layout of all MACD rows in the report. Certain fields described are *required* of each MACD row, regardless of type, while individual differences are highlighted in the definition for each type later.

Format	Examples
MACD <macdEffectiveDT> <macdCategory> <macdCode...<additional fields>...	MACD 201108111983040511GMT FGROUP A ... MACD 201108111983040511GMT RESELL A ... MACD 201108111983040511GMT CUST A ... MACD 201108111983040511GMT SUB A ... MACD 201108111983040511GMT SITE A ... MACD 201108111983040511GMT DEV A ... MACD 201108111983040511GMT LINE A ...

Note

- The fields are *required* for ALL MACD rows, regardless of type.
- In the format and examples, the **<macdCategory>** field always matches the row type name of the corresponding type to the change.
- The **<macdEffectiveDT>** field represents the effective date/time of the MACD event. The format of this element should follow the [“Date/Time Element”](#) section on page 13-7 format.

MACD Code Element (General)

This format definition describes how MACD Code elements are represented in all MACD rows. No separate definition row is required in the file to describe the MACD Code elements.

The following list describes the characters used to construct the format:

- **M** = Moved
- **A** = Entity is Added
- **D** = Entity is Deleted
- **C** = Entity is Changed

Format	Examples
<macdCode>	M A D C

Note

This field applies to all row types that have corresponding MACD rows, except devices. Devices have additional states for registration and assignment that require a separate representation. See [“MACD Code Element \(Devices Only\)”](#) section on page 13-20.

MACD Code Element (Devices Only)

This format definition describes how MACD Code elements are represented in all MACD rows for devices. No separate definition row is *required* in the file to describe the MACD Code Elements for devices.

The following list describes the characters used to construct the format:

- **A** = Device is Registered
- **D** = Device is Unregistered
- **S** = Device is Associated to a user/Cisco Extension Mobility profile is added to a user
- **U** = Device is Disassociated from a user/Cisco Extension Mobility profile is removed from a user
- **C** = Device is Modified/Cisco Extension Mobility profile is Modified

Format	Examples
<macdCode>	A D S U C

MACD Data Row (Feature Group)

This format definition describes how the function “add, change, or delete a feature group” can appear in the MACD section of the SI report.

Format	Examples
MACD <macdEffectiveDT> FGR OUPI<macdCode> <customerName> <featureGroupName> <feature[1]ID> <feature[2]ID> ... <feature[N]ID>	<p>Example 13-9</p> <pre> MACD 20110423163455GMT FGROUP A CompanyXYZ Advanced Feature Group 10 11 19 33 99 </pre> <p>Example 13-10</p> <pre> MACD 20110423163455GMT FGROUP C CompanyXYZ Advanced Feature Group 10 11 19 99 </pre> <p>Example 13-11</p> <pre> MACD 20110423163455GMT FGROUP D CompanyXYZ Advanced Feature Group 10 11 19 99 </pre>

In [Example 13-9](#), a feature group is added to the system, assigned to customer “CompanyXYZ” and contains features 10, 11, 19, 33, and 99 (mapped to the **FEATURES** definition row previously). In [Example 13-10](#), the same feature group is modified, and feature 33 is removed. In [Example 13-11](#), the entire feature group is deleted. In the next day’s report, this feature group would no longer exist unless it was re-added.

MACD Data Row (Provider)

There is no “Provider” MACD information supported or needed in this version of the report format.

MACD Data Row (Reseller)

This format definition describes how reseller MACD information is presented within the SI report file.

Format	Examples
MACD <macdEffectiveDT> RESELL <macdCode> <resellerName>	<p>Example 13-12</p> <pre> MACD 20110423163455GMT RESELL A ResellerXYZ </pre> <p>Example 13-13</p> <pre> MACD 20110423163455GMT RESELL D ResellerXYZ </pre> <p>Example 13-14</p> <pre> MACD 20110423163455GMT RESELL C ResellerXYZ </pre>

In [Example 13-12](#), a reseller named “ResellerXYZ” is added to the Domain Manager on April 23, 2011 at 04:34:55 PM GMT.

[Example 13-13](#) describes deleting of the reseller from the Domain Manager. [Example 13-14](#) describes a change to the reseller in the above example.

Note

- Reseller metadata changes are supported on CUCDM and result in the generation of a MACD row; however, CUCDM does not currently support indicating the nature of such changes in the MACD row. This may be updated in future releases with more detail.
- Only the new state of the entity is reported in the MACD row.

MACD Data Row (Customer)

This format definition describes how customer MACD information is presented within the SI report file.

Format	Examples
MACD <macdEffectiveDT> CUST <macdCode> <customerName> <resellerName> <externalCustomerID>	<p>Example 13-15</p> <pre> MACD 20110423163455GMT CUST A CompanyXYZ ResellerXYZ ~ </pre> <p>Example 13-16</p> <pre> MACD 20110423163455GMT CUST D CompanyXYZ ResellerXYZ ~ </pre> <p>Example 13-17</p> <pre> MACD 20110423163455GMT CUST C CompanyXYZ ResellerXYZ 34587573 </pre>

In [Example 13-15](#) customer “CompanyXYZ” is added on April 23, 2011 at 4:34:55 PM GMT to the Domain Manager. [Example 13-16](#) describes the delete of the customer. [Example 13-17](#) describes the change of the customer whereby the <externalCustomerID> field was updated.

Note

- The only changes that are currently supported are changes to the <externalCustomerID> field. Other customer metadata changes are supported on CUCDM and result in generation of a MACD row; however, CUCDM does not support indicating the nature of such changes in the MACD row.
- Only the new state of the entity is reported in the MACD row.

MACD Data Row (Division)

No “Division” MACD information is supported or needed in this version of the report format.

MACD Data Row (Site)

This format definition describes how site MACD information is presented within the SI report file.

Format	Examples
MACD <macdEffectiveDT> SITE <macdCode> <customerName> <siteName> <externalSiteID>	<p>Example 13-18</p> <pre> MACD 20110423163455GMT SITE A CompanyXYZ New York ~ </pre> <p>Example 13-19</p> <pre> MACD 20110423163455GMT SITE D CompanyXYZ New York ~ </pre> <p>Example 13-20</p> <pre> MACD 20110423163455GMT SITE C CompanyXYZ New York 74536577456 </pre>

In [Example 13-18](#) a site with name “New York” is added on April 23, 2011 at 4:34:55 PM GMT to the Domain Manager. [Example 13-19](#) shows the case where a site was deleted from customer “CompanyXYZ.” [Example 13-20](#) shows the case where the <externalSiteID> field has been updated.

Note

- The only changes that are currently supported and meaningful are changes to the <externalSiteID> field. Other site metadata changes are supported on CUCDM and result in the generation of a MACD row; however, CUCDM does not support indicating the nature of such changes in the MACD row.
- Only the new state of the entity is reported in the MACD row.

MACD Data Row (Subscriber)

This format definition describes how subscriber MACD information is presented within the SI report file.

Format	Examples
MACD <macdEffectiveDT> SUB <macdCode> <customerName> <siteName> <subUsername> <subEmail> <subNameFirst> <subNameMiddle> <subNameLast> <subTitle> <subDepartment> <subDepartmentCode> <subContactTelephone> <featureGroupName>	<p>Example 13-21</p> <pre> MACD 20110423163455GMT SUB A CompanyXYZ NewYork jsmith jsmith@xyz.com John Thomas Smith Manager Finance 99 +19198548001 Basic Features </pre> <p>Example 13-22</p> <pre> MACD 20110423163455GMT SUB D CompanyXYZ NewYork jsmith jsmith@xyz.com John Thomas Smith Manager Finance 99 +19198548001 Basic Features </pre> <p>Example 13-23</p> <pre> MACD 20110423163455GMT SUB C CompanyXYZ NewYork jsmith jsmith@xyz.com John Thomas Smith Manager Finance 99 ~ Basic Features </pre> <p>Example 13-24</p> <pre> MACD 20110423163455GMT SUB C CompanyXYZ NewYork jsmith jsmith@xyz.com John Thomas Smith Manager Finance 99 +19198548001 ~ </pre> <p>Example 13-25</p> <pre> MACD 20110423163455GMT SUB A CompanyXYZ NewYork jsmith jsmith@xyz.com John Thomas Smith Manager Finance 99 +19198548001 Basic Features </pre>

In [Example 13-21](#), subscriber John Smith is added on April 23, 2011 at 4:34:55 PM GMT to the customer “CompanyXYZ” at site “New York.” John Smith’s full details are provided on the MACD line to show all the data that was added. [Example 13-22](#) shows the deletion of user John Smith.

Various types of changes are possible where a subscriber is concerned. The first type is metadata changes including modifications to email, name (first, middle, last), title, department, and department code. The second type of change are modifications to, additions, or deletions of the <subContactTelephone> and <featureGroupID> fields. A delete of the external TN from the user, therefore, appears as a MACD change type. [Example 13-23](#) shows this type of change. Adding or removing a user to or from a feature group also appears as a MACD change type. [Example 13-24](#) shows the removal of user John Smith from a feature group. [Example 13-25](#) shows his addition back into that feature group.

Only the new state of the entity is reported in the MACD row.

MACD Data Row (Device, Line and Service)

This format definition describes how device and line MACD information is presented within the SI report file. Reporting MACD data for devices includes registration, assignment, and change operations for devices listed as part of sites and subscribers only. It also includes the addition, deletion, and modification of lines for those devices. In almost all cases, the device and line MACD rows are presented together. In some cases, the line MACD rows can be omitted. Line MACD rows can never be presented in standalone fashion. Service Inventory and MACD data for devices listed in Provider, Reseller, and Division, Customer, and Site inventories are not reported. Only data for registered devices under Site and Subscriber entities are reported.

Format

```
|MACD|<macdEffectiveDT>|DEV|<macdCode>|<customerName>|<siteName>|<subUsername>|<d
eviceName>|<deviceMAC>|<phoneOrExtMobility>|<deviceTypeID>|<lineCount>|
```

```
|MACD|<macdEffectiveDT>|LINE|<macdCode>|<internalTN>|<contactCenterAgentLineService>|
...
```

```
|MACD|<macdEffectiveDT>|LINE|<macdCode>|<internalTN>|<contactCenterAgentLineService>|
```

The following are examples of different scenarios for the MACD Data Row.

- A device with two internal TNs is registered to a site.
- Assignment of the device to a subscriber described in “A device with two internal TNs is registered to a site.”
- Unassignment of device from a subscriber described in “A device with two internal TNs is registered to a site.”
- A device with two lines is unregistered from a site.
- A device with two lines is registered and assigned to a subscriber.
- A device with two lines is unassigned and unregistered from a subscriber.
- A device with two lines has a setting modified on either the device itself, one of its lines, or both of its lines. Modification does not affect the service inventory record, but a MACD row appears.
- A device with two lines. Contact Center service is enabled on line 1, but is already enabled on the second line.
- A device with two lines. Contact Center service is enabled on line 2.
- A device with two lines. Contact Center service is disabled on line 1 and enabled on line 2.
- A device with 0 lines is registered and assigned to a subscriber.
- A device with two lines is modified. A third line is added.
- A device with three lines is modified. The second line is deleted.

A device with two internal TNs is registered to a site.

Examples**Example 13-26**

```
|MACD|20110423171235GMT|DEV|A|CompanyXYZ|NewYork|~|SEP0445687B8A11|0445687B8A11|0|3|2|
|MACD|20110423171235GMT|LINE|A|4761000|0|
|MACD|20110423171235GMT|LINE|A|4761001|0|
```

Assignment of the device to a subscriber described in “A device with two internal TNs is registered to a site.”

Example

Example 13-27

```
|MACD|20110423171235GMT|DEV|S|CompanyXYZ|NewYork|~|SEP0445687B8A11|0445687B8A11|0|3|0|
```

Note Line information is omitted in this scenario if it has not changed.

Unassignment of device from a subscriber described in “A device with two internal TNs is registered to a site.”

Example

Example 13-28

```
|MACD|20110423171235GMT|DEV|U|CompanyXYZ|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3|~|
```

Note Line information is omitted in this scenario if it has not changed.

A device with two lines is unregistered from a site.

Example

Example 13-29

```
|MACD|20110423171235GMT|DEV|D|333|1|~|SEP0445687B8A11|0445687B8A11|0|3|~|
```

Note Line information is omitted in this scenario.

A device with two lines is registered and assigned to a subscriber.

Example

Example 13-30

```
|MACD|20110423171235GMT|DEV|S|CompanyXYZ|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3|~|
|MACD|20110423171235GMT|DEV|A|CompanyXYZ|NewYork|~|SEP0445687B8A11|0445687B8A11|0|3|2|
|MACD|20110423171235GMT|LINE|A|4761000|0|
|MACD|20110423171235GMT|LINE|A|4761001|0|
```

A device with two lines is unassigned and unregistered from a subscriber.

Example

Example 13-31

```
|MACD|20110423171235GMT|DEV|D|CompanyXYZ|NewYork|~|SEP0445687B8A11|0445687B8A11|0|3|~|
|MACD|20110423171235GMT|DEV|U|CompanyXYZ|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3|~|
```



Note

Line information may be omitted in this scenario.

A device with two lines has a setting modified on either the device itself, one of its lines, or both of its lines. Modification does not affect the service inventory record, but a MACD row appears.

Example

Example 13-32

```
|MACD|20110423171235GMT|DEV|C|Citibank|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3|2|
|MACD|20110423171235GMT|LINE|C|4761000|0|
|MACD|20110423171235GMT|LINE|C|4761001|0|
```

A device with two lines. Contact Center service is enabled on line 1, but is already enabled on the

second line.

Example

Example 13-33

```
|MACD|20110423171235GMT|DEV|C|Citibank|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3
|2|
|MACD|20110423171235GMT|LINE|C|4761000|1|
|MACD|20110423171235GMT|LINE|C|4761001|1|
```



Note

In this example, the second line already has Contact Center service enabled. However, due to the nature of reporting MACD operations, the new state of the entire device (and lines) is reported, which, in this example, now includes Contact Center service on both lines for the device.

A device with two lines. Contact Center service is enabled on line 2.

Example

Example 13-34

```
|MACD|20110423171235GMT|DEV|C|Citibank|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3
|2|
|MACD|20110423171235GMT|LINE|C|4761000|0|
|MACD|20110423171235GMT|LINE|C|4761001|1|
```

A device with two lines. Contact Center service is disabled on line 1 and enabled on line 2.

Example

Example 13-35

```
|MACD|20110423171235GMT|DEV|C|Citibank|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3
|2|
|MACD|20110423171235GMT|LINE|C|4761000|0|
|MACD|20110423171235GMT|LINE|C|4761001|1|
```



Note

[Example 13-33](#) and [Example 13-34](#) represent different scenarios resulting in the generation of identical MACD rows for this device. In both cases, the new state of the device (and lines) is reported, regardless of the operation leading to that state.

A device with 0 lines is registered and assigned to a subscriber.

Example

Example 13-36

```
|MACD|20110423171235GMT|DEV|S|Citibank|NewYork|jsmith|SEP0445687B8A11|0445687B8A11|0|3|~|
|MACD|20110423171235GMT|DEV|A|Citibank|NewYork|~|SEP0445687B8A11|0445687B8A11|0|3|~|
```

Note Line information is omitted in this scenario because it does not exist.

A device with two lines is modified. A third line is added.

Example

Example 13-37

```
|MACD|20110423171235GMT|DEV|C|CompanyXYZ|NewYork|jsmith|SEPMyNewPhoneNumber|0445687B8A11|0|3|1|
|MACD|20110423171235GMT|LINE|A|4761002|0|
```

A device with three lines is modified. The second line is deleted.

Example

Example 13-38

```
|MACD|20110423171235GMT|DEV|C|CompanyXYZ|NewYork|jsmith|SEPMyNewPhoneNumber|0445687B8A11|0|3|1|
|MACD|20110423171235GMT|LINE|D|4761001|0|
```



Note

- The examples describe several scenarios that may occur in the registration and assignment of devices to both sites and subscribers. If a device is registered with lines, the line MACD row is reported with the device MACD row. If a device is already registered and later assigned, the line MACD rows are not reported because those have not changed.
- The only supported change to a device for Service Inventory purposes is the modification of the `<lineCount>` field. Modifications to the `<lineCount>` field, however, is the result of additions or deletions of lines, and those corresponding line MACD rows must immediately follow this device MACD row.
- Modify various device and line settings on the CUCDM application for a device that do not affect the billing record. Such changes, however, still result in the generation of a MACD row for the device (with optional line MACD rows). You cannot capture the nature of the change and indicate whether the MACD row in question has or has not affected the billing record. Similar to MACD rows for other entities, the Device (& Line) MACD rows simply report the state of the device (and lines) following the change operation in question.
- To modify user assignment of a device, the device must be unassociated with a user, then associated with another user.
- You can also modify the site assignment. If the device is associated with a user it must be unassociated with that user. Then it must be unregistered from the site, then reregistered under another site.

- If multiple devices are added, changed, or deleted at the same time, these are reported on separate MACD row.
- Soft client and mobile device MACDs are reported the same way as traditional devices.
- Device MACD rows use the **<lineCount>** field to identify the number of **|LINE|** MACD records that immediately follow the **|DEVI|** MACD record in the report. This number is NOT the total count of lines that are assigned to the device at the time of the MACD operation. Be aware of this notation when you use parsing applications. For device changes that result in zero line changes, the **<lineCount>** field is a tilde (~).

MACD Report Footer

Format	Examples
MACDEND	MACDEND
Note	This is a <i>required</i> row.

Report Statistical Header

Format	Examples
STATSTART	STATSTART
Note	This is a <i>required</i> row.

Report Statistical Row

Format	Examples
STAT <fieldName> <fieldValue> <fieldUnits>	STAT providerCount 1 ~ STAT resellerCount 1 ~ STAT customerCount 3 ~ STAT siteCount 6 ~ STAT subscriberCount 12 ~ STAT devRegAssigned 20 ~ STAT devRegUnassigned 20 ~ STAT macdCount 126 ~ STAT siRequestDT 06013011030000GMT ~ STAT siStartDT 06013011030800GMT ~ STAT siEndDT 06013011032314GMT ~
Note	Each Domain Manager must properly write out the above time stamps because of how the SI files are received from the DM servers. This information is used for performance tracking and debugging information. The column <fieldUnits> above is currently unused and left empty.

The following lists the meaning of each requested statistic:

Field Name	Description
providerCount	The total number of unique providers (and thus, PROV rows) listed in the report.
resellerCount	The total number of unique resellers (and thus, RESELL rows) listed in the report.
customerCount	The total number of unique customers (and thus, CUST rows) listed in the report.
siteCount	The total number of unique sites (and thus, SITE rows) listed in the report.
subscriberCount	The total number of unique subscribers (and thus, SUB rows) listed in the report.
devRegAssigned	The total number of unique devices that are both registered <i>and</i> assigned to a subscriber listed in the report. If devices are shared, this count does not accurately reflect the number of DEV rows present in the report. Uniqueness is required.
devRegUnassigned	The total number of unique devices that are registered <i>but not</i> assigned to a subscriber, listed in the report. This is the count of devices that are assigned to sites, such as conference room phones, lobby phones, and “empty” Cisco Extension Mobility phones. If devices are shared, this count does not accurately reflect the number of DEV rows that are present. Uniqueness is required.
macdCount	The total number of MACD rows reported in the MACD section of the file.

The following lists the meaning of each requested Date/Time (DT) field:

Field Name	Description
siRequestDT	The time when the SI request is received or activated by the DM.
siStartDT	The time when the DM begins the SI process (after delays, for example).
siEndDT	The time when the DM ends the SI process. This field should not include any file transfer times or the like.

Report Statistical Footer

Format	Examples
STATEND	STATEND
Note	This is a <i>required</i> row.

Example Service Inventory File

This section provides example output files following the format specifications provided throughout this document. [Example 13-39](#) shows an example output file for an SI reporting period resulting in a data set that fits in a single file.

Example 13-39 Single File Inventory Report

```
|FSTART|
|INFOSTART|
|INFO|formatVersion|8.6.2|
|INFO|filename|20110528032329GMT+12345+cucdm+1+1.si|
|INFO|dmVerPlatform|4.1.6+0.4.47|
|INFO|dmVerSoftware|7.3.0+er15|
|INFO|dmHostname|nelco-cucdm4|
|INFO|dmDomain|cisco.com|
|INFO|dmIP|172.18.200.200|
|INFO|reportStartDT|06012011000000GMT|
|INFO|reportEndDT|06012011235959GMT|
|INFOEND|
|DEFSTART|
|DEF|COUNTRY|15|United States|USA|16|United Kingdom|UK|
|DEF|FEATURES|10|Voice|11|Voicemail|19|CallForwarding|33|ExtMobility|53|Presence|9
9|Conferencing|
|DEF|FGROUP|XYZ, Inc.|27|Basic Feature Group|10|11| | | | | | | | |
|DEF|FGROUP|SmartTech|29|Advanced Feature Group|10|11|19|33|99|
|DEF|FGROUP|ComputerCo|233|Engineering Dept Feature Group|10|11|19|33|53|
|DEF|DEV|XYZ, Inc.|1|Cisco|7960|2|Cisco|7965|3|Cisco|Cius_V1|4|Avaya|Phone1000|
|DEF|DEV|SmartTech|1|Cisco|7960|2|Cisco|7965|3|Cisco|Cius_V1|4|Avaya|Phone1000|5|A
pple|iPhone 3GS|
|DEF|DEV|ComputerCo|1|Cisco|7960|3|Cisco|Cius_V1|5|Apple|iPhone
3GS|11|Cisco|CUPC8|
|DEFEND|
|SISTART|
|PROV|-1|Verizon|
|RESELL|-1|-1|ResellerXYZ|
|REND|
|RESELL|-1|-1|MidWestCom| | | | | | | | | |
|CUST|-1|-1|-1|XYZ, Inc.|~|7600 RTP Road|~|~|Cary|NC|15|27513|
|SITE|-1|-1|RTP|~|7600 RTP Road|~|~|Cary|NC|15|27513|EST|
|DEV|-1|-1|~|SEP0445687BDDDD|0|003|1|
|LINE|8548111|+19198548111|0|
|SUB|-1|-1|-1|jsmith|jsmith@xyz.com|John|Thomas|Smith|Manager|Finance|99|+19198548
001|Basic Feature Group|
|DEV|-1|-1|-1|SEP0445687B8AAF|0|003|1|
|LINE|8548001|+19198548001|0|
|DEV|-1|-1|-1|SEP95AAEFF3456|0|001|2|
|LINE|98548002|+19198548002|0|
|LINE|8548003|+19198548003|1|+19198548004|
|SUBEND|
|SUB|-1|-1|-1|jdoe|jdoe@xyz.com|Jane|Mary|Doe|SeniorAccountant|Finance|99|+1919854
8005|Basic Feature Group|
|DEV|-1|-1|-1|SEPAAAABBBBCCCC|001|1|
|LINE|98548002|+19198548002|0|
|SUBEND|
|SEND|
|SITE|-1|-1|New York|~|100 Broadway Ave|~|~|New York|NY|15|10101|EST|
|SUB|...
|DEV|...
|LINE|...
|SUBEND|
```



```

|SEND|
|SITE|...
|SEND|
|CEND|
|CUST|-1|-1|-1|ComputerCo|~|8000 RTP Road|~|~|Cary|NC|15|27513|
|SITE|...
|SUB|...
|DEV|...
|LINE|...
|SUBEND|
|SEND|
...
|CEND|
|CUST|...
|SITE|...
...
|SEND|
...
|CEND|
...
|REND|
|PEND|
|SIEND|
|MACDSTART|
|MACD|20110423163455GMT|C|SITE|XYZ, Inc.|New York|74536577456| | | | | |
|MACD|20110423163455GMT|C|RESELL|111|ResellerXYZ|
|MACD|20110423171235GMT|DEV|C|TechCo|RTP|jsmith|SEPNewPhoneName|0445687B8A11|0|3|1|
|MACD|20110423171235GMT|LINE|D|4761002|1|+19194761002|
|MACD|...
...
|MACDEND|
|STATSTART|
|STAT|providerCount|1|~|
|STAT|resellerCount|2|~|
|STAT|customerCount|3|~|
|STAT|siteCount|6|~|
|STAT|subscriberCount|12|~|
|STAT|macdCount|126|~|
|STAT|devRegUnassigned|344|~|
|STAT|devRegAssigned|5235|~|
|STAT|siRequestDT|06013011030000GMT|~|
|STAT|siStartDT|06013011030800GMT|~|
|STAT|siEndDT|06013011032314GMT|~|
|STATEND|
|FEND|

```

