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## Introduction

This document describes how the Service Inventory (SI) reports are created in a Hosted Collaboration Solution (HCS) 9.2.1 deployment and the interactions between Cisco Hosted Collaboration Mediation Fulfillment (HCM-F) Service inventory and Cisco Unified Communications Domain Manager (CUCDM) 8.1.X during this process.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

The information in this document is based on these software and hardware versions:

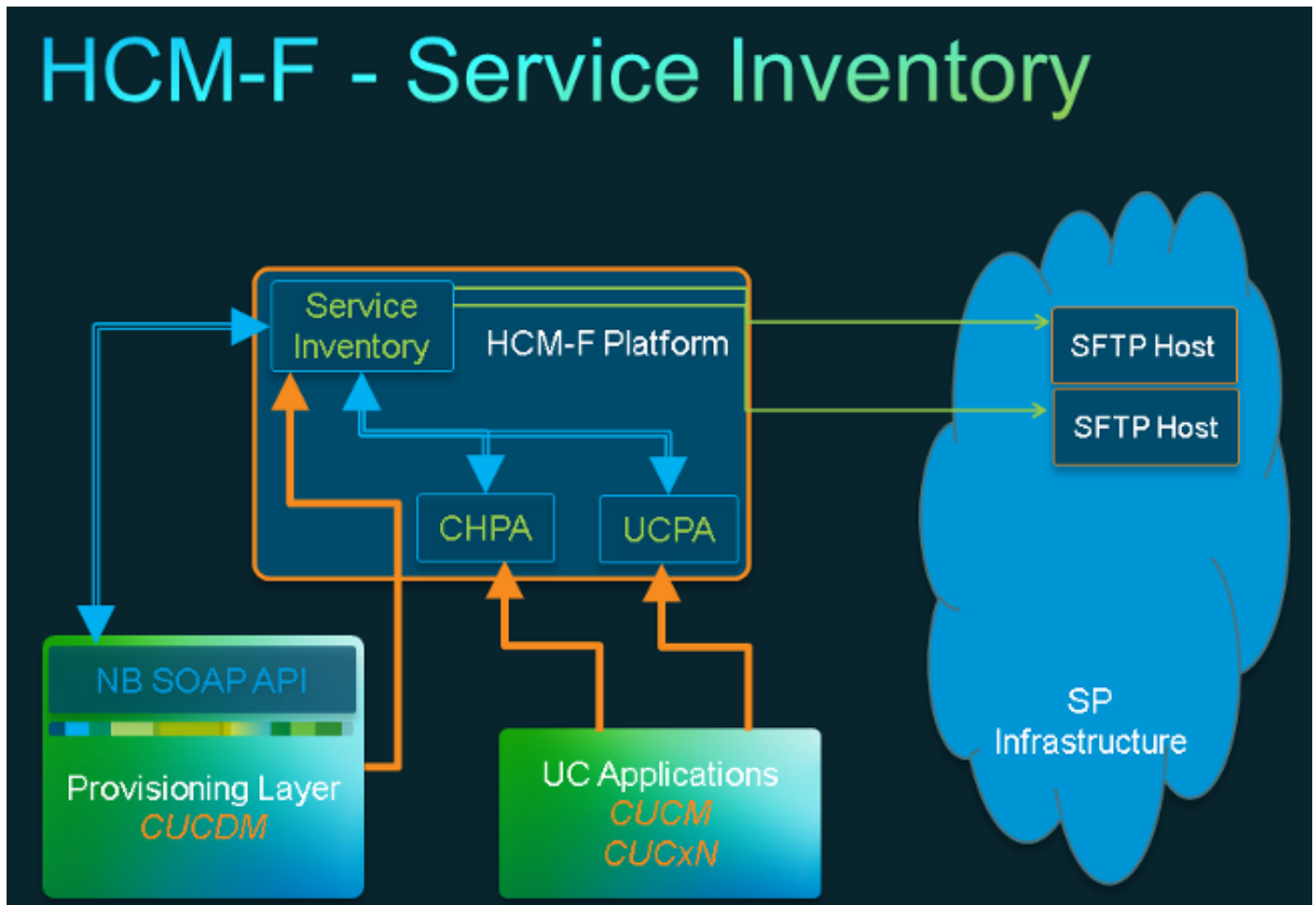
- CUCDM 8.1.X
- HCM-F 9.2.1

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Background Information

Cisco HCS SI is an application that provides reports for service providers for billing purposes.

These reports contain data on customers, subscribers, devices, and other details that are currently provisioned on CUCDM. In addition, SI can generate reports directly from Cisco Unified Communications Manager and Cisco Unity Connection application servers for customers that are provisioned in Cisco HCM-F that do not have a CUCDM configured. SI automatically transfers the report files at regular configurable intervals to remote SFTP servers. The service providers use these reports in order to generate billing records for their customers.



## Workflow

1. SI reports are scheduled and configured via Service Inventory Configuration by the administrator.
2. Based on a set schedule, the SI web service submits a Simple Object Access Protocol (SOAP) request to CUCDM.
3. CUCDM receives this SOAP request and triggers a transaction in order to create service inventory related data and CUCDM sends this data to HCM-F SI via SFTP.
4. SI sees the new file(s), decompresses the file(s), and processes the file(s).
5. SI eventually outputs a .si file(s).
6. SI creates backup copies of all files, which includes .si, for later retrieval and field support if necessary.
7. SI transfers the .si file(s) to the SFTP host(s) as configured in the GUI.

## Prerequisites

HCM-F and CUCDM must be installed and configured. These services must be activated and started on HCM-F:

- Cisco CDM Database
- Cisco Tomcat
- Cisco HCS SI UI

Use Cisco HCS North Bound Interface Web Service, if you plan to configure SI through the SI administrative interface. Use Cisco HCS Fulfillment Service, if you plan to configure SI through the Cisco HCM-F NBI. Ensure that Cisco HCS CUCDMSync Service is running if you plan to run Cisco HCS CUCDMSync Service. Use Cisco HCS Provisioning Adapter Service so that automatic synchronization can propagate CUCDM data to the Shared Data Repository. SI obtains the connection data for CUCDM from the Shared Data Repository. The Cisco HCS Provisioning Adapter Service provisions credentials and SNMP information, as well as provisions remote Syslog data on Cisco Unified Communications Manager devices.

Services required differ between a CUCDM report and a supported UC Application report.

For CUCDM reports, you need these services:

- Cisco HCS Provisioning Adapter Service
- Cisco Tomcat
- Cisco HCS Service Inventory
- Cisco HCS SI UI
- Cisco CDM Database
- Cisco HCS Fulfillment Service
- Cisco HCS CUCDMSync Service
- Cisco HCS UCSMSync Service
- Cisco HCS VCenterSync Service

For supported UC Applications reports, you need these services:

- Cisco HCS Provisioning Adapter Service
- Cisco Tomcat
- Cisco HCS Service Inventory
- Cisco HCS SI UI
- Cisco CDM Database

Webservices must be activated and started on CUCDM 8.1.X.

```
=>[webservices] # show
|OPTION |VALUE |DESCRIPTION |
|-----|-----|-----|
|Enabled|True |Enable Webservice |
|8.1.0 |True |Enable version 8.1.0 webservices interface |
|8.0.0 |False|Enable version 8.0.0 compatible webservices interface |
```

## Configure

**Note:** Use the [Command Lookup Tool](#) ([registered](#) customers only) in order to obtain more information on the commands used in this section.

Ensure that you have added CUCDM as a management application instance in HCM-F. This is because HCM-F Service Inventory relies on data from CUCDM in order to generate SI reports, hence it needs to be added.

In order to do so, choose **Infrastructure Manager > Management Network > Management Application > Add New**.

The screenshot shows the 'Edit Management Application - VOSS' form. The left sidebar contains a navigation menu with 'Management Application' highlighted. The main form area is titled 'Edit Management Application - VOSS' and contains a 'General Information' section. The fields in this section are: Application Type (CUCDM), Name (VOSS), API Version (8.1.0), Port (8181), Description (empty), Virtual Machine (None), Host ID (1), Routing ID (empty), Sync Enabled (checked), and Sync Interval (Minutes) (15).

The screenshot shows the 'Credentials' and 'Network Addresses' sections. The 'Credentials' section has a table with one entry: 'ADMIN' with User ID 'hcmf' and Access Type 'Read-Only'. The 'Network Addresses' section has a table with one entry: 'Service' with IPv4 Address '10.48.50.60' and SRV Address 'false'. Both sections have 'Add New', 'Refresh', and 'Delete Selected' buttons at the top.

- API Version - From this drop-down list, choose either 8.1.0 or 8.0. When you integrate with a CUCDM version earlier than 8.1.2, the API version must be set to 8.0. The API version can be set to either 8.0 or 8.1 when you integrate with CUCDM 8.1.2 or later. Also, note that if the 8.0 API version is configured, SIP trunks will not be synced and only the location name will be synced for Customer Location.
- Port - The port defaults to 8181. This is the SOAP port that is used by SI in order to send the first SOAP message to CUCDM.

- Credentials - Choose the credential Type ADMIN and provide a User ID (in this case hcmf). This user is used to access CUCDM.

**Note:** This user also needs to exist in CUCDM with the same password. In order to check this, from the CUCDM GUI choose **General Administration > Administration Users**.

The screenshot shows the CUCDM GUI with two sections: 'Credentials' and 'Network Addresses'.

**Credentials Section:**

Credential Type	User ID	Access Type
ADMIN	hcmf	Read-Only

**Network Addresses Section:**

Network Space	IPv4 Address	IPv6 Address	Hostname	Domain	SRV Address
Service	10.48.50.60				false
Provider Space					

Buttons at the bottom: Save, Add New, Delete.

When you add/configure this user, ensure the Webservice access has been checked. (This user is used by HCM-F SI in order to send a WebService Request to CUCDM, hence it needs to be enabled.)

The screenshot shows the 'User Management' GUI. On the left is a 'Menu' with 'General Administration' and 'Administration Users' highlighted. The main area shows a list of users.

**User Management Section:**

User: bvsin Voss Role: Internal System SuperUser

Search by: Username Max results: 50

**Search results:-**

Username	Name	Role	Provider
cisco	Cisco Tac	system	
hcmf	hcmf hcmf	system	
hcslab	andrea cisco	system	
lab@golf.com	sss	customeradmin	Cisco
test	aaa aaaa	provideradmin	Cisco
testroma@golf.com	testroma	customeradmin	Cisco

Report Generation sourced from CUCDM has now been covered. SI, however, can also generate reports directly from a supported UC Application, Cisco Unified Communications Manager, and Cisco Unity Connection application servers for customers that are provisioned in Cisco HCM-F that do not have a CUCDM configured.

If you do not have a CUCDM configured, you need to add Cisco Unified Communications Manager

(CUCM) and Cisco Unity Connection (CUC) application servers manually in order to run a Service Inventory report.

1. Choose **Infrastructure Manager > Customer Management > Customer > Cluster**. Choose the application in question. For example, your CUCM or CUC server, as shown in this image.

	Name	Type	Cluster	Customer	VM
<input type="checkbox"/>	Golf-CUC-Pub	CUCXN	GOLF-CUC	AS Roma	Golf-CUC-Pub
<input type="checkbox"/>	cm-pub-golf	CUCM	GOLF-CL01	AS Roma	cm-pub-golf
<input type="checkbox"/>	Golf-CUCM-Sub1	CUCM	GOLF-CL01	AS Roma	Golf-CUCM-Sub1
<input type="checkbox"/>	Golf-CUC-Sub	CUCXN	GOLF-CUC	AS Roma	Golf-CUC-Sub
<input type="checkbox"/>	Im-golf	CUP	Im-golf	AS Roma	Im-golf
<input type="checkbox"/>	CM-PUB-FOXTROT	CUCM	FOXTROT-CL01	BT	CM-PUB-FOXTROT
<input type="checkbox"/>	CUP-FOXTROT	CUP	CUP-FOXTROT	BT	CUP-FOXTROT
<input type="checkbox"/>	CUC-PUB-FOXTROT	CUCXN	CUC-PUB-FOXTROT	BT	CUC-PUB-FOXTROT

2. Add both PLATFORM and ADMIN credentials to each of the applications as shown in this image.

### Edit Cluster Application - Golf-CUC-Pub

**General Information**

Application Type: CUCXN

Name: Golf-CUC-Pub

Description:

Node Type: ☒ Publisher ☐ Subscriber

Cluster: GOLF-CUC

☒ Auto Link to Virtual Machine

Virtual Machine: Golf-CUC-Pub

Routing ID:

**Credentials**

	Credential Type	User ID	Access Type
<input type="checkbox"/>	ADMIN	cucadministrator	Read-Only

**Network Addresses**

## Add Credentials

In order to add credentials,

1. Click the **Credentials** tab.
2. Click **Add New**.
3. Choose the **Credential Type**. **Note:** BOTH **PLATFORM** and **ADMIN** are required in order to run the UC Application Report Collection.
4. Complete the **User ID**, **Password**, and **Re-enter Password** fields.
5. Click **Save**.
6. Repeat to add the next **Credential Type**.

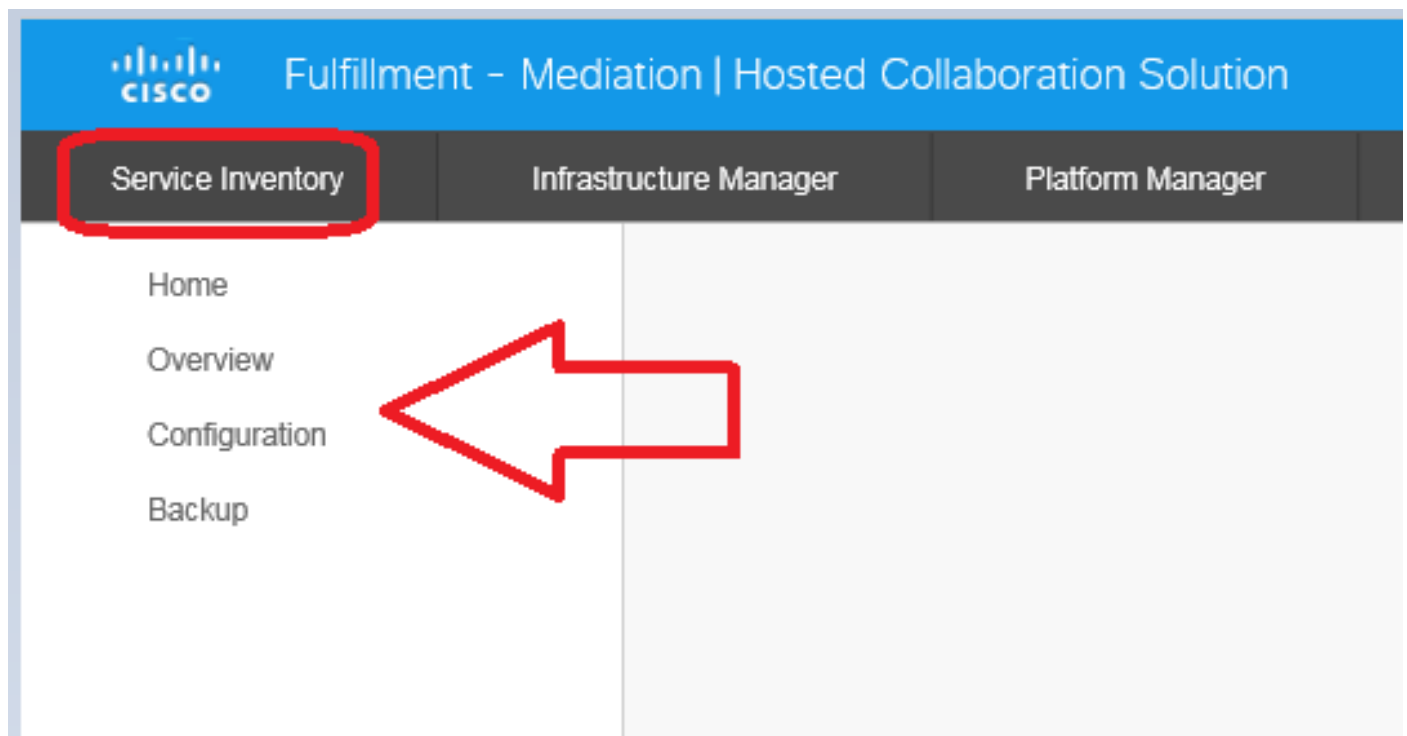
## Add the Network Address

1. Click the **Network Address** tab.
2. Click **Add New**.
3. Select the **Network Space : Service Provider Space**.
4. Enter the **IPV4 Address**. This is required for both Cisco Unified Communications Manager and Cisco Unity Connection.

## Cluster Applications

Repeat all for the next Cluster Application.

Next, configure the Service Inventory piece on the Service Inventory Configuration Page on HCM-F, as shown in this image.



## Overview Page

Here you can set the schedule that defines when you would like the report to begin.

1. Be sure to check the **Enable Schedule** checkbox. **Note:** The Report Format Version is key here.

The screenshot shows the 'Overview' page of the Service Inventory application. The left sidebar has 'Overview' selected. The main content area shows the 'Schedule' section with the following settings:

- System Time: 04:58:20 PM CEST (with a Refresh button)
- ☒ Enable Schedule
- Begin execution of report daily at (GMT): 09:00:00
- Report must include information up to (GMT): 00:00:00
- Report Format Version: 9.1.1

2. Select the report format version that you want the SI application to deliver. Ensure that you use the compatible versions of SI and any supported UC Application. For compatibility information, see Compatibility Matrix for Cisco Hosted Collaboration Solution. The Cisco HCS 9.1(1) report format version is only compatible with CUCDM Version 8.1 and later. The Cisco HCS 9.0(1) report format version is compatible with CUCDM Version 8.0 and later. If you run an earlier version of the CUCDM software, choose the 8.6(2) report format version.

## SI CUCDM Report

1. In order to ensure that Version 9.1(1) and 9.0(1) HCS report formats are generated properly, navigate to **Infrastructure Manager > Management Application**. On this page, be sure to choose the CUCDM Software Version 8.0 or 8.1 and not Version 7.4.
2. Next, configure the Configuration Page on the Service Inventory Configuration Page on HCM-F.

The screenshot shows the top navigation bar of the Service Inventory application. The 'Service Inventory' tab is highlighted with a red box. Below the navigation bar, the 'Configuration' link in the left sidebar is highlighted with a red arrow pointing to it.



3. In the Service Inventory Settings section, configure the **Hostname/IP address** of the SI server. The SI hostname must be entered as an IP address or a fully qualified domain name. If the CUCDM server is not configured with DNS enabled, enter an IP address in the Hostname field. The Username field is greyed out (hardcoded).CUCDM uses the username, adminsfpt, in order to transfer data to the SI application. You cannot update this field.
4. In the Password field, enter the password for the adminsfpt user account. This step is required as an identity confirmation for security purposes. This password is the same as the HCS administrator password that you set up during the Cisco HCM-F installation (or changed after installation). **Note:** CUCDM learns this password from SI when SI sends the original SOAP request.
5. In the Service Provider SFTP Settings section, configure the **hostname and port (22)** along with the username/password for the SFTP server to which you will send the .si report files.

## Troubleshoot

This section provides information you can use in order to troubleshoot your configuration.

Important logs are:

- **activelog tomcat/logs/catalina.out** - includes request and response messages to and from CUCDM.
- **activelog tomcat/logs/si/log4j** - contains all SI-specific operations.

**Note:** If you use SI without CUCDM, also review these logs:

- /var/log/active/hcs/chpa - Provisioning Adapter Service Log files
- /var/log/active/hcs/ucpa – ucpa Service Log files

Complete these steps in order to set the log levels to Detailed (debug) level:

1. Enter the command: `admin:set trace tracelevel`
2. Enter the tracelevel (use the CLI command **show tracelevels** in order to find allowed tracelevels) - **Detailed**
3. Enter the servicename - **Cisco Tomcat** The record(s) are updated successfully.

Once that is done, wait for the next report generation as per your schedule. The first thing to check is whether you can see the transaction in VOSS. Search for a transaction called CreateServiceInventory. This transaction should succeed.

Menu					
Setup Tools	12353	hcmf	CreateServiceInventory	Y	Service Inventory Creation Started
Dial Plan Tools			2015/07/12 10:58:38 CEST		
Provider Administration	12352	hcmf	CreateServiceInventory	Y	Service Inventory Creation Started
Network			2015/07/11 10:58:36 CEST		
Resources	12351	hcmf	CreateServiceInventory	Y	Service Inventory Creation Started
General Tools			2015/07/10 10:58:37 CEST		
Operations Tools	12350	hcmf	CreateServiceInventory	Y	Service Inventory Creation Started
Bulk Load Tools			2015/07/09 10:58:39 CEST		
Transactions					
Bulk Administration					
General Administration	12349	hcmf	CreateServiceInventory	Y	Service Inventory Creation Started
Location Administration			2015/07/08 14:13:37 CEST		

Note that you can see the User ID in the transaction output is the hcmf user that was configured earlier both in HCM-F as well as on CUCDM.

Once that is done, check whether the files have made it into SI correctly. It is important to understand how the report data structure functions in SI. The format of a SI file is an ASCII-based file with the ".si" file extension. (The file extension for the UC Application Service Inventory Common Format is .ucsi)

So, under normal circumstances, CUCDM sends the raw SI files (compressed) to HCM-F. HCM-F (SI) then massages the data. (SI sees the new file(s), decompresses the file(s), and processes the file(s).) Within the file structure there are a number of directories and each of these have their own meaning dependent upon the state of the data. These folders can be accessed only by the Technical Assistance Center (TAC) during a troubleshooting session via the root account.

Specifically, all the files are stored here in SI: /opt/hcs/si/backup/

- dmuncompressed/ - this is where you unzip and place the files received from CUCDM.
- cntranslated/ - then the files are translated as an intermediate step and these go into this directory.
- cisco-normalized/ - then a single file is produced (copy of the final output) and it goes in here.
- sp-normalized/ - based on the maximum file size configured on the GUI, the previously mentioned file is split into chunks based on the maximum configured fill size (then they are renumbered for sequencing).

```
/opt/hcs/si/backup/dmuncompressed
[root@hcmf921 dmuncompressed]#
20150522210000GMT+1+CUCDM+1+1.dsi 20150622121500GMT+1+CUCDM+1+1.dsi
20150523210000GMT+1+CUCDM+1+1.dsi 20150623121500GMT+1+CUCDM+1+1.dsi
20150524210000GMT+1+CUCDM+1+1.dsi 20150624121500GMT+1+CUCDM+1+1.dsi
20150525210000GMT+1+CUCDM+1+1.dsi 20150625121500GMT+1+CUCDM+1+1.dsi
20150526210000GMT+1+CUCDM+1+1.dsi 20150626121500GMT+1+CUCDM+1+1.dsi
[root@hcmf921 dmuncompressed]# /opt/hcs/si/backup/cntranslated
[root@hcmf921 cntranslated]#
20150602210000GMT+1+CUCDM+1+1.tsi 20150703121500GMT+1+CUCDM+1+1.tsi
20150603210000GMT+1+CUCDM+1+1.tsi 20150704121500GMT+1+CUCDM+1+1.tsi
20150604210000GMT+1+CUCDM+1+1.tsi 20150705121500GMT+1+CUCDM+1+1.tsi
20150605210000GMT+1+CUCDM+1+1.tsi 20150706121500GMT+1+CUCDM+1+1.tsi
[root@hcmf921 cntranslated]# /opt/hcs/si/backup/cisco-normalized
[root@hcmf921 cisco-normalized]#
10000GMT+1+CUCDM+1+1.csi 20150703121500GMT+1+CUCDM+1+1.csi
20150603210000GMT+1+CUCDM+1+1.csi 20150704121500GMT+1+CUCDM+1+1.csi
20150604210000GMT+1+CUCDM+1+1.csi 20150705121500GMT+1+CUCDM+1+1.csi
20150605210000GMT+1+CUCDM+1+1.csi 20150706121500GMT+1+CUCDM+1+1.csi
20150606210000GMT+1+CUCDM+1+1.csi 20150707121500GMT+1+CUCDM+1+1.csi
20150607210000GMT+1+CUCDM+1+1.csi 20150708121500GMT+1+CUCDM+1+1.csi
20150608210000GMT+1+CUCDM+1+1.csi 20150709090000GMT+1+CUCDM+1+1.csi /opt/hcs/si/backup/sp-
normalized
[root@hcmf921 sp-normalized]#
20150528210000GMT+1+CUCDM+1+1.si 20150628121500GMT+1+CUCDM+1+1.si
20150529210000GMT+1+CUCDM+1+1.si 20150629121500GMT+1+CUCDM+1+1.si
20150530210000GMT+1+CUCDM+1+1.si 20150630121500GMT+1+CUCDM+1+1.si
20150531210000GMT+1+CUCDM+1+1.si 20150701121500GMT+1+CUCDM+1+1.si
20150601210000GMT+1+CUCDM+1+1.si 20150702121500GMT+1+CUCDM+1+1.si
```

In order to pull the log files from SI, enter these commands

```
file get activelog tomcat/logs/catalina.out
file get activelog tomcat/logs/si/log4j/XXXXXXX (where XXXX are the filenames
you want to gather)
```

## Verify

There is currently no verification procedure available for this configuration.