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HPE Security ArcSight ESM

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Administrator's Guide

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Chapter 1: Starting and Stopping the Manager and Components

Start the Manager from a command or console window. The remainder of this section provides more information about command line options to start, shut down, configure, or reconfigure ESM components.

Restarting the Manager - Stop the Manager and Start All Services

To restart the Manager, as user *arcsight*, you must stop the Manager, and then start all services.

To stop the Manager and start all services:

1. Stop the Manager:

```
/etc/init.d/arcsight_services stop manager
```

2. Start all services:

```
/etc/init.d/arcsight_services start all
```

Note: If your system is in distributed correlation mode, refer to the *ESM Release Notes* topic "Stop and Start All Services if a Major Service is Stopped" for special instructions.

Starting the ArcSight Command Center

To start the Command Center from a supported browser enter the following URL:

```
https://<hostname>:8443/
```

Where **<hostname>** is the host name or IP address of the Manager that you specified when you first configured ESM.

Starting ArcSight SmartConnectors

This procedure is only for SmartConnectors that are *not* running as a service. Before you start ArcSight SmartConnectors, make sure the Manager is running. It's also a good idea for the ArcSight Console to also be running, so that you can see the status of the configured SmartConnectors and view messages as they appear on the Console.

To start up an ArcSight SmartConnector:

1. Open a command window and navigate to the connector's `/current/bin` directory.
2. Type in the following line and press **Enter**:

```
./arcsight agents (on Linux)  
arcsight agents (on windows)
```

The connector in that folder starts.

Stopping and Starting ArcSight Services

Before performing tasks such as rebooting the server or installing a patch, you must stop ArcSight services. Performing a clean shutdown of services in this way will ensure the integrity of your ESM databases.

To stop ArcSight services, run the following command as the user *arcsight*:

```
/etc/init.d/arcsight_services stop all
```

To start ArcSight services, run the following command as the user *arcsight*:

```
/etc/init.d/arcsight_services start all
```

Important: In distributed correlation mode, you must run:

```
/etc/init.d/arcsight_services start all
```

after a system reboot to start **all services on all cluster nodes**. If you do not do so, only the persistor node-related services will start; services on other cluster nodes will not start automatically in this case.

Starting the ArcSight Console

To start up the ArcSight Console:

1. Open a command window on <ARCSIGHT_HOME>/bin.
2. Type in the following line and press **Enter**.
./arcsight console (on Linux)
arcsight console (on Windows)

Reconnecting ArcSight Console to the Manager

If the ArcSight Console loses its connection to the Manager (because the Manager was started again, for example) a dialog box appears in the ArcSight Console stating that your connection to the Manager has been lost. Wait for the Manager to finish starting, if applicable. Click **Retry** to re-establish a connection to the Manager or click **Relogin**.

Note: The connection to the Manager cannot be re-established while the Manager is starting. In some cases, a connection cannot be established without resetting one or both machines.

Clicking **Retry** may display connection exceptions while the Manager is starting again, or as the connection is re-established.

Chapter 2: Basic Configuration Tasks

References to ARCSIGHT_HOME

<ARCSIGHT_HOME> in the paths represents:

- /opt/arcsight/manager for the ArcSight Manager
- Whatever path you specified when you installed the ArcSight Console
- Whatever path you specified when you installed an ArcSight SmartConnector.

Managing and Changing Properties File Settings

Various components use properties files for configuration. Many sections of this documentation require you to change properties in those files. Some of the properties files are also modified when you use one of the configuration wizards.

Property File Format

Properties files are text files containing pairs of keys and values. The keys specify the setting to configure. For example, the following property configures the port on which the Manager listens:

```
servletcontainer.jetty311.encrypted.port=8443
```

Blank lines and lines that start with a pound sign (#) are ignored. Use the pound sign for comments.

Defaults and User Properties

Most properties files come in pairs. The first is the defaults properties file, such as `server.defaults.properties`. It contains the default settings. Do not modify these files; use them as a reference. They are overwritten upon upgrade.

The second file is the user properties file, such as `server.properties`. It can contain any properties from the defaults properties file, but the property values in this file override those in the defaults file. Thus, it contains settings that are specific to a particular installation. Typically, the user properties file for a component is created and modified automatically when you configure the component using its configuration wizard.

Because the user properties file contains settings you specify to suit your environment, it is never replaced by an upgrade. If an upgrade, such as a service pack or a version update, changes any properties, it does so in the defaults file.

The following table lists the most important properties files. The paths are relative to <ARCSIGHT_HOME>.

Default Properties	User Properties	Purpose
config/server.defaults.properties	config/server.properties	Manager Configuration
config/esm.defaults.properties	config/esm.properties	Cluster configuration properties and SSL properties common to persistor, correlator, and aggregator services on the node. This properties file is present on each node in a distributed correlation cluster.
config/console.defaults.properties	config/console.properties	ArcSight Console Configuration
config/client.defaults.properties	config/client.properties	ArcSight Common Client Configuration
/opt/arcsight/logger/current/arcsight/logger/config/logger.defaults.properties	/opt/arcsight/logger/userdata/logger/user/logger.properties	Features exposed on the ArcSight Command Center

Editing Properties Files

When you edit a properties file, copy the property to edit from the *.defaults.properties to *.properties and change the setting to your new value in *.properties. When you install an upgrade, and the *.defaults.properties file is updated, the properties you customized in *.properties remain unchanged.

You can edit the properties using any text editor. Make sure you use one that does not add any characters such as formatting codes.

If you configured the Console and SmartConnectors using default settings in the configuration wizard, a user properties file is not created automatically for that component. If you need to override a setting on such a component, use a text editor to create this file in the directory specified in the above table.

When you edit a property on a component, you must restart the component for the new values to take effect except for the dynamic Manager properties listed in the next section.

If you change a communication port, be sure to change both sides of the connection. For example, if you configure a Manager to listen to a different port than 8443, be sure to configure all the Manager's clients (Consoles, SmartConnectors, and so on) to use the new port as well.

Protocol	Port	Configuration
ICMP	none	ArcSight Console to Target communication (ping tool)
UDP	1645 or 1812	Manager to RADIUS server (if enabled)
	9090	ESM Service Layer Container Port
	9000	Used by the Manager for peering.
TCP	8443	SmartConnectors, ArcSight Command Center, and ArcSight Console to Manager communication
TCP	636	Manager to LDAP server (with SSL if enabled)
TCP	389	Manager to LDAP server (without SSL if enabled)
TCP	143	Manager to IMAP server (for Notifications)
TCP	110	Manager to POP3 server (for Notifications)
UDP/TCP	53	ArcSight Console to DNS Server communication (nslookup tool)
UDP/TCP	43	ArcSight Console to Whois Server communication (whois tool)
TCP	25	Manager to SMTP server (for Notifications)

Dynamic Properties

When you change the following properties in the `server.properties` file on the Manager, you do not need to start the Manager again for the changes to take effect:

- `auth.auto.reenable.time`
- `auth.enforce.single.sessions.console`
- `auth.enforce.single.sessions.web`
- `auth.failed.max`
- `auth.password.age`
- `auth.password.age.exclude`
- `auth.password.different.min`
- `auth.password.length.max`
- `auth.password.length.min`
- `auth.password.letters.max`
- `auth.password.letters.min`
- `auth.password.maxconsecutive`
- `auth.password.maxoldsubstring`
- `auth.password.numbers.max`

- `auth.password.numbers.min`
- `auth.password.others.max`
- `auth.password.others.min`
- `auth.password.regex.match`
- `auth.password.regex.reject`
- `auth.password.unique`
- `auth.password.userid.allowed`
- `auth.password.whitespace.max`
- `auth.password.whitespace.min`
- `external.export.interval`
- `notification.aggregation.max_notifications`
- `process.execute.direct`
- `servletcontainer.jetty311.log`
- `servletcontainer.jetty311.socket.https.expirationwarn.days`
- `ssl.debug`
- `whine.notify.emails`
- `xmlrpc.accept.ips`

After you make the change, you use the `manager-reload-config` command to load those changes to the Manager. Every time the `manager-reload-config` command is successful, a copy of the `server.properties` file it loaded is placed in `<ARCSIGHT_HOME>/config/history` for backup purposes. The `server.properties` file in `<ARCSIGHT_HOME>/config/history` is suffixed with a timestamp and does not overwrite the existing versions, as described in the following example.

Example

Manager M1 starts successfully for the first time on September 26, 2013, at 2:45 p.m. A backup copy of its `server.properties` file is written to `<ARCSIGHT_HOME>/config/history` with this timestamp:

```
server.properties.2013_09_26_14_45_27_718
```

On September 27, 2013, the M1 administrator adds the following property to the `server.properties` file:

```
notification.aggregation.max_notifications=150
```

When the administrator runs the `manager-reload-config` command at 1:05 p.m. the same day, it runs successfully because this property can be loaded dynamically.

As soon as the updated `server.properties` file is loaded in M1's memory, a backup copy of the updated `server.properties` file is written to `<ARCSIGHT_HOME>/config/history` with appropriate timestamp.

Now, <ARCSIGHT_HOME>/config/history contains these two backup files:

```
server.properties.2013_09_26_14_45_27_718
```

```
server.properties.2014_09_27_01_05_40_615
```

On September 28, 2014, the M1 administrator adds this property to the `server.properties` file:

```
notification.aggregation.time_window=2d
```

As this property can be also loaded dynamically, similar to the previous change, after the updated `server.properties` is loaded in M1's memory, a backup copy of the `server.properties` file is written to <ARCSIGHT_HOME>/config/history with appropriate timestamp.

Now, <ARCSIGHT_HOME>/config/history contains these three backup files:

```
server.properties.2014_09_26_14_45_27_718
```

```
server.properties.2014_09_27_01_05_40_615
```

```
server.properties.2014_09_28_03_25_45_312
```

On September 30, 2014, the M1 administrator updates the `log.channel.file.property.maxsize` property in the `server.properties` file. When the administrator runs the `manager-reload-config` command, the command fails because this property cannot be loaded dynamically. As a result, these things happen:

- The updated `server.properties` file is not loaded into M1's memory, however, changes made to it are not reverted.
- M1 continues to use the properties that were loaded on September 29th.
- No backup copy is made. The <ARCSIGHT_HOME>/config/history directory continues to contain the same three backup files:

```
server.properties.2014_09_26_14_45_27_718
```

```
server.properties.2014_09_27_01_05_40_615
```

```
server.properties.2014_09_28_03_25_45_312
```

The changes made on September 30th are not effective until M1 is restarted.

Changing Manager Properties Dynamically

To change any of the properties listed previously, do these steps:

1. Change the property in the `server.properties` file and save the file.
2. **(Optional)** Use the `-diff` option of the `manager-reload-config` command to view the difference between the server properties the Manager is currently using and the properties loaded after you run this command:

```
arcsight manager-reload-config -diff
```

Note: The `-diff` option compares all server properties—default and user properties. For all options available with the `manager-reload-config` command, see "[manager-reload-config](#)" on page 154.

3. Run this command in `<ARCSIGHT_HOME>/bin` to load the new property values:

```
arcsight manager-reload-config
```

If this command fails with a warning, it means you are changing properties that require a Manager restart. In that case, none of the property changes are applied, including ones that do not require a restart. You can:

- Revert changes to properties that require you to stop the Manager and then start all services and rerun the `manager-reload-config` command.
- Force an update of all properties using the `-as` option, as follows:

```
arcsight manager-reload-config -as
```

When you use the `-as` option, the properties that can be changed without starting the Manager take effect immediately. The properties that require the Manager started again are updated in the `server.properties` but are not effective until the Manager is started.

For example, if you change `auth.password.length.min` to 7 and `search.enabled` to false, you get the above warning because only `auth.password.length.min` can be updated without starting the Manager. If you force an update of the `server.properties` file, `auth.password.length.min` is set to 7, but `search.enabled` continues to be set to true until the Manager is started.

Note: Be careful in using the `-as` option to force reload properties. If an invalid static change is made, it may prevent the Manager from starting up after it reboots.

Changing the Service Layer Container Port

By default the service layer container port is 9090. You can change this port:

1. Modifying the following files located in the Manager's `<ARCSIGHT_HOME>`:
 - `<ARCSIGHT_HOME>/arcsight-dm/plugins/com.arcsight.dm.plugins.tomcatServer/conf/server.xml`
 - `<ARCSIGHT_HOME>/config/proxy.rule.xml`
 - `<ARCSIGHT_HOME>/config/rewriteProxy.rule.xml`Make sure to replace the references to port 9090 with an unused port number.

2. Stop the Manager by running the following command as user *arcsight*:

```
/etc/init.d/arcsight_services stop manager
```

3. Start all services:

```
/etc/init.d/arcsight_services start all
```

Securing the Manager Properties File

The Manager's `server.properties` file contains sensitive information such as database passwords, keystore passwords, and so on. Someone accessing the information in this file can do a number of things, such as tampering with the database and acting as a Manager. Protect the `server.properties` file so that only the user account under which the Manager is running is able to read it. For example, in Unix you can use the `chmod` command:

```
chmod 600 server.properties
```

This operation is performed during the Manager installation. As a result, only the owner of the file, which must be the user that runs the Manager, may read or write to the file. For all other users, access to the file is denied.

Adjusting Console Memory

Because the ArcSight Console can open up to ten independent event-viewing channels, out-of-memory errors may occur. If such errors occur, or if you simply anticipate using numerous channels for operations or analysis, please make the following change to each affected Console installation.

In the `bin/scripts` directory, edit the `console.bat` (Windows) or `console.sh` (Linux) and modify the `ARCSIGHT_JVM_OPTIONS` `-Xms` and/or the `-Xmx` parameters for the memory usage range of the Java Virtual Machine.

Adjusting Pattern Discovery

Note: Pattern Discovery is not supported on ESM on an appliance.

Note: Pattern Discovery is not supported in distributed correlation mode.

By default, Pattern Discovery limits its memory usage to about 4 GB of memory. However, if the search for patterns involves too many transactions and events, the task can run out of memory and abort. To control the memory limit indirectly, change the maximum number of transactions and events the Pattern Discovery task can hold in memory. The settings for these values are in the

`server.defaults.properties` file in the `config` folder. Place the changed versions in the `server.properties` file to supersede the default.

- **`patterns.transactionbase.max`**: The maximum transactions allowed in memory. If you exceed this, these transactions are stored as a page file. The default is 10000.
- **`patterns.maxSupporterCost`**: The maximum supporters allowed in memory. If you exceed this number, the Pattern Discovery task aborts. The default is 80000.
- **`patterns.maxUniqueEvents`**: The maximum unique events allowed in memory. If you exceed this number, the Pattern Discovery task aborts. The default is 20000.
- **`patterns.timeSpreadCalculation`**: Set to `false` avoid calculating timespread statistics, which can take a lot of resources. If you experience performance issues while "Extracting Pattern for Snapshot," try scheduling Pattern Discovery for off-peak times.

If you run Pattern Discovery against millions of matched events, try reducing the time frame to half to see how long it takes to complete. Use that information to plan when to run it. You can also make the filter condition more granular so there are fewer matches.

If the Pattern Discovery task aborts, a message to that effect appears in the console. Run the Pattern Discovery task again after increasing the Pattern Discovery memory usage limits. To increase the memory usage limit increase the three values proportionally. For example, to add 25 percent more memory capacity, you would change the values to:

- **`patterns.transactionbase.max=12500`**
- **`patterns.maxSupporterCost=100000`**
- **`patterns.maxUniqueEvents=25000`**

After changing these values, stop the manager and start all services for the new values to take effect:

1. Stop the Manager by running the following command as user *arcsight*:

```
/etc/init.d/arcsight_services stop manager
```

2. Start all services:

```
/etc/init.d/arcsight_services start all
```

Improving Annotation Query Performance

If you have annotation queries, their performance can be improved by adding the following property to the Manager's `server.properties` file:

```
event.annotation.optimization.enabled=true
```

You can edit the properties file using a regular text editor. After adding this property, start the manager for it to take effect.

Installing New License Files

You receive new license files packaged as .zip files and sent in an e-mail. To deploy the new license file, use the `managersetup` command to run the Manager Configuration Wizard and replace the old license file with the new one.

Configuring Manager Logging

The Manager writes logging information to log files, which by default are located in:

```
/opt/arcsight/var/logs/manager/default
```

Various Manager utilities write logging information to different sets of log files. Each of which can consist of multiple files.

The number and size of log files are configurable, a typical setting is 10 files with 10 megabytes each. When a log file reaches a maximum size, it is copied over to a different location. Depending on your system load, you may have to change the default settings. To make changes to the logging configuration, change the log channel parameters. The default log channel is called *file*.

For the main Manager log file, called `server.log`, the following `server.properties` settings are used:

```
# Maximum size of a log file.  
log.channel.file.property.maxsize=10MB  
  
# Maximum number of roll over files.  
log.channel.file.property.maxbackupindex=10
```

The first setting affects the size of each individual log file; the second affects the number of log files created. The log file currently in use is always the one with no number appended to the name. The log file with the largest number is the oldest. All log files are written to the `/opt/arcsight/var/logs/manager/default` directory.

The Manager and its related tools write the following log files:

Log File	Description
<code>server.log*</code>	The main Manager log.
<code>server.status.log*</code>	System status information, such as memory usage.
<code>server.channel.log*</code>	Active Channel logs.
<code>server.std.log*</code>	All output that the Manager prints on the console (if run in command line mode)

Log File	Description
server.pulse.log*	The Manager writes a line to this set of logs every ten seconds. Used to detect service interruptions.
server.sql.log*	If database tracing is enabled, the SQL statements are written to this set of log files.
execproc.log*	Log information about externally executed processes (only on some platforms)
serverwizard.log*	Logging information from the managersetup command.

Logs for distributed correlation services are located in:

Distributed Correlation Service	Log Location
persistor	/opt/arcsight/var/logs
correlators	/opt/arcsight/var/logs/<correlator_serviceId>
aggregators	/opt/arcsight/var/logs/<aggregator_serviceId>
message bus control	/opt/arcsight/var/logs/<mbus_control_serviceId>
message bus data	/opt/arcsight/var/logs/<mbus_data_serviceId>
distributed cache	/opt/arcsight/var/logs/<dcache_serviceId>
repository	/opt/arcsight/var/logs/<repo_serviceId>

Sending Logs and Diagnostics to ArcSight Support

Customer Support may request log files and other diagnostic information to troubleshoot problems. You can use the Log Retrieval feature in ArcSight Command Center. Check the online help for that feature for more information.

In the Console, the `sendlogs` command automatically locates the log files and compresses them. You can send the compressed files to Customer Support. For details on the `sendlogs` command, see ["sendlogs" on page 165](#).

- You can run this command as a wizard directly from the Console interface (GUI) in addition to the command-line interface of each component.
- Optionally, gather diagnostic information such as session wait times, thread dumps, and database alert logs about your ESM system, which helps Customer Support analyze performance issues on your ESM components.

Note: You can also use the `arcdt` command to run specific diagnostic utilities from the Manager command line. For more information, see ["arcdt" on page 127](#).

- When you run this command from the Console or Manager, you can gather logs and diagnostic information for all components of the system.

Guidelines for Using the `sendlogs` Command

When using the `sendlogs` command:

- You can be connected as any valid user on an ESM component to collect its local logs; however, you must have administrator access to collect logs from other components. For example, if you are connected as user 'joe' to the Console, you can collect its logs. But if you need to collect logs for the Manager and the database, you must connect to the Console as the administrator.
- You can only collect local logs on SmartConnectors or the CORR-Engine. The Send Logs utility only collects logs for the component on which you run it. In order to collect the CORR-Engine logs, the Manager needs to be running.
- All log files for a component are gathered and compressed. That is, you cannot select a subset of log files that the utility should process.
- The `sendlogs` command generates a compressed file on your local system that you can send to Customer Support by e-mail, if they request it.
- You can review the compressed file to ensure that only a desired and appropriate amount of information is sent to support.
- You can remove or sanitize information such as IP addresses, host names, and e-mail addresses from the log files before compressing them. The options are:
 - Send log as generated
This option, the default, does not remove any information from the logs files.
 - Only remove IP address
This option removes IP addresses, but not host names or e-mail addresses, from the logs files.
 - Remove IP address, host names, e-mail addresses
This option removes all IP addresses and enables you to specify a list of host-name suffixes for which all host names and e-mail addresses are removed from the logs.

For example, if you specify 'company.com' as a host-name suffix to remove, the Send Logs utility removes all references to domains such as 'www.company.com' and e-mail addresses such as 'john@company.com' from the logs.

Gathering Logs and Diagnostic Information

When you run the `sendlogs` command on SmartConnectors, it gathers logs and diagnostic information (if applicable) for only those components. However, when you run this utility on ArcSight Console or Manager, you can gather logs and diagnostic information for all or a selected set of ESM components.

To run this command on SmartConnectors, enter this in `<ARCSIGHT_HOME>/bin`:

```
./arcsight agent sendlogs
```


To gather logs and diagnostic information for all or a selected set of components, do one of the following:

- On the ArcSight Console, click **Tools > SendLogs**.
- Enter this command in <ARCSIGHT_HOME>/bin on the Console or Manager machine:

```
./arcsight sendlogs
```

The above action starts the Send Logs wizard. In the wizard screens, perform these steps:

Note: The Send Logs wizard remembers most of the choices you make when you run it for the first time. Therefore, for subsequent runs, if you choose to use the previous settings, you do not need to re-enter them.

1. Decide whether you want the wizard to gather logs only from the component on which you are running it or from all components.

Choose either **Use current settings to gather logs** or **Change/Review settings before gathering logs**.

If you select **Use current settings to gather logs** Logs for all components are gathered thus: If this is the first sendlogs is run after installation, then all the logs are gathered. If this is not the first time you have sendlogs has run, it uses the same setting as the previous run.

- a. Enter the Manager's login information.
- b. Go to the step [Sanitize logs](#).

If you select **Change/Review settings before gathering logs**, you can to select the components for which you want logs gathered.

Choose either **Local Logs Only** or **Logs from other components (Requires Manager credentials)**. These choices allow you to select whether you want only the local (the component from where you ran the sendlogs command) logs selected or to select logs from other components to be collected as well.

Local logs only:

If you select **Local logs only**, you can choose either **Include all time ranges** or **Choose a specific time range**.

If you select **Include all time ranges**, go to the step [Sanitize logs](#).

If you select **Choose a specific time range**, you are prompted to enter a **Start Time** and **End Time**, which is a time range for which the wizard gathers the logs.

Go to the step [Sanitize logs](#).

Logs from other components (Requires Manager credentials):

If you select **Logs from other components (Requires Manager credentials)**, you are prompted to choose the components.

- a. Select the components (for example, Manager, or Connectors) and the time range for which you want to gather logs. In addition, select whether you want to run the diagnostic utilities to gather

additional information for those components.

If you choose to specify the diagnostic utilities to run, you are prompted to select the utilities from a list in a later screen. The diagnostic utilities you can select are described in ["arcdt" on page 127](#).

- b. If you chose to gather logs from the SmartConnectors, select those SmartConnectors in the next screen.
- c. If you chose to select the diagnostic utilities you want to run earlier in this wizard, select them in the next screen.

2. Sanitize logs

Select whether you want to sanitize the logs before collecting them. For more information about sanitizing options, see ["Guidelines for Using the sendlogs Command" on page 24](#).

If you choose **Do not sanitization logs (fastest)**, go to the step [Incident Number](#)

If you choose **Change/Review Logs sanitization settings**, you are prompted to select what you want to sanitize.

If you chose one of the first two options, go to the step [Incident Number](#).

If you selected **Remove IP addresses, host names, and e-mail addresses (Slowest)**, you are prompted to enter what you want removed. Click **Add** to add a suffix to remove. Highlight an entry and click **Remove** to remove it from the list.

3. Incident Number

Enter the Customer Support incident number.

The sendLogs command uses this number to name the compressed file it creates. Use the incident number that Customer Support gave you when you reported the issue for which you are sending the logs. Doing so helps Customer Support relate the compressed file to your incident.

In case you do not have an incident number at this time, you can continue by entering a meaningful name for the compressed file to be created. After you obtain the incident number from Customer Support, you can rename the file with the incident number you received.

4. Click **Next** to start the compression.

Note: Most of the values you entered during the first run of the Send Logs wizard are retained. The next time you run this wizard, you need to enter only a few settings.

5. Click **Done** on the final screen.

Reconfiguring the ArcSight Console After Installation

You can reconfigure ArcSight Console at anytime by typing `arcsight consolesetup` within a command window.

Run the ArcSight Console Configuration Wizard by entering the following command in a command window in the <ARCSIGHT_HOME>/bin directory:

```
./arcsight consolesetup
```

To run the ArcSight Console Setup program without the graphical user interface, type:

```
./arcsight consolesetup -i console
```

The ArcSight Console Configuration Wizard launches.

Reconfiguring ArcSight Manager

To reconfigure Manager settings made during installation, run the Manager Configuration Wizard. The Manager Configuration Wizard is covered in ["Running the Manager Configuration Wizard" on page 112](#).

To change advanced configuration settings (port numbers, database settings, log location, and so on) after the initial installation, change the `server.properties` file. ArcSight's default settings are listed in the `server.defaults.properties` file. You can override these default settings by adding the applicable lines from `server.defaults.properties` to the `server.properties` file. If a property exists in both the `server.defaults.properties` file and the `server.properties` file, the value in the `server.properties` file is used. These files are located in <ARCSIGHT_HOME>/config. Values in the `server.properties` file supersede those in `server.defaults.properties`.

Changing ArcSight Command Center Session Timeout

ArcSight Command Center will automatically log out if it has been inactive for a certain amount of time. This duration is defined by the configurable `service.session.timeout` property. The default timeout is 900 seconds (15 minutes). If the session duration is too short, increase the value set for the `service.session.timeout` property in the <ARCSIGHT_HOME>/config/`server.properties` file.

Configuring Email for Transport Layer Security

Note: ESM supports TLS only.

The server property, `email.tls.desired`, can be used to configure email for SMTP servers configured to use Transport Layer Security (TLS).

If your SMTP server is configured to use TLS, you do not need to do anything because, by default, this property is set to `true`.

If your SMTP server is not set to use TLS, then add the property `email.tls.desired=false` to the `server.properties` file. See ["Managing and Changing Properties File Settings" on page 14](#), for information on editing the `server.properties` file.

If the TLS configurations do not match:

- SMTP server uses TLS and `email.tls.desired=false`, emails are sent without TLS.
- SMTP server does not use TLS and `email.tls.desired=true`, emails are not sent.

If emails fail for any reason, they are not re-sent.

Managing Password Configuration

The Manager supports a rich set of functionality for managing users passwords. This section describes various password configuration options. Generally, all the settings are made by editing the `server.properties` file. See ["Managing and Changing Properties File Settings" on page 14](#). Some of these control character restrictions in passwords.

Enforcing Good Password Selection

There are a number of checks that the Manager performs when a user picks a new password in order to enforce good password selection practices.

Password Length

The simplest one is a minimum and, optionally, a maximum length of the password. The following keys in `server.properties` affect this:

```
auth.password.length.min=6
```

```
auth.password.length.max=20
```

By default, the minimum length for passwords is six characters and the maximum length is 20 characters and can contain numbers and/or letters.

Configuring the above properties to a value of `-1` sets the password length to unlimited characters.

Restricting Passwords Containing User Name

Another mechanism that enforces good password practices is controlled through the following `server.properties` key:

```
auth.password.userid.allowed=false
```

When this key is set to `false` (the default), a user cannot include their user name as part of the password.

Password Character Sets

For appliance users, the Manager comes installed using the UTF-8 character set. If you install the Manager, it allows you to set the character set encoding that the Manager uses. When you install the ArcSight Console, the operating system on that machine controls the character set the Console uses. Be sure the operating system uses the same character set as the Manager if:

- A user password contains "non-English" characters (in the upper range of the character set: values above 127)
- That user wants to log in with that ArcSight Console.

This is not an issue if you log in from the web-based ArcSight Command Center.

For passwords that are in the ASCII range (values up to 127), the character set for the ArcSight Console does not matter.

Requiring Mix of Characters in Passwords

Strong passwords consist not only of letters, but contain numbers and special characters as well. This makes them more difficult to guess and can prevent dictionary attacks.

By default, the minimum length for passwords is six characters and the maximum length is 20 characters and can contain numbers and/or letters.

The following properties control the distribution of characters allowed in new passwords:

```
auth.password.letters.min=-1
```

```
auth.password.letters.max=-1
```

```
auth.password.numbers.min=-1
```

```
auth.password.numbers.max=-1
```

```
auth.password.whitespace.min=0
```

```
auth.password.whitespace.max=0
```

```
auth.password.others.min=-1
```

```
auth.password.others.max=-1
```

The *.min settings can be used to enforce that each new password contains a minimum number of characters of the specified type. The *.max settings can be used to limit the number of characters of the given type that new passwords can contain. Letters are all letters from A-Z, upper and lowercase, numbers are 0-9; "whitespace" includes spaces, etc.; "others" are all other characters, including special characters such as #,\$%@!

Additionally, the following `server.properties` key lets you restrict the number of consecutive same characters allowed.

```
auth.password.maxconsecutive=3
```

For example, the default setting of 3 would allow "adam999", but not "adam9999" as a password.

Furthermore, the following `server.properties` key enables you to specify the length of a substring that is allowed from the old password in the new password.

```
auth.password.maxoldsubstring=-1
```

For example, if the value is set to 3 and the old password is "secret", neither "secretive" nor "cretin" is allowed as a new password.

Checking Passwords with Regular Expressions

To accommodate more complex password format requirements, the Manager can also be set up to check all new passwords against a regular expression. The following `server.properties` keys can be used for this purpose:

```
auth.password.regex.match=
```

```
auth.password.regex.reject=
```

The `auth.password.regex.match` property describes a regular expression that all passwords have to match. If a new password does not match this expression, the Manager rejects it. The `auth.password.regex.reject` property describes a regular expression that no password may match. If a new password matches this regular expression, it is rejected.

Note: Backslash (\) characters in regular expressions must be duplicated (escaped)—instead of specifying \, type \\.

For more information on creating an expression for this property, see <http://www.regular-expressions.info/>. The following are a few examples of regular expressions and a description of what they mean.

- `auth.password.regex.match= /^\D.*\D$/`
Only passwords that do not start or end with a digit are accepted.
- `auth.password.regex.match= ^(?=.*[A-Z].*[A-Z])(?=.*[a-z].*[a-z])(?=.*[0-9].*[0-9])(?=.*[^a-zA-Z0-9].*[^a-zA-Z0-9]).{10,}$`
Only passwords that contain at least 10 characters with the following breakdown are accepted:
 - At least two upper case letters
 - At least two lower case letters
 - At least two digits
 - At least two special characters (no digits or letters)

- `auth.password.regex.reject= ^(?=[A-Z].*[A-Z])(?=[a-z].*[a-z])(?=[0-9].*[0-9])(?=[^a-zA-Z0-9].*[^a-zA-Z0-9]).{12,}$`

The passwords that contain 12 characters with the following breakdown are rejected:

- At least two upper case letters
- At least two lower case letters
- At least two digits
- At least two special characters (no digits or letters)

Password Uniqueness

In some environments, it is also desirable that no two users use the same password. To enable a check that ensures this, the following `server.properties` key can be used:

```
auth.password.unique=false
```

If set to true, the Manager checks all other passwords to make sure nobody is already using the same password.

Note: This feature may not be appropriate for some environments as it allows valid users of the system to guess other user's passwords.

Setting Password Expiration

The Manager can be set up to expire passwords after a certain number of days, forcing users to choose new passwords regularly. This option is controlled by the following key in `server.properties`:

```
auth.password.age=60
```

By default, a password expires 60 days from the day it is set.

When this setting is used, however, some problems arise for user accounts that are used for automated log in, such as the user accounts used for Manager Forwarding Connectors. These user accounts can be excluded from password expiration using the following key in `server.properties`:

```
auth.password.age.exclude=username1,username2
```

This value is a comma-separated list of user names. The passwords of these users never expire.

The Manager can also keep a history of a user's passwords to make sure that passwords are not reused. The number of last passwords to keep is specified using the following key in `server.properties`:

```
auth.password.different.min=1
```

By default, this key is set to check only the last password (value = 1). You can change this key to keep up to last 20 passwords.

Restricting the Number of Failed Log Ins

The Manager tracks the number of failed log in attempts to prevent brute force password guessing attacks. By default, a user's account is disabled after three failed log in attempts. This feature is controlled through the following key in `server.properties`:

```
auth.failed.max=3
```

Change this to the desired number or to `-1` if you do not wish user accounts to be disabled, regardless of the number of failed log in attempts.

After a user account has been disabled, the Manager can be configured to automatically re-enable it after a certain period of time. This reduces administrative overhead, while effectively preventing brute force attacks. This mechanism is controlled by the following key in `server.properties`:

```
auth.auto.reenable.time=10
```

This value specifies the time, in minutes, after which user accounts are automatically re-enabled after they were disabled due to an excessive number of incorrect log ins. Set the property key to `-1` to specify that user accounts can only be re-enabled manually.

Disabling Inactive User Accounts

By default, if a user does not log in for 90 days, the account is automatically disabled. To change the number of days of inactivity before the account is disabled, add the following property to the `server.properties` file:

```
auth.user.account.age=<days>
```

Change `<days>` to the number of days of inactivity allowed before the account is disabled.

Re-Enabling User Accounts

Under normal circumstances, user accounts that have been disabled—for example, as a result of too many consecutive failed log ins—can be re-enabled by any user with sufficient permission. Check the **Login Enabled** check box for a particular user in the User Inspect/Editor panel in the ArcSight Console.

If the only remaining administrator user account is disabled, a command line tool can be run on the system where the Manager is installed to re-enable user accounts. First, ensure that the Manager is running. Then, from the command line, run the following commands as user `arcsight`:

```
cd <ARCSIGHT_HOME>/bin  
./arcsight reenableuser <username>
```


where `username` is the name of the user you want to re-enable. After this procedure, the user can log in again, using the unchanged password.

Advanced Configuration for Asset Auto-Creation

Assets are automatically created for all components and, if applicable, for assets arriving from scan reports sent by vulnerability scanners via scanner SmartConnectors. This is done by the asset auto-creation feature.

If the profile of events in your network causes asset auto creation feature to create assets in your network model inefficiently, you can modify the asset auto creation default settings in the user configuration file, `server.properties`.

The `server.properties` file is located at `<ARCSIGHT_HOME>/config/server.properties`.

Asset Auto-Creation from Scanners in Dynamic Zones

The following properties relate to how assets are created from a vulnerability scan report for dynamic zones.

Create Asset with Either IP Address or Host Name

By default, an asset is not created in a dynamic zone if there is no host name present. The property set by default is:

```
scanner-event.dynamiczone.asset.nonidentifiable.create=false
```

You can configure ESM to create the asset as long as it has either an IP address or a host name. In `server.properties`, change `scanner-event.dynamiczone.asset.nonidentifiable.create` from **false** to **true**. ESM discards conflicts between an IP address and host name (similar IP address, but different host name and/or MAC address).

Caution: Creating an asset if no host name is present can result in an inaccurate asset model.

Setting `scanner-event.dynamiczone.asset.nonidentifiable.create` to `true` means that assets are created if the asset has an IP address or hostname.

This could lead to disabled assets or duplicated assets being created. Change this configuration only if you are using a dynamic zone to host ostensibly static assets, such as long-lived DHCP addresses.

When this property is set to `true`, the following takes place:

Example	Action taken if no conflicts	Action taken if previous asset with similar information
IP=1.1.1.1 hostname=myhost mac=0123456789AB	Asset created.	Asset created, previous asset is deleted.
ip=1.1.1.1 hostname=myhost mac=null	Asset created.	Asset created, previous asset is deleted.
ip=1.1.1.1 hostname=null mac=0123456789AB	Asset created.	Asset created, previous asset is deleted.
ip=1.1.1.1 hostname=null mac=null	Asset created.	Asset created, previous asset is deleted.
ip=null hostname=myhost mac=null	Asset created.	Previous asset deleted.
ip=null hostname=null mac=0123456789AB	Asset not created.	Asset not created.
ip=null hostname=myhost mac=0123456789AB	Asset created.	Previous asset deleted.

Preserve Previous Assets

This setting applies when ESM creates assets from a vulnerability scan report for dynamic zones. By default, if a previous asset with similar information already exists in the asset model, ESM creates a new asset and deletes the old one.

To preserve the previous asset rather than delete it when a scan finds a new asset with similar information, you can configure ESM to rename the previous asset. In `server.properties`, change `scanner-event.dynamiczone.asset.ipconflict.preserve` from `false` to `true`.

Caution: Preserving previous assets results in a larger asset model.

Setting `event.dynamiczone.asset.ipconflict.preserve` to `true` means that assets are continually added to the asset model and not removed. Use this option only if you know you must preserve all assets added to the asset model.

When the system is configured with `scanner-event.dynamiczone.asset.nonidentifiable.create=false` and `scanner-event.dynamiczone.asset.ipconflict.preserve=true`, it takes the following actions:

Example	Action taken if previous asset with similar information and <code>preserve = true</code>
IP=1.1.1 hostname=myhost mac=0123456789AB	Asset created, previous asset is renamed.
ip=1.1.1 hostname=myhost mac=null	Asset created, previous asset is renamed.
ip=1.1.1 hostname=null mac=0123456789AB	Asset created, previous asset is renamed.
ip=1.1.1 hostname=null mac=null	No asset created. Either host name or MAC address is required.
ip=null hostname=myhost mac=null	Asset created.
ip=null hostname=null mac=0123456789AB	Asset not created.
ip=null hostname=myhost mac=0123456789AB	Asset created.

Changing the Default Naming Scheme

By default, the system names assets that come from scanners using the naming scheme outlined in the topic "Asset Names" in the *ArcSight Console User's Guide*.

	Static Zone	Dynamic Zone
Property	scanner-event.auto-create.asset.name.template	scanner-event.auto-create.dynamiczone.asset.name.template
Value	\$destinationAddress - \$!destinationHostName	\$destinationHostName
Example	1.1.1.1 - myhost	myhost

You can reconfigure this naming scheme. For example, if you want the asset name for an asset in a static zone to appear this way in the ArcSight Console:

```
myhost_1.1.1.1
```

In this case, change the default

```
$destinationAddress - $!destinationHostName
```

to

```
$!destinationHostName_ $destinationAddress
```

Compressing SmartConnector Events Using Turbo Modes

ArcSight SmartConnectors can send event information to the Manager in a compressed format using HTTP compression. The compression technique used is standard GZip, providing compression ratio of 1:10 or higher, depending on the input data (in this case, the events the ArcSight SmartConnector is sending). Using compression lowers the overall network bandwidth used by ArcSight SmartConnectors dramatically, without impacting their overall performance.

By default, all ArcSight SmartConnectors have compression enabled. To turn it off, add the following line to the <ARCSIGHT_HOME>/user/agent/agent.properties file:

```
compression.enabled = false
```

ArcSight SmartConnectors determine whether the Manager they are sending events to supports compression.

Compressing SmartConnector Events

ArcSight SmartConnectors can send event information to the Manager in a compressed format using HTTP compression. The compression technique used is standard GZip, providing compression ratio of 1:10 or higher, depending on the input data (in this case, the events the ArcSight SmartConnector is

sending). Using compression lowers the overall network bandwidth used by ArcSight SmartConnectors dramatically, without impacting their overall performance.

By default, all ArcSight SmartConnectors have compression enabled. To turn it off, add the following line to the <ARCSIGHT_HOME>/user/agent/agent.properties file:

```
compression.enabled = false
```

ArcSight SmartConnectors determine whether the Manager they are sending events to supports compression.

Reducing Event Fields with Turbo Modes

If your configuration, reporting, and analytic usage permits, you can accelerate the transfer of sensor information through SmartConnectors by choosing one of the "turbo" modes, which send fewer event fields from the connector. The default transfer mode is called Complete, which passes all the data arriving from the device, including any additional data (custom, or vendor-specific).

ArcSight SmartConnectors can be configured to send more or less event data, on a per-SmartConnector basis, and the Manager can be set to read and maintain more or less event data, independent of the SmartConnector setting. Some events require more data than others. For example, operating system syslogs often capture a considerable amount of environmental data that may or may not be relevant to a particular security event. Firewalls, on the other hand, typically report only basic information.

ESM defines the following Turbo Modes:

	Turbo Modes	
1	Fastest	Recommended for firewalls
2	Faster	Manager default

When Turbo Mode is not specified (mode 3, Complete), all event data arriving at the SmartConnector, including additional data, is maintained. Turbo Mode 2, Faster, eliminates the additional custom or vendor-specific data, which is not required in many situations. Turbo Mode 1, Fastest, eliminates all but a core set of event attributes, in order to achieve the best throughput. Because the event data is smaller, it requires less storage space and provides the best performance. It is ideal for simpler devices such as firewalls.

The Manager processes event data using its own Turbo Mode setting. If SmartConnectors report more event data than the Manager needs, the Manager ignores the extra fields. On the other hand, if the Manager is set to a higher Turbo Mode than a SmartConnector, the Manager maintains fields that are not filled by event data. Both situations are normal in real-world scenarios, because the Manager configuration reflects the requirements of a diverse set of SmartConnectors.

Event data transfer modes are numbered (1 for Fastest, 2 for Faster, 3 for Complete), and possible Manager-SmartConnector configurations are therefore:

1-1 Manager and SmartConnector in Fastest mode

1-2 SmartConnector sending more sensor data than Manager needs

1-3 SmartConnector sending more sensor data than Manager needs

2-1 SmartConnector not sending all data that Manager is storing*

2-2 Manager and SmartConnector in Faster mode

2-3 Default: Manager does not process additional data sent by SmartConnector

3-1 Manager maintains Complete data, SmartConnector sends minimum*

3-2 Manager maintains additional data, but SmartConnector does not send it

3-3 Manager and SmartConnector in Complete mode

*When the SmartConnector sends minimal data (Turbo Mode 1), the Manager can infer some additional data, creating a 2-1.5 or a 3-1.5 situation.

Monitoring ESM Appliance with SNMP

We now provide the necessary snmp packages on the appliance so that you can set up SNMP monitoring.

By default net-snmp comes set up using the community string *public*, and will work right out of the box using that community string.

If you would like to change the configuration to make it more secure, edit the `/etc/snmp/snmpd.conf` file. All the configuration about net-snmp goes in that file.

Sending Events as SNMP Traps

ESM can send a sub-stream of all incoming events (that includes rule-generated events) via SNMP to a specified target. A filter is used to configure which events are sent. ESM's correlation capabilities can be used to synthesize network management events that can then be routed to your enterprise network management console.

Configuration of the SNMP Trap Sender

The SNMP trap sender is configured using the Manager configuration file. The `<ARCSIGHT_HOME>/config/server.defaults.properties` file includes a template for the required configuration values. Copy those lines into your `<ARCSIGHT_HOME>/config/server.properties` file and make the changes there. After making changes to this file, you must stop the Manager and then start all services:

```
/etc/init.d/arcsight_services stop manager
```

```
/etc/init.d/arcsight_services start all
```

Caution: Setting the Manager to send SNMP v3 traps is not FIPS compliant. This is because SNMP v3 uses the MD5 algorithm. However, SNMPv1 and v2 are FIPS compliant.

The following provides a description of specific SNMP configuration properties:

```
snmp.trapsender.enabled=true
```

Set this property to true in order to enable the SNMP trap sender.

```
snmp.trapsender.uri=
```

```
/All Filters/Arcsight System/SNMP Forwarding/SNMP Trap Sender
```

The system uses the filter specified by the URI (it should all be on one line) to decide whether or not an event is forwarded. There is no need to change the URI to another filter. These contents are locked and are overwritten when the contents are upgraded to the next version. By default, the "SNMP Trap Sender" filter logic is Matches Filter (/All Filters/ArcSight System/Event Types/ArcSight Correlation Events)—that is, only rules-generated events are forwarded.

```
snmp.destination.host=
```

```
snmp.destination.port=162
```

The host name and the port of the SNMP listener that wants to receive the traps.

```
snmp.read.community=public
```

```
snmp.write.community=public
```

The SNMP community strings needed for the traps to make it through to the receiver. The read community is reserved for future use, however, the write community must match the community of the receiving host. This depends on your deployment environment and your receiving device. Please consult your receiving device's documentation to find out which community string to use.

```
snmp.version=1
```

```
snmp.fields=\
```

```
event.eventId,\
```

```
event.name,\
```

```
event.eventCategory,\
```

```
event.eventType,\
```

```
event.baseEventCount,\
```

```
event.arcsightCategory,\
```

```
event.arcsightSeverity,\  
event.protocol,\  
event.sourceAddress,\  
event.targetAddress
```

These event attributes should be included in the trap. The syntax follows the SmartConnector SDK as described in the FlexConnector Developer's Guide. All the ArcSight fields can be sent. The identifiers are case sensitive, do not contain spaces and must be capitalized except for the first character. For example:

ArcSight Field	SDK/SNMP trap sender identifier
Event Name	eventName
Device Severity	deviceSeverity
Service	service

The SNMP field types are converted as:

ArcSight	SNMP
STRING	OCTET STRING
INTEGER	INTEGER32
Address	IP ADDRESS
LONG	OCTET STRING
BYTE	INTEGER

Additional data values are accessible by name, for example:

```
snmp.fields=event.eventName,additionaldata.myvalue
```

This sends the Event Name field and the value of myvalue in the additional data list part of the SNMP trap. Only the String data type is supported for additional data, therefore all additional data values are sent as OCTET STRING.

Configuring Asset Aging

The age of an asset is defined as the number of days since it was last scanned or modified. So, for example, if an asset was last modified 29 hours ago, the age of the asset is taken as 1 day and the remaining time (5 hours, in our example) is ignored in the calculation of the asset's age. You can use asset aging to reduce asset confidence level as the time since the last scan increases.

Note: Only the assets belonging to the following categories are considered for aging:

- /Site Asset Categories/Scanned/Open Ports
- /Site Asset Categories/Scanned Vulnerabilities

Excluding Assets from Aging

To exclude certain assets from aging, you can add those assets to a group and then set the property `asset.aging.excluded.groups.uris` in the `server.properties` file to the URI(s) of those groups.

For example, to add the groups `MyAssets` and `DontTouchThis` (both under `All Assets`) add the following to the `server.properties` file:

```
#Exclude MyAssets and DontTouchThis from aging  
  
asset.aging.excluded.groups.uris=/All Assets/MyAssets,/All  
Assets/DontTouchThis
```

Note: When setting the `asset.aging.excluded.groups.uris` property keep in mind that the assets in this group are not disabled, deleted or amortized.

Disabling Assets of a Certain Age

By default, asset aging is disabled. There is a scheduled task that disables any scanned asset that has reached the specified age. By default, after the assets aging feature is turned on, this task runs every day half an hour after midnight (00:30:00). Add the following in the `server.properties` file to enable asset aging:

```
#-----  
# Asset aging  
#-----  
# Defines how many days can pass before a scanned asset is defined as old  
# after this time the asset will be disabled  
# Default value: disabled  
asset.aging.daysbeforedisable = -1
```

Note that the default value `-1` means that asset aging is turned off, not that assets will be disabled.

The value is expressed in days that define how long an asset is allowed to age before it is disabled. For example:

```
asset.aging.daysbeforedisable = <number of days>
```

So, this setting:

```
asset.aging.daysbeforedisable = 4
```

means that after 4 days, assets will be considered old and disabled. Set this property to a reasonable value that makes sense for your assets.

Deleting an Asset

To delete the asset instead of disabling it, set the property `asset.aging.task.operation` to `delete` in `server.properties` file:

```
# Delete assets when they age
asset.aging.task.operation = delete
```

Verify that this property is set to `delete` for deletion of aging assets to occur.

Amortize Model Confidence with Scanned Asset Age

The `IsScannedForOpenPorts` and `IsScannedForVulnerabilities` sub-elements in the `ModelConfidence` element are factored by the age of an asset. They are extended to include an optional attribute, `AmortizeScan`. If `AmortizeScan` is not defined (or defined with value `-1`), the assets are not amortized. A "new" asset gets the full value while an "old" asset gets no points. You can edit the `AmortizeScan` value (number of days) in the Manager's `/config/server/ThreatLevelFormula.xml` file:

```
<ModelConfidence>
  <Sum MaxValue="10" Weight="10">
    <!-- If target Asset is unknown, clamp modelConfidence to 0 -->
    <HasValue FIELD="targetAssetId" Value="-10" Negated="Yes" />
    <HasValue FIELD="targetAssetId" Value="4" Negated="NO" />
    <!-- Give 4 points each for whether the target asset has been scanned
for open port and vulnerabilities -->
    <!-- This values can be amortized by the age of the asset -->
    <!-- that means that the value will reduce constantly over time as the
asset age -->
    <!-- ie if you set the value to be 120 on the day the assets are
created they receive the four points, by day 60 they'll receive 2 points and
by day 120 they'll receive 0 points -->
    <IsScannedForOpenPorts Value="4" Negated="NO"
      AmortizeScan="-1" />
    <IsScannedForVulnerabilities Value="4" Negated="NO" AmortizeScan="-1" />
  </Sum>
</ModelConfidence>
```

</Sum>

</ModelConfidence>

For this example, the value is modified as follows:

Asset Age (in days)	AmortizeScan Value
0	4
60	2
120	0
240	0

Tuning for Supporting Large Actor Models

If your actor model contains tens of thousands of members, follow the guidelines in this section to allow adequate processing capacity for best results.

1. Shut down the Manager.

Note: In-memory capacity changes made to `arc_session_list` must match `sessionlist.max_capacity` in `server.properties`

If you update the in-memory capacity for the `arc_session_list` table to number other than the default 500,000, the value you enter must match the value set for `sessionlist.max_capacity` in `server.properties`.

2. **Adjust Java Heap Memory Size** using the Manager Configuration Wizard. Supporting 50,000 actors requires an additional 2 GB of Java heap memory in the Manager. An additional 300 MB is needed for each category model you construct that uses 50,000 actors. This additional memory is not in use all the time, but is needed for certain operations. The Manager Configuration Wizard is covered in ["Running the Manager Configuration Wizard" on page 112](#).
3. Re-start the Manager. See ["Restarting the Manager - Stop the Manager and Start All Services" on page 11](#) for details.
4. Proceed with importing the actor model.

About Exporting Actors

If you need to export your entire actor model to image another Manager, you can do it using the `export_system_tables` command with the `-s` parameter, which specifies the export of session list data. Additionally, the `-s` parameter captures the special session list infrastructure that is part of the Actor Resource Framework in addition to the actor resources themselves.

Viewing License Tracking and Auditing Reports

The system automatically maintains a license audit history that allows you to see how many licenses are in use. When users log into the Console they receive a warning notifying them if they have exceeded their current license. ESM creates an internal audit event for each licensable component to help users track which areas have been exceeded. There are licensing reports on individual features. These reports are located in `/All Reports/ArcSight Administration/ESM/Licensing/`. The reports provide a summary for the number of Actors, Assets, Users, Devices, and EPS identified over the last week.

Setting Up ESM for MSSP Environments

To set up ESM in a managed security service provider (MSSP) environment, do the following:

- Disable the search auto-complete feature. To do this, in the `logger.properties` file change the value of `auto-complete.fulltext.enabled` to **false**.
- Also, consult [ESM Best Practices: Multitenancy and Managed Security Services Providers](#).

Setting up a Custom Login Message for ArcSight Console and Command Center

You can configure the Manager to display a custom login message when users log in to the ArcSight Console and Command Center. The login message will be displayed once, at initial user login. Use this feature to display a legal disclaimer message, or other information you wish the user to see upon login.

To set up a custom login message:

1. Create a text file named `loginbanner.txt` in the `<ARCSIGHT_HOME>/config` directory. In the file, type the login message the user will see. If the message is very long, add physical line breaks so the message formats properly when displayed.
2. Set the following properties in `server.properties`:

Required Property Setting	Purpose
<code>server.staticbanner.text=true</code>	Enables the display of the custom login message
<code>auth.login.banner=config/loginbanner.txt</code>	Configures the Manager to send the text from the <code>loginbanner.txt</code> file

3. To implement the changes, stop the Manager by running the following command as user `arcsight`:

```
/etc/init.d/arcsight_services stop manager
```

4. Then, start all services:

```
/etc/init.d/arcsight_services start all
```

Setting Checkpoint Parameters

When you stop ESM, the system takes a checkpoint (snapshot) of the rules engine to record the actions that occurred until the system stopped. When ESM starts again, it uses the checkpoint to return the system to the state it was in just before it stopped.

Note: Duplicate rule actions after a crash recovery

If you stop ESM, it takes a checkpoint of the rules engine so that it knows what actions have been performed and where it stopped. If ESM crashes in such a way that it cannot take a checkpoint (during a power failure, for example), it returns to the last checkpoint when ESM starts again, and replays events from there. Any actions that occurred between that checkpoint and the ESM crash are therefore repeated. Repeated actions that generate audit events generate duplicate audit events. You should investigate repeated actions that do not duplicate well. For example, if an action adds an item to an Active List, that item's counter will be incremented. If the action runs a command, it will run the command again, and so on.

The following properties related to system checkpoint are configurable in the `server.properties` file on the Manager:

- `rules.checkpoint.enabled=true`
Use this property to set whether or not a rules engine checkpoint file is created. The default is true. If this property is set to true, then the property `rules.recovery.enabled` should also be set to true.
- `rules.checkpoint.interval=300`
This property sets the interval between checkpoints in seconds. The default is 300 seconds (5 minutes).
- `rules.recovery.enabled=true`
Use this property to specify if a checkpoint should be used when ESM starts. The default is true.
- `rules.recovery.time-limit=120`
This property sets the time limit on loading events from the database. The default is 120 seconds (2 minutes). For example, if it takes longer than 2 minutes to load the events, the system will stop event recovery at 2 minutes.
- `rules.recovery.event-query-time-range=1800`
This property sets the limit on how far in the past the system will go for events during recovery. The default is 1800 seconds (30 minutes). You can increase this parameter value to accommodate an extended system downtime, but prolonged recovery time can affect system performance. Also, if you

change the value of this parameter, you might find you need to change the value of `rules.recovery.time-limit=120` as well.

Preventing Rules Recovery Timeout

Rules recovery can timeout if there is a high EPS on the system, which causes the server to stop loading events from the database for checkpoint. You can modify the

`rules.recovery.time-limit` property in `server.properties` to set a higher recovery time limit to attempt to prevent this timeout. The default value for the `rules.recovery.time-limit` property is 120 seconds (two minutes).

Note: The timeout can still occur even after you increase the time limit, due to overall system load, high EPS, or a large number of rules to recover.

Enable Iframe of ArcSight Command Center Pages

To allow iframing of ArcSight Command Center pages, you can add the following optional setting in `server.properties`:

```
allow.from.domains=entries
```

Where entries are a comma separated list of the elements that could be of one of the following two forms:

- origin (for example, `https://mycompany.com`)
- `key::origin`

In this example, the key is any string uniquely identifying the origin within the comma-separated list. For the definition of origins, see <http://tools.ietf.org/html/rfc6454>.

Below is an example of `allow.from.domains` containing several entries. The first entry is origin, while the second is key-value pair:

```
allow.from.domains=https://mycompany.com,microsoft::https://microsoft.com
```

Third party applications that need to iframe Command Center pages should add the parameter "origin" to URLs pointing to Command Center page and use that parameter to specify their origin. For example:

```
https://host:8443/www/ui-phoenix/com.arcsight.phoenix.PhoenixLauncher/?origin=microsoft#login
```

In that parameter the origin could be specified directly (`https://microsoft.com`) or with help of the key (`microsoft`) from the above ESM configuration setting.

ESM uses "origin" parameter from HTTP request to lookup an entry in "allow.from.domains" setting. If there is matching entry, then iframing is allowed for configured origin. If origin is specified in the HTTP

request, but is not presented in "allow.from.domains", the request will fail with the exception "Not allowed request".

HTTP requests without "origin" parameter are handled by ESM the same way as before, so there are no changes for regular Command Center sessions. Here iframing is not allowed to prevent clickjacking vulnerability:

https://www.owasp.org/index.php/Clickjacking_Defense_Cheat_Sheet

The implementation requires enabling cookies in the browser. It might also be needed to login to Command Center without iframing from the browser once. Opening Command Center directly creates browser's cookie for the target host. By default, the cookies for iframed pages are not created.

Enabling Scaling for Bytes In and Bytes Out Event Fields

When the values for Bytes In and Bytes Out event fields are larger than the maximum value of integer numbers, overflow can occur for these fields. You can control scaling for these fields using the server property `bytesInBytesOut.scaling.divider`. This property has a default value 1. If this value is set to be greater than 1, the values for Bytes In and Bytes Out event fields are scaled, and are saved in ESM in the scaled units.

For example, if the value of the property `bytesInBytesOut.scaling.divider` is 10, all bytes in and bytes out values are divided by 10. By default, the data are not changed. If the values after scaling are still larger than the maximum integer number ($2^{31}-1$), they are then rounded to the maximum integer number, which is 2,147,483,647.

For forwarded events (Locality=forwarded), bytes in and bytes out values will not be changed and scaling will not apply.

Notes for bytes in and bytes out behavior in relation to the different versions of SmartConnectors:

- For SmartConnectors version 7.4.0.XXXX.0 and newer: These versions of SmartConnectors send the Bytes In and Bytes Out field values as long numbers to ESM. If the property value is more than 1, scaling will be applied. If a value of Bytes In or Bytes Out event fields after scaling is more than the maximum integer value, it will be truncated to the maximum integer value.
- For SmartConnectors version 7.3.0.XXXX.0 and older: These versions of SmartConnectors do not support values for Bytes In and Bytes Out event fields that are larger than the maximum integer value; in these cases, the entire event is dropped. For Bytes In and Bytes Out fields that have values less than the maximum integer value, data will be scaled if the server property value is more than 1.

Converting an ESM Appliance to IPv6

You can convert your ESM appliance to use IPv6. Note that any connectors registered on the appliance will need to be re-registered after you perform this conversion because the IPv4 IP address will change to a hostname, and the Manager certificate will be regenerated.

To perform the conversion:

1. Stop all the services. As user *root* or *arcsight*, run:
`/etc/init.d/arcsight_services stop all`
2. Confirm if all services are stopped. As user *root* or *arcsight*, run:
`/etc/init.d/arcsight_services status all`
3. As user *root*, run the network configuration script:
`/opt/arcsight/services/bin/scripts/nw_reconfig.py`
4. Reboot the system.
5. As user *root*, edit the `/etc/hosts` file and comment out the line that contains "IPv4 address to hostname mapping if present".
6. Stop the Manager. As user *root*, run:
`/etc/init.d/arcsight_services stop manager`
7. Re-run `managersetup`. As user *arcsight*, run:
`opt/arcsight/manager/bin/arcsight managersetup`
Change the IP protocol to IPv6 and change the hostname to the appropriate IPv6 hostname.
8. Regenerate the Manager certificate.
9. Start all services. As user *root*, run:
`/etc/init.d/arcsight_services start all`
ESM now uses IPv6.

Importing an Archive of 300MB Maximum Size

Use this procedure to import large files into the ArcSight Console. Or, you could export resources from the ArcSight Console to import them into another Manager.

1. In `server.properties`, change the value of the parameters `persist.file.size.total.max` and `persist.file.size.max` to 600:
`persist.file.size.total.max=600`
`persist.file.size.max=600`
See ["Editing Properties Files" on page 15](#) for details on editing properties.
2. As user *arcsight*, stop ArcSight services:


```
service arcsight_servers stop all
```

3. Increase the heap size on the server machine:

```
export ARCSIGHT_JVM_OPTIONS="-Xms12288m -Xms12288m"
```

4. As user *arcsight*, start ArcSight services:

```
service arcsight_services start all
```

5. Import the archive using a command like this:

```
./arcsight archive -f /home/arcsight/test.xml -u admin -p password -m n15-214-137-h65.arst.swlab.net -action import
```

Changing the Hostname of Your Machine

Wherever you see "hostname," you may assume it means "hostname or IP address." If you have configured peering, make sure to re-establish the peer relationship.

Note: You cannot use an IPv6 address as a hostname. IPv4 addresses can be used as hostnames.

If you are using the High Availability module, the procedure is different. Refer to the *ArcSight High Availability Module User's Guide* for the proper procedure.

In case you want to change the IP address of your machine after running the First Boot Wizard successfully, follow these steps:

Note: Run the Manager setup command when logged in as user *arcsight*.

1. Stop all ArcSight services by running (as user *arcsight*):

```
/etc/init.d/arcsight_services stop all
```

2. Change the hostname of your machine.
3. Reboot the machine.
4. As the user *arcsight*, stop the Manager by running:

```
/etc/init.d/arcsight_services stop manager
```

5. As the user *arcsight*, run the Manager's setup program from the `<ARCSIGHT_HOME>/bin` directory:

```
./arcsight managersetup
```

- a. Enter the new host name (that you set for your machine in the steps above), in the Manager Host Name field when prompted by the wizard – and in every other field where the old hostname is displayed.
- b. Make sure to select the self-signed keypair option when prompted by the wizard and enter the required information to generate the self-signed certificate containing the new host name.

If you are in FIPS mode, you do not get an option to regenerate the keypair. In this case, manually delete the keypair, regenerate it, and then go the next step to start all services.

6. As the user *arcsight*, start all services by running:

```
/etc/init.d/arcsight_services start all
```

7. As the user *arcsight*, see if the manager is running yet by running the command.

```
/etc/init.d/arcsight_services status manager
```

Run this command about once a minute, until you see the line, *manager service available*. Then continue to the next step.

8. Import the Manager's newly-generated certificate on all clients (Console and connectors) that access the Manager. See the "Import a Certificate" topic in the "SSL Authentication" chapter in the ESM Administrator's Guide.
9. Test to make sure that
 - The clients can connect to the Manager
 - Peer configuration works as expected. If not, redo the peer configuration.

Chapter 3: Configuring and Managing Distributed Correlation

Note: The information in this section applies only if your ESM instance is installed in distributed correlation mode.

Distributed correlation enables the configuration and deployment of multiple correlators and aggregators running as services on nodes in a cluster. A distributed correlation deployment includes correlators, aggregators, message bus, distributed cache, and more. Ideally, the correlators and aggregators in the cluster will keep up with event flow on your system. As needed, add more correlators and aggregators. You must balance system resources as you add these components (CPU and memory). You will want to be somewhat generous in your cluster planning, and add more correlators and aggregators than you think you need. For cluster planning details, see "Distributed Correlation Cluster Planning" in the *ESM Installation Guide*.

Distributed correlation is most effective if configured over multiple physical systems to ensure the fault tolerance benefit of the distributed correlation cluster deployment is fully realized. You can implement the cluster on one machine that has adequate resources, but will sacrifice the fault tolerance aspect of the distributed correlation cluster, as described in "Distributed Correlation Concepts" in *ESM 101*.

Also, when you add cluster services (such as instances of correlators, aggregators, distributed cache, or message bus) or change system content (for example, import a package or write a rule that updates an active list), that change is known to and is available to every part of the cluster. No manual synchronization is required across the multiple nodes in the distributed correlation environment.

This section contains information on configuring and managing the cluster services, as well as monitoring, security considerations, and troubleshooting related to your cluster.

Cluster Implementation Tasks

These are the tasks you must perform to implement a distributed correlation cluster (in this order):

- Plan the cluster. This is an important task and you want to get as much of it right the first time as you can. See the topic "Distributed Correlation Cluster Planning" in the *ESM Installation Guide*.
- Install ESM in distributed correlation mode on each machine that will be a node in the cluster. The cluster installation includes the persistor and repository on the first cluster node. You can also add other cluster services (aggregators, correlations, distributed cache, and repository) on the cluster nodes during installation. See the *ESM Installation Guide*. Note that message bus data and message bus control services are not added during installation, and must be configured later.

- Configure cluster services as needed. In this step, you must configure message bus data and message bus control; these services are not configured during cluster installation. See ["Configuring Services in a Distributed Correlation Cluster" on the next page](#).
- After you configure cluster services, you must start the cluster services on the persistor node. See ["Managing Distributed Correlation Services - Basic Commands" on page 62](#).
- Perform cluster management tasks (starting and stopping services). See ["Managing Distributed Correlation Services - Basic Commands" on page 62](#).

Cluster Services

The cluster consists of services that you configure and manage, on one or several systems. These services are:

- **Persistor:** This system is the root of the cluster and executes processes across the cluster services. The persistor consists of these internal services (that you generally do not need to manage, but are listed here for your reference):
 - manager
 - logger_httpd
 - logger_servers
 - logger_web
 - mysqld
 - aps
 - postgresql
 - execprosvc

All cluster nodes can be managed from the persistor; tasks executed at the node level affect that node only. Import content packages into the persistor system and they are promulgated across the cluster. All database queries run on the persistor.

- **Correlator:** Performs correlation in a cluster using filters and rule conditions to discover the relationships between events. You can have multiple instances of correlators.
- **Aggregator:** Performs aggregation in a cluster, to summarize or consolidate events with matching (or not matching) values over a timeframe. You can have multiple instances of aggregators.
- **Message bus data** and **Message bus control (mbus_data and mbus_control):** Manages messaging in a cluster.
- **Distributed cache (dcache):** Shared data cache for a cluster.
- **Repository (repo):** Repository of cluster service status information and the index of cluster resources. The repository is the shared information base for the cluster and central to cluster operation; no repository means no cluster.

For conceptual information on a distributed correlation cluster see the topic "Distributed Correlation" in *ESM 101*. For information on cluster planning and installation, see the *ESM Installation Guide*.

Configuring Services in a Distributed Correlation Cluster

Configuring service in a distributed correlation cluster means to add another instance of a service (such as a correlator or distributed cache) to a cluster, or to edit an existing instance of a service. Adding additional cluster services is optional as needed, however adding message bus control and message bus data services after distributed cluster installation is mandatory for cluster operation.

Note: After configuring any new cluster service, you must start all services at the persistor level. See ["Start All Distributed Correlation Services" on page 61](#).

As you add cluster services, ESM increments the service names with numbers. For example, as you add correlators, they are numbered as *correlator1*, *correlator2*, and so on. If you later delete an instance of a service (for example, *correlator2*), the next instance of that service that you add will increment in number by one. So, in this example, if you delete *correlator2*, and then add a new correlator instance, that instance is numbered as *correlator3*. Numbers are not reused to preserve uniqueness and prevent confusion because all cluster services are identified internally by the assigned service numbers.

You can add names to services to identify them for organization, as a reminder of the point of adding the services, or other purposes that help you work with the cluster. These services names do not replace the number identities provided by ESM, but exist in addition to those names.

Configuring Message Bus Control and Message Bus Data

Message bus control (*mbus_control*) and message bus data (*mbus_data*) facilitate communication among cluster services. There are specific guidelines for the number of message bus control and message bus instances that must exist in a cluster see "Distributed Correlation Cluster Planning" in the *ESM Installation Guide*.

All instances of message bus control or message bus data must be available and functioning for event flow to continue in the cluster.

Important: Passwordless SSH must be set up on the persistor node in order to be able to configure message bus data and message bus control. If passwordless SSH is not implemented, the *mbusetup* wizard will not perform any configuration, and you must then exist the wizard and set up passwordless SSH on the persistor node. See ["Setting Up Key-Based Passwordless SSH" on page 61](#) for details.

Note: After cluster installation, you must configure message bus control and message bus data. These services are not configured in the context of running the First Boot Wizard. This configuration must be performed as a post-installation task after the First Boot Wizard completes.

When you change message bus data or message bus control instances, ESM replaces all instances of these services and you lose the data in the replaced instances of these services. Also, the number in the name of the new instances will be incremented. For example, if you have a cluster that has four nodes and this configuration of message bus data and message bus control (other services will exist in your cluster, but for the clarity of this example, they are not described here):

Node 1 - (no message bus instances)

Node 2 - Message Bus Data 1, Message Bus Control 1

Node 3 - Message Bus Data 2, Message Bus Control 2

Node 4 - Message Bus Data 3, Message Bus Control 3

And you change this cluster to add a message bus data instance to Node 1, the instances of these services are replaced with new instances, and the number of each instance is incremented by 1 in the service name:

Node 1 - Message Bus Data 4

Node 2 - Message Bus Data 5, Message Bus Control 4

Node 3 - Message Bus Data 6, Message Bus Control 5

Node 4 - Message Bus Data 7, Message Bus Control 6

Unlike other services, message bus control services can be stopped **only** from the persistor node. When you run `/etc/init.d/arcsight_services stop mbus_control<#>` from the persistor, it will stop all instances of message bus data.

To configure multiple message bus control and message bus data instances in a cluster:

Perform these steps to add, delete, or change instances. Perform all of these steps on the persistor node.

1. Verify that key-based passwordless SSH is set up on the persistor node.
2. Stop all services:
`/etc/init.d/arcsight_services stop all`
3. Start the information repository:
`/etc/init.d/arcsight_services start repo`
4. Run `<ARCSIGHT_HOME>/bin/arcsight mbussetup` on the persistor node. You run the configuration command on the persistor node, but do not add a message bus instance to the persistor node. Message bus data and message bus control instances must be added to non-persistor nodes.

- Choose an action to configure or update an instance:

Action	Description
I want to add, delete, or change an instance	<p>Enter the number of mbus_data instances you want on each node below. You need a minimum of two message bus data instances per cluster. You must configure message bus data after installation; the message bus data service is not added during distributed correlation installation.</p> <p>Enter the number of mbus_control instances you want on each node below. Add one or three instances of message bus control per cluster. You must configure message bus control after installation; the message bus control service is not added during distributed correlation installation.</p> <p>You can change the location of instances by specifying different node locations for instances. You might want to do this if the machine on which the persistor and the initial instance of the repository is running has become unavailable. Note: If there are running message bus instances, this option will stop the old ones and start the new ones.</p>
I want to update an mbus_control instance	<p>Enter a name for the service. This name does not replace the service name provided by ESM (for example, <i>mbus_control1</i>) but allows you to provide a friendly name to keep track of the specific services for your purposes in logs and other service reporting.</p>
I want to update an update mbus data instance	<p>Enter a name for the service. This name does not replace the service name provided by ESM (for example, <i>mbus_data1</i>) but allows you to provide a name to keep track of the specific services for your purposes in logs and other service reporting.</p>

- When you are finished, choose **I do not want to make any further changes** and click **Finish** to exit the configuration wizard.
- If you have added cluster services (such as a new instance of message bus data) or changed existing services (such as adding a friendly name for a service), see ["Start All Distributed Correlation Services" on page 61](#) and start the services and make your configuration changes take effect.

Configuring Additional Correlators and Aggregators after Installation

In a distributed correlation environment, correlation and aggregation is performed by correlator and aggregator services. You can run multiple instances of these services on the cluster nodes.

If you did not add correlators and aggregators during installation and want to add them post-installation, see the next section.

To configure multiple correlator and aggregator instances in a cluster:

1. Run `<ARCSIGHT_HOME>/bin/arcsight correlationsetup` on the cluster node to which you wish to add an instance. This does not have to be the persistor node. Note that `correlationsetup` operates on a per instance basis; you can configure multiple instances one at a time.
2. Choose an action to configure or update an instance:

Action	Description
Select the type of service you would like to configure	Select Correlator or Aggregator .
Add/Configure an Instance	<p>Add Hostname, Port, and Physical Location for system containing the correlator or aggregator.</p> <p>Java Heap Size: Specify from the listed options.</p> <p>Key Pair Option: Specify from the listed options.</p> <p>Add Service Name: This name does not replace the service name provided by ESM (for example, <i>correlator1</i>) but allows you to provide a friendly name (for example, <i>correlatormymachine</i>) to keep track of the specific services for your purposes in logs and other service reporting.</p>
Delete an Instance	<p>Specify the instance to delete.</p> <p>Note: You must stop the instance of the correlator or aggregator service before you delete it. Run the command:</p> <pre>/etc/init.d/arcsight_services stop correlator#</pre> <p>or</p> <pre>/etc/init.d/arcsight_services stop aggregator#</pre> <p>to stop the service, where # refers to the correlator or aggregator instance id number. Then use the <code>correlationsetup</code> wizard to delete the instance.</p>

3. When you are finished, choose **I am done with my changes** and click **Finish** to exit the configuration wizard.
4. If you have added cluster services (such as a new instance of an aggregator) or changed existing services (such as adding a friendly name for a service), see ["Start All Distributed Correlation Services" on page 61](#) and start the services and make your configuration changes take effect.

Configuring Correlators and Aggregators if you Did Not Add These Services During Installation

If you did not add correlators and aggregators to a cluster node during installation and want to add them post-installation, you must use the steps below to ensure that the certificate exchange occurs between the Manager and the service.

In a distributed correlation environment, correlation and aggregation is performed by correlator and aggregator services. You can run multiple instances of these services on the cluster nodes.

To configure multiple correlator and aggregator instances in a cluster:

1. Run `<ARCSIGHT_HOME>/bin/arcsight correlationsetup` on the cluster node to which you wish to add an instance. This does not have to be the persistor node. Note that `correlationsetup` operates on a per instance basis; you configure multiple instances one at a time.
2. Choose an action to configure or update an instance:

Action	Description
Select the type of service you would like to configure	Select Correlator or Aggregator .
Add/Configure an Instance	<p>Add Hostname, Port, and Physical Location for system containing the correlator or aggregator.</p> <p>Java Heap Size: Specify from the listed options.</p> <p>Key Pair Option: Specify from the listed options.</p> <p>Add Service Name: This name does not replace the service name provided by ESM (for example, <i>correlator1</i>) but allows you to provide a friendly name (for example, <i>correlatormymachine</i>) to keep track of the specific services for your purposes in logs and other service reporting.</p>
Delete an Instance	<p>Specify the instance to delete.</p> <p>Note: You must stop the instance of the correlator or aggregator service before you delete it. Run the command:</p> <pre>/etc/init.d/arcsight_services stop correlator#</pre> <p>or</p> <pre>/etc/init.d/arcsight_services stop aggregator#</pre> <p>to stop the service, where # refers to the correlator or aggregator instance id number. Then use the <code>correlationsetup</code> wizard to delete the instance.</p>

3. When you are finished, choose **I am done with my changes** and click **Finish** to exit the configuration wizard.

4. On the persistor node, run:

```
<ARCSIGHT_HOME>/bin/arcsight certadmin -approveall
```

5. Stop and start the manager (so certificates can be read by the Manager):

```
/etc/init.d/arcsight_services stop manager
```

```
/etc/init.d/arcsight_services start all
```

6. See ["Start All Distributed Correlation Services" on page 61](#) and start the services and make your configuration changes take effect.

Configuring Distributed Cache

The distributed cache contains the shared resources for the cluster, such as keeping track of how many times a rule condition has been met for the aggregators.

To configure multiple distributed cache instances in a cluster:

1. Run `<ARCSIGHT_HOME>/bin/arcsight dcachesetup` on the cluster node to which you wish to add an instance. This does not have to be the persistor node. Note that `dcachesetup` operates on a per instance basis; you configure multiple instances one at a time.
2. Choose an action to configure or update an instance:

Action	Description
Configure Common Settings	Status timeout (180): Interval to report that distributed cache instances are running. The default is 180 seconds.
Add/Configure an Instance	Add New Instance Service Name. This name does not replace the service name provided by ESM (for example, <code>dcache1</code>) but allows you to provide a friendly name (for example, <code>dcachenorth</code>) to keep track of the specific services for your purposes in logs and other service reporting.
Delete an Instance	Specify the instance to delete. Note: You must stop the instance of the distributed cache service before you delete it. Run the command: <code>/etc/init.d/arcsight_services stop dcache#</code> to stop the service. Then use the <code>dcachesetup</code> wizard to delete the instance.

3. When you are finished, choose **Finish** to exit the configuration wizard.
4. If you have added cluster services (such as a new instance of distributed cache) or changed existing services (such as adding a friendly name for a service), see ["Start All Distributed Correlation Services" on page 61](#) and start the services and make your configuration changes take effect.

Inconsistency of distributed cache cluster

In some cases, distributed cache nodes may lose contact with each other. This can occur due to network interruptions or as the result of a heavily-loaded system. If this happens, not all data is shared between correlators, aggregators, and the persistor. As a result, some data monitors and dashboards will show no data, and there may be a possible drop in EPS.

To fix this, you must identify the distributed cache (`dcache`) instance(s) that are causing the problem and need to be restarted. Note that if the distributed cache becomes inconsistent, you will see `Connection to DC` in right upper corner of ArcSight Command Center Cluster View dashboard shown in red.

To restore the state of distributed cache cluster:

1. Go the ArcSight Command Center and navigate to the Cluster View Dashboard.
2. Check the audit events on the dashboard, and look for the service name **DCache connection is down**. There will be an associated service message, "**Hazelcast cluster is inconsistent . . .**".
3. Hover your mouse pointer over the "**Hazelcast cluster is inconsistent . . .**" service message, and you will see the identity of the service that is causing the issue. For example:

```
Hazelcast cluster is inconsistent with repository. Check/restart
standalone DCache instances: [dcache2@<hostname>]
```

In this example the name of the distributed cache instance that is causing the issue is *dcache2*. The hostname is the name of the machine in the cluster on which that particular distributed cache instance resides.

4. Restart the services. For example:

```
/etc/init.d/arcsight_services stop dcache2
/etc/init.d/arcsight_services start dcache2
```

Configuring a Repository

A repository instance is created by default on the persistor node, which is first cluster node added when you install ESM in distributed correlation mode. Subsequent to installation, you can configure three repository instances. A cluster can have either one repository instance or three instances, with one repository instance per node; other numbers of repository instances are not supported. The benefit of having multiple instances of the repository is that you will have more than one place to keep cluster service status information (including certificate status and port assignments for services); all repository instances work together to provide the repository service. If a node that contains the repository goes offline, the other instances of the repository will maintain the cluster status information, and keep the cluster running. The repository is central to cluster operation, and cluster membership is based on the information in the cluster repository. If the repository is unavailable, the cluster stops working.

Note that when you change repository instances, ESM replaces all instances of these services and you lose the data in the replaced instances of these services. Also, the number in the name of the new instances will be incremented. This is similar to the behavior of message bus instances.

To configure multiple repository instances in a cluster:

1. Verify that key-based passwordless SSH is set up on all cluster nodes.
2. Stop all services:

```
/etc/init.d/arcsight_services stop all
```

3. Start the information repository:

```
/etc/init.d/arcsight_services start repo
```

4. Run `<ARCSIGHT_HOME>/bin/arcsight repositsetup` on the persistor node.
5. Choose an action to configure or update an instance:

Action	Description
Update an Information Repository Instance	Service Name: Enter a name for the service. This name does not replace the service name provided by ESM (for example, <i>repo1</i>) but allows you to provide a friendly name (for example, <i>repobuilding2</i>) to keep track of the specific services for your purposes in logs and other service reporting.
Change the list of Information Repository Instances	Select Nodes to place instances in the cluster. This does not have to be the persistor node. From a list of existing nodes, Select two nodes to add a total of three repositories. The initial repository instance is added during distributed correlation installation. You can change the location of instances by specifying different node locations for instances. You might want to do this if the machine on which the initial instance of the repository is running is due to be taken offline, or will otherwise be unavailable. Note: After you change the repository instances, existing instances are restarted, new instances are started, and deleted instances are stopped.
Change the TCP Port Range for ESM Processes	Lowest ESM Server Port and Highest ESM Server Port. Specifies a range of ports to use for dynamic assignment to correlator and aggregator services. Enter the lowest port value and the highest port value to modify the port range. The lowest value must be lower than the original lowest value, and the highest value must be higher than the original highest value. For example if the original lowest value was 10000, and the original highest value was 12000, then a valid set of new port designations could be the lowest ESM server port at 9000, and the highest ESM server port at 14000. You can change the lowest value, the highest value, or both. Note that the lowest supported port value is 1024 and the highest supported port value is 32767. The original range was specified during install and the configuration of the first (persistor) cluster node.
Remove a node from the Information Repository	Select the instances you want to delete. See the topic, " Removing a Node from a Cluster " on page 72, for details on removing a node. Note: Ensure that at least one instance of the repository is preserved. New repository instances get their data from existing instances.

6. When you are finished, choose **I do not want to make any further changes** to exit the configuration wizard.
7. If you have added cluster services (such as a new instance of information repository) or changed existing services (such as adding a friendly name for a service), see "[Start All Distributed Correlation Services](#)" on the next page and start the services and make your configuration changes take effect.

Setting Up Key-Based Passwordless SSH

The distributed correlation services cluster depends on key-based passwordless SSH to enable communication among the cluster services. In the distributed correlation environment, passwordless SSH must be implemented on the node in the cluster that contains the persistor.

The command `arcsight_services` uses passwordless SSH to allow starting and stopping of services on remote nodes through commands originating on the persistor node. In this instance, passwordless SSH works by generating a keypair on the persistor, and configuring the remote node to accept the login based on a public key for the persistor node. In the distributed correlation environment, ESM is configured to allow the user `arcsight` on the persistor node to connect to a remote node as the user `arcsight`. Only `arcsight` user to `arcsight` user passwordless SSH is supported, and only from the persistor node to other cluster nodes.

Set Up Key-Based Passwordless SSH

After installing ESM on all nodes in the cluster, use this command on the persistor node to setup passwordless SSH with cluster nodes. Run as user `arcsight`:

```
/etc/init.d/arcsight_services sshSetup <hostname_for_the_node>
```

If a node needs configuration, the command prompts you for the user `arcsight` password, so it can log in and complete the setup.

For ease of setup, you can elect not to specify the hostname, and in that case the setup is performed on all cluster nodes.

Verify Key-Based Passwordless SSH

On the persistor node, run the command `/etc/init.d/arcsight_services checkSshSetup`. This command verifies whether the nodes in the cluster are configured with passwordless SSH.

Start All Distributed Correlation Services

After configuring new services, or making any change to cluster configuration (such as adding a friendly name for a service), you must start all services to start processing in the cluster. From the persistor node in the cluster, run:

```
/etc/init.d/arcsight_services start all
```

Managing Distributed Correlation Services - Basic Commands

Use the `arcsight_services` command to manage ArcSight distributed correlation services on the cluster. You can start and stop and otherwise manage services from the machine that hosts the persistor or from the specific nodes where services are installed in the distributed correlation environment.

While you can view the status of all services in a cluster from one node, you can only start and stop services from the local node or from the persistor node. This means that if you make a request from a non-persistor node (Node A), and the process is on another node in the cluster (Node B), `arcsight_services` cannot start or stop it. Only commands issued from the persistor node or from the local node will be successful. In this case, the command to start a service on Node B must come from the persistor node or Node B. Node A cannot start services on Node B.

In the distributed correlation environment, there can be multiple instances of services (such as correlators and aggregators). In this case, you must identify which of several processes you want to start. To support that, each process has an id, consisting of its type, followed by a number (for example, *correlator1*). You can start or stop all processes by type (for example, *correlator*) as well. In the case of persistor services, there will only be one process for each service, and no number is used (for example, *manager*, or *mysqld*).

See "[ArcSight_Services Command - Distributed Correlation Mode](#)" on page 121 for further information on using the `arcsight_services` command in a distributed correlation environment.

This section shows examples of the commands you will use most of the time for cluster management.

Stop Services

To stop service by service type

```
/etc/init.d/arcsight_services stop <service_name>
```

For example:

```
/etc/init.d/arcsight_services stop logger_servers
```

To stop a specific instance of a service type

```
/etc/init.d/arcsight_services stop <service_name_service#ID>
```

For example:

```
/etc/init.d/arcsight_services stop correlator3
```

Note: You can specify a friendly name for a service, but when you stop services, you must use the service name provided by the cluster.

To stop all services (run from the persistor node only)

```
/etc/init.d/arcsight_services stop all
```

If a service fails to stop, you will receive a message like this (for example, for the service manager):

```
FAIL: timed out awaiting stop of manager service after PT00:050:00.000
```

Start Services

To start service by service type

```
/etc/init.d/arcsight_services start <service name>
```

For example:

```
/etc/init.d/arcsight_services start dcache
```

will start all instances of the distributed cache service in the cluster.

To start a specific instance of a service type

```
/etc/init.d/arcsight_services start <service_name_service#ID>
```

For example:

```
/etc/init.d/arcsight_services start correlator3
```

Note: You can specify a friendly name for a service, but when you start services, you must use the service name provided by the cluster.

To start all services (run from the persistor node only)

```
/etc/init.d/arcsight_services start all
```

Check the Status of Services

To check a specific service status

```
/etc/init.d/arcsight_services status <service name>
```

For example:

```
/etc/init.d/arcsight_services status repo
```

will display the status of all repository instances in the cluster.

To check the status of all services (run from the persistor node only)

You can display service status from the persistor system or from individual nodes. Status for persistor services can be viewed only on the persistor machine.

```
/etc/init.d/arcsight_services status all
```

To check service status by node (run from the persistor node only)

```
/etc/init.d/arcsight_services statusByNode <hostname>
```

Displays service status information grouped by node, and the status of the node. If a hostname is specified, only services are listed; if not, all services on all hosts are listed. The process name displays as well.

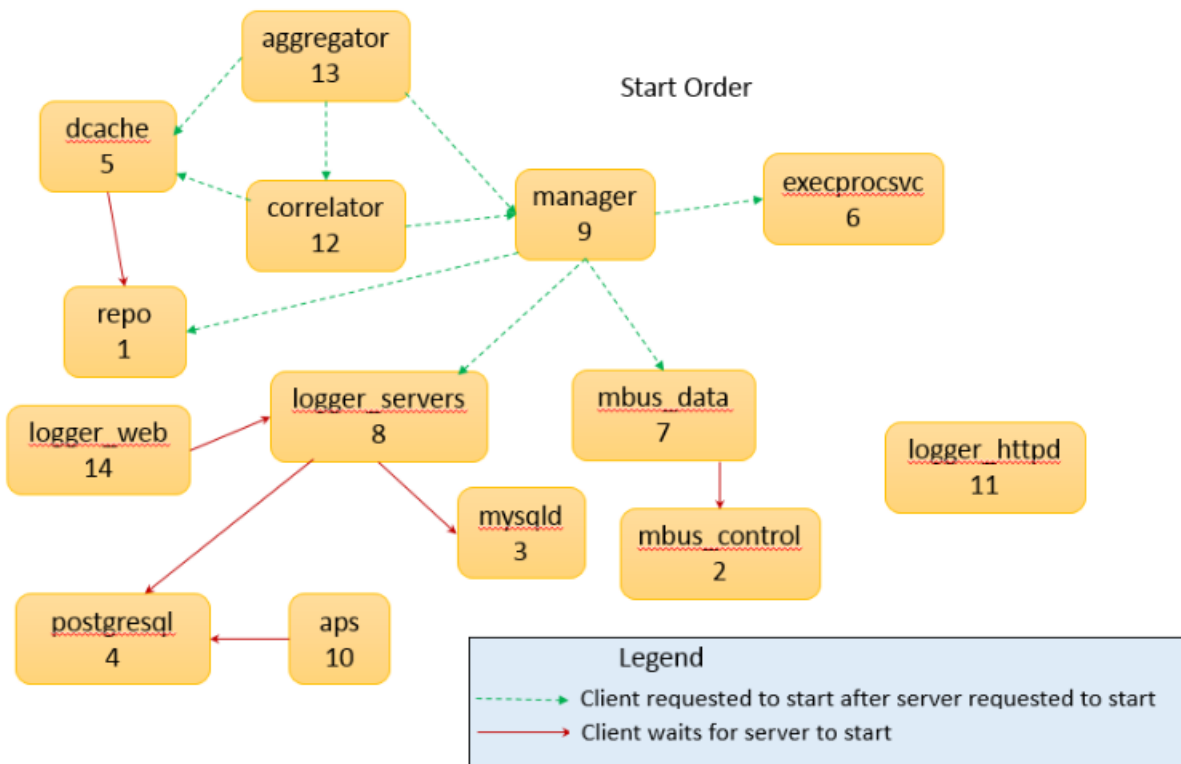
See "[ArcSight_Services Command - Distributed Correlation Mode](#)" on page 121 for details on running `arcsight_services`.

Start and Stop Order of Distributed Correlation Processes

The services in a distributed correlation cluster are started and stopped in a predetermined order. The `arcsight_services` command starts servers (for example, databases) first, followed by clients (for example, `logger_web`). Instances of services of the same type are started at the same time, meaning, for example, that all repository instances are started at the same time and all correlator instances are started at the same time.

First, `arcsight_services` starts all the repository instances. This is important because the repository contains information on the status of all processes. Repository instances are not stopped unless there is a specific reason to do so, and are only stopped by the command `arcsight_services stop all`.

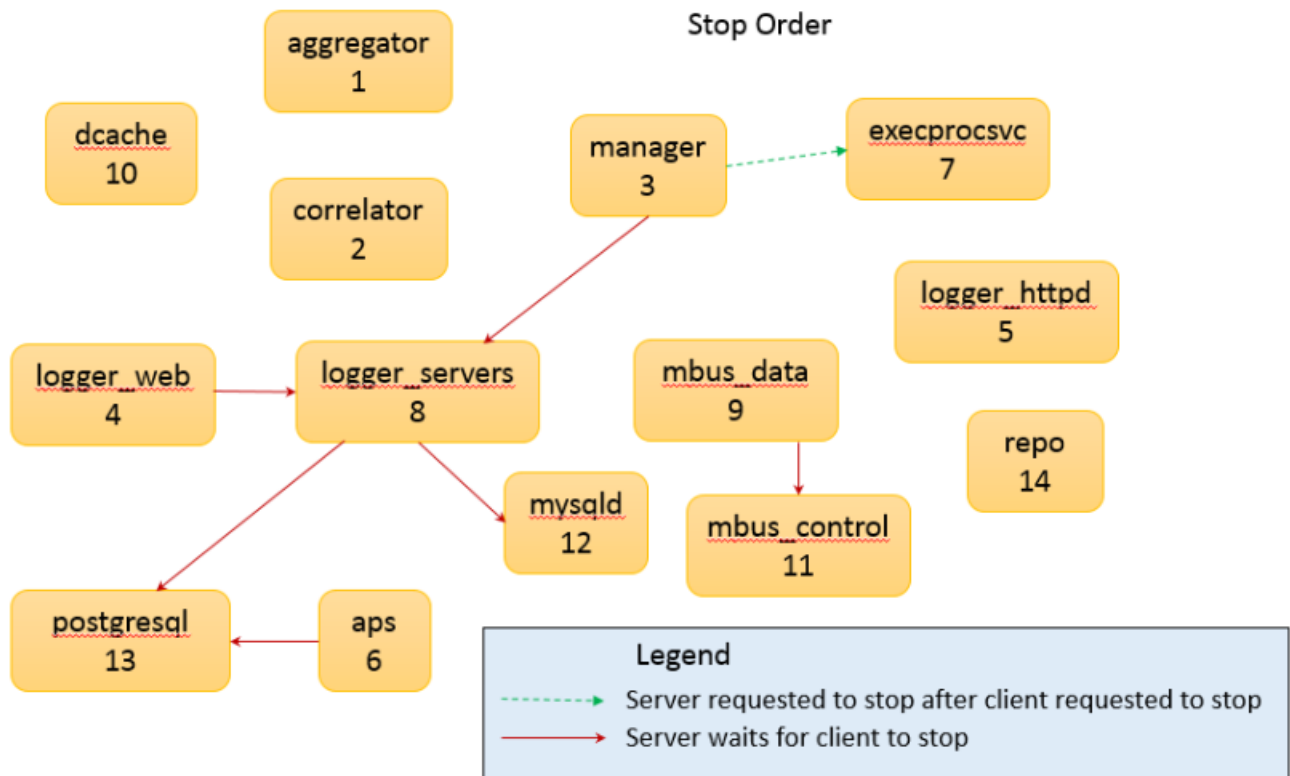
The diagram below illustrates the order of starting process types, as well as when `arcsight_services` waits for servers to start before starting clients.



In this diagram, the order of process start is indicated by the numbers below each process type. As shown, the repository instances start first and the aggregator instances start last. The arrows in the graphic point from clients to servers. Note that the processes are started in the reverse direction of the arrows. The arrows indicate which processes to start. For instance, in order to start an aggregator instance, besides that aggregator, all correlators, distributed cache (dcache), manager, execprocsvc, logger_servers, postgresql, mysqld, mbus_data (message bus data), and mbus_control (message bus control) are started.

The arrows also indicate when arcsight_services waits for servers to start before starting clients. For instance, logger_servers do not start until mysqld and postgresql are running. By contrast, requests to start aggregators usually immediately follow the request to start correlators.

The following diagram illustrates processes stopping.



The stop order is roughly the reverse of the start order. Client-server relationships remain the same. However, more servers must wait for clients to stop before the server itself can stop to ensure there is no data loss.

Monitoring the Cluster Using the Cluster View Dashboard

Monitoring the processing of the existing cluster with the Cluster View Dashboard and data monitors will allow you to make decisions about cluster management and sizing. The Cluster View dashboard is provided in the ArcSight Command Center to allow you to monitor cluster activity and determine if the correlators and aggregators you are managing are keeping up with the event load.

This dashboard includes a visualization of the entire cluster and status information for each service in the cluster (available or not available). The status of a service running on a node in a cluster is based on the heartbeat from that service that is collected in the repository. The dashboard shows this status as derived from the cluster's repository. See the *ArcSight Command Center User's Guide* for details.

Certificate-Based Admission of Services to a Cluster

Admission to a cluster is enabled using a master certificate with the digital signature for the cluster. All services in the cluster share the same keypair and the same keystore. Each cluster component has its own SSL certificate. This certificate is imported into the cluster trust store for each cluster component (service) during ESM distributed correlation installation. Each cluster node must have a client-side SSL certificate (one certificate per node). This certificate can be generated by ArcSight or be one that you provide.

When you add a service to the cluster, it submits an admission request to the cluster repository. The request includes the client-side and server-side SSL certificate and the name of the service to be admitted to the cluster (for example, *correlator2*). Services (clients) authenticate themselves to the persistor (which acts as a server).

Use the `certadmin` command to view all certificates based on status: submitted, approved, or revoked. Use this command to approve or revoke SSL certificates used by the aggregator, correlator, and persistor services. See "[certadmin](#)" on page 140 for details.

Dynamic Ports in the Distributed Correlation Environment

Each instance of a correlator or aggregator service that is part of a cluster has a port associated with that service. That port is permanently identified with the individual instance of the service, and cannot be reused. For example, if port 20201 is associated with the cluster service *correlator3*, if you happen to remove *correlator3* from the cluster, the port 20201 will not be made available for use by another service.

You must specify a range of available ports when you install ESM and specify the first node (the persistor node) of your cluster. This range of ports is made available for dynamic assignment to services as they are added to a cluster.

The default range offered during install is:

- Lowest ESM server port: 10000
- Highest ESM server port: 10100

You can set other values during installation; the lowest value can be 1024 and the highest value 32767. The difference between the lowest value and the highest value specified must be at least 100.

If, after working with the cluster, you find you need to extend the range of available ports, you can do so using `repositup`. See ["Configuring Services in a Distributed Correlation Cluster" on page 53](#) for details.

Viewing Port Numbers for Dynamically Allocated Ports

If you want to find the port number of a dynamically allocated port for a specific service, you can:

- Run the `correlationsetup` wizard on the node for that service, and choose an existing correlator or aggregator; the port number associated with that service is one of the properties displayed. See ["Configuring Services in a Distributed Correlation Cluster" on page 53](#) for details on running `correlationsetup`.
- In the ArcSight Console, view the Distributed Correlation Audit Events Active Channel. The field `deviceCustomString1` contains the service name (for example, `correlator4`). The field `source port` displays the port number for that service.

Changing Authentication in a Distributed Correlation Environment

To change authentication for distributed correlation:

1. Stop all services on the cluster persistor node:

```
/etc/init.d/arcsight_services stop all
```
2. Using `managersetup`, change the authentication on the persistor node. See ["Running the Wizard" on page 112](#) for details on running `managersetup`.
3. Start all services on the cluster persistor node:

```
/etc/init.d/arcsight_services start all
```

Changing Hostnames or IP Addresses in a Cluster

This information applies to ESM in distributed mode only.

About:

Each node in a cluster is identified either by hostname or IPv4 address. A single host may have multiple hostnames and IP addresses. The procedures refer to the specific hostname or IP address where ArcSight services are stored.

To determine the hostnames for ArcSight services:

Run the command from any node as arcsight:

```
/etc/init.d/arcsight_services version
```

Following is an example of the returned information (your results may not match exactly, but the versions should all be identical in all returned nodes):

```
[arcsight@n15-nnn-nnn-nnnn esm]$ /etc/init.d/arcsight_services version
```

Build versions:

myhost1:

```
esm: 7.0.0.XXXXX.0(BEXXXXX)
storage: 7.0.0.AAAAA.0(BLAAAAA)
process_management: 7.0.0-BBBBB
installer: 7.0.0-CCCCC
highavail: (HA2345)
```

myhost2:

```
esm: 7.0.0.XXXXX.0(BEXXXXX)
storage: 7.0.0.AAAAA.0(BLAAAAA)
process_management: 7.0.0-BBBBB
installer: 7.0.0-CCCCC
highavail: (HA2345)
```

myhost3:

```
esm: 7.0.0.XXXXX.0(BEXXXXX)
```

```
storage: 7.0.0.AAAAA.0(BLAAAAA)
```

```
process_management: 7.0.0-BBBBB
```

```
installer: 7.0.0-CCCCC
```

```
highavail: (HA2345)
```

In the above example, the nodes are identified by the hostnames `myhost1`, `myhost2`, and `myhost3`. If the name(s) `myhostn` are changing to something else, then use the procedures in this topic to apply the new hostname in ESM.

Typically a single host may have multiple hostnames and IP addresses. If the hostname or IP Address shown above are to be changed, then you are required to perform the documented procedure.

Initial steps:

On the persistor, log in the user `arcsight` and stop all services:

```
/etc/init.d/arcsight_services stop
```

Run on each node where the hostnames will be changed:

On all nodes where the hostnames will be changed, run the following command as root:

```
<ARCSIGHT_HOME>/bin/remove_services.sh
```

This prevents services from restarting, in case a reboot is necessary.

Change the hostnames on each node:

Use the OS-specified process for changing the IP address or hostname on the node.

Note: If the persistor is an HA setup refer to the *ESM High Availability Module User's Guide*. Follow the instructions in the topics "Changing Hostname, IP Address, or Service IP" for both the primary and secondary ESM systems.

If the persistor is an HA setup, as the user `arcsight`, confirm the change to the HA subsystem by running the command

```
/usr/lib/arcsight/highavail/bin/arcsight firstBootWizard
```

The wizard should display the new information. Exit the wizard.

After changing hostnames:

After the hostnames have been changed in the system, perform these steps on the persistor as user `arcsight`.

1. Run

```
<ARCSIGHT_HOME>/bin/arcsight updaterepohostconfig
```

Enter the updated hostnames when prompted. This is only necessary if the hostnames where one or more of the repository instances runs, has changed. It updates the repository configuration so that the repository can be accessed using the new hostnames.

In most cases, this step will fail the first time it is run, because `sshSetup` needs to be run again. The message will display a similar information:

```
6 errors were detected.
```

```
See /opt/arcsight/var/logs/misc/updaterepohostconfig.log for details.
```

2. Run

```
/opt/arcsight/services/init.d/arcsight_services sshSetup
```

This fixes the errors that caused `updaterepohostconfig` to fail. Note that the `arcsight_services` in `/etc/init.d` is not used. It was removed when you ran `remove_services.sh` on the persistor. Expect to see errors like:

```
ERROR: Information Repository is down.
```

Ignore such messages.

3. Run

```
<ARCSIGHT_HOME>/bin/arcsight updaterepohostconfig
```

but do not change hostnames at this point, since these have already been updated.

At the prompt to continue, enter yes.

4. If the persistor hostname was also changed, run the command as user root:

```
<ARCSIGHT_HOME>/bin/setup_services.sh
```

This enables `monit` and also starts local services.

5. As user `arcsight`, run:

```
/etc/init.d/arcsight_services stop all
```

This is necessary because in the command in the previous step started the local services.

6. Run

```
/etc/init.d/arcsight_services start repo
```

```
/etc/init.d/arcsight_services start mysqld
```

Update the hostname(s) in the repository:

As user `arcsight`, run

```
<ARCSIGHT_HOME>/bin/arcsight updatehostnameinrepo
```

When prompted, enter the old and new hostnames for this node. Repeat the process on each node. This updates the hostnames in the repository.

Set up the persistor:

Updating the manager keypair is only necessary if the persistor hostname or IP address is changed.

Run these commands as user `arcsight`.

1. If this is a FIPS installation, and/or CA signed certificates are being used, replace the existing certificate with the alias `mykey` in the `managerkeys` keystore with a new certificate with the new hostname using the instructions for creating FIPS and/or CA certificates.

2. Run

```
bin/arcsight managersetup
```

Even if you have already generated a new keypair outside of `managersetup`, you still need to run the `managersetup` wizard to completion so that the newly generated certificate can be submitted to the repository.

Set up other nodes:

These steps are only need on nodes where the hostname/IP was changed. Run the commands as user `arcsight`.

1. If there are correlators or aggregators on this node, do the following:
 - a. If this is a FIPS installation, and/or CA signed certificates are being used, replace the existing certificate with the alias `mykey` in the `managerkeys` keystore with a new certificate with the new hostname using the instructions for creating FIPS or CA certificates.

- b. Run:

```
<ARCSIGHT_HOME>/bin/arcsight correlationsetup
```

Pick an already configured correlator or aggregator, and select the current options.

Even if you have already generated a new keypair outside of `correlationsetup`, you still need to run the `correlationsetup` wizard to completion (choosing any existing instance) so that the newly generated certificate can be submitted to repository.

2. As the user `root`, run the command

```
<ARCSIGHT_HOME>/bin/setup_services.sh
```

This re-enables `monit`. Local services are also restarted.

3. Run

```
/etc/init.d/arcsight_services stop all
```

This is necessary because local services were started by the previous step.

4. Run

```
/etc/init.d/arcsight_services start repo
```

Final steps:

Run these commands on the persistor as the user `arcsight`.

1. Run

```
bin/arcsight certadmin -approveall
```

This approves newly created certificates.

2. Run

```
/opt/arcsight/services/init.d/arcsight_services sshSetup
```

This is needed for the following step.

3. If one or more of the nodes with `mbus_data` or `mbus_control` instance had its hostname changed, then run:

```
bin/arcsight mbussetup
```

Select **I want to add, delete, or change Message Bus Instances**. When prompted for the number of instances, make no changes.

The message confirms you did not make changes and you are prompted to continue.

Enter **yes** to continue.

4. Run

```
/etc/init.d/arcsight_services start
```

The cluster should be running normally.

Removing a Node from a Cluster

You can remove any cluster node that is not the persistor node. You might, for example, want to redeploy a system that is a node in your cluster.

To remove a cluster node:1. Stop all services on the cluster, except for the information repository. Run the following commands as user `arcsight` from the persistor node:

```
/etc/init.d/arcsight_services stop all
```

```
/etc/init.d/arcsight_services start repo
```

2. On the persistor node, run the configuration wizards and delete all services on the node you want to remove. This may require reducing repository or message bus control from three to one if there are no longer three nodes in the cluster. See ["Configuring Services in a Distributed Correlation Cluster" on page 53](#) for details on the cluster configuration wizards.

3. If `reposestap` stopped the repository, run this command on the persistor:

```
/etc/init.d/arcsight_services start repo
```
4. On the node to be removed, remove services by running, as user `root`:

```
<ARCSIGHT_HOME>/bin/remove_services.sh
```

Do not attempt to add the node back into the cluster using `<ARCSIGHT_HOME>/bin/setup_services.sh`.
5. Uninstall the ESM on the node. See "Uninstalling ESM - Distributed Correlation Mode" in the *ESM Installation Guide* for details.
6. As user `arcsight`, run the information repository wizard to ensure that the node has been removed. Select Remove a Node, and if you see that the node is still in the cluster, remove it:

```
<ARCSIGHT_HOME>/bin/arcsight reposestap
```

See "[Configuring Services in a Distributed Correlation Cluster](#)" on page 53 for details on the information repository configuration wizard.
7. On the persistor node, start all services:

```
/etc/init.d/arcsight_services start
```

Troubleshooting and Frequently Asked Questions for Distributed Correlation

What is compact Mode?

Compact mode is the way that ESM has always operated until the advent of distributed correlation mode. In compact mode, event processing occurs in the core of ESM, and is not extensible. In contrast, distributed correlation mode allows you to extend processing by adding instances of services like aggregators, correlators, or repository, among others. Also, the processing can be spread over several machines, which are configured as nodes in a distributed correlation cluster. Each node can run groups of cluster services.

How does Distributed Correlation Mode differ from Compact Mode in terms of what I see in the ArcSight Console?

There is no difference except for some distributed correlation audit events.

How do I verify that my system is in distributed correlation mode?

You can verify that your system is in distributed correlation mode by checking the `esm.distributed` property in the `<ARCSIGHT_HOME>/config/esm.properties` file. If distributed correlaton mode is enabled, the property should be set to `esm.distributed=true`. If the component is running in default mode, the property will be set to `false`. Do not modify the value of `esm.distributed`.

How do I verify that the correlators, aggregators, and other services in my cluster are working?

On the persistor node, run `/etc/init.d/arcsight_services statusByNode` after ESM cluster installation is complete, and the various services are configured.

If I make a change to a system in the cluster, do I have to synchronize the cluster to make that change universally known throughout the cluster?

When you add cluster services (such as instances of correlators, aggregators, distributed cache, or message bus) or change system content (for example, import a package, or write a rule that updates an active list), that change is known to and is available to every part of the cluster. No manual synchronization is required across the multiple nodes in the distributed correlation environment.

Why can't I start a service from a non-persistor node?

Access to the cluster nodes is granted through passwordless SSH. Only commands issued from the persistor node (through passwordless SSH) or from the local node will be successful.

Are there special memory requirements for the cluster?

Yes, the persistor needs more memory due to its interaction with the distributed cache for the cluster.

How are audit events generated for distributed correlation services?

Each service in a cluster node has a heartbeat, and these heartbeats generate audit events.

Will content behave differently in distributed correlation mode?

Content will work the same as in original compact mode.

Where do queries run in distributed correlation mode?

Queries run on the persistor mode in the cluster.

How does upgrade work for distributed correlation?

You upgrade your system to compact mode, and after that use configuration wizards to create a cluster by adding services such as distributed cache, message bus, correlators, and aggregators. See "Converting Compact Mode to Distributed Correlation Mode" in the *ESM Upgrade Guide* for details.

I changed the friendly name for one of my correlators and this does not show up in audit events.

After making any configuration change to the cluster (including adding friendly names for services), you must start all services in the cluster. See ["Start All Distributed Correlation Services" on page 61](#).

Chapter 4: SSL Authentication

ESM uses Secure Socket Layer (SSL) technology for communication between the Manager and its clients, ArcSight Console, Event Broker, and SmartConnectors. It is not used between the Manager and the database.

Note: TLS is based on SSL 3.0, so you can read this chapter to get a better understanding of how TLS works as well.

SSL enables the Manager to authenticate its clients and communicate information over an encrypted channel, thus providing the following benefits:

- **Authentication:** Ensuring that clients send information to an authentic server and not to a machine pretending to be that server.
- **Encryption:** Encrypting information sent between the clients and the server to prevent intentional or accidental modification.

By default, clients submit a valid user name and password to authenticate with the server; however, these clients can be configured to use SSL client authentication.

Note that in the following topics in this chapter, for paths to commands on the Manager are:

- Interpret `bin/arcsight` as `<ARCSIGHT_HOME>/bin/arcsight`
- Interpret `jre/bin/keytool` as `<ARCSIGHT_HOME>/jre/bin/keytool`

SSL Authentication Terminology

- **Certificate**

A certificate is an entry in the keystore file that contains the public key and identifying information about the machine such as machine name and the authority that signs the certificate. SSL certificates are defined in the ISO X.509 standard.

- **Key pair**

A key pair is a combination of a private key and a public key that encrypts and decrypts information. A machine shares only its public key with other machines; the private key is never shared. The public and private keys are used to set up an SSL session. For details, see ["How SSL Works" on page 78](#).

- **SSL server-SSL client**

An SSL session is set up between two machines: a server and a client. In client-side SSL authentication, the server and its clients authenticate each other before communicating.

The Manager is an SSL server, while SmartConnectors, Console, and browsers are SSL clients.

- **Keystore**

A keystore file is an encrypted repository on the SSL server that holds the SSL certificate and the server's private key. The following table lists the ESM component, the name of the keystore on that component, and its location. Do not change the keystore file name.

Keystore password

Use a keystore password to encrypt the keystore file. Without this password, you cannot open the keystore file. The default is *password* for the Manager and *changeit* for the ArcSight Console's client keystore. The default password for the key pair for any component is the same as for the component's keystore.

You specify a keystore password when creating a key pair, which is discussed in later sections of this chapter. The password is obfuscated and stored in the ESM component's *.properties file. The following table lists the property name where the obfuscated keystore passwords are stored.

Keystore	Property File	Property Name
Client*	config/client.properties**	ssl.keystore.password
Manager	config/esm.properties	server.privatekey.password. encrypted Default password is password.
Connector	user/agent/agent.properties**	ssl.keystore.password.encrypted Default password is changeit.

*For client-side authentication

** If config/client.properties or user/agent/agent.properties does not exist, create it using an editor of your choice.

Whenever you change a password for the keystore, you must make the same change in the password entry in the corresponding properties file.

- **Truststore**

Truststore is an encrypted repository on SSL clients that contains a list of certificates from the issuers that a client trusts. Use either the `keytool` or `keytoolgui` command to view a truststore. See ["View Certificate Details From the Store" on page 89](#) for details on viewing a truststore.

A certificate is signed by the issuer with its private key. When the server presents this certificate to the client, the client uses the issuer's public key from the certificate in its truststore to verify the signature. If the signature matches, the client accepts the certificate. For more details, see how SSL handshake occurs in ["How SSL Works" on page 78](#).

- **Alias**

Certificates and key pairs in a keystore or a truststore are identified by an alias.

- **Truststore password**

The *.defaults.properties file contains the default truststore password for each ESM component (By default this password is *changeit*). Use a truststore password to encrypt a truststore

file. Without this password, you cannot open the truststore file. The password is in clear text. To change or obfuscate it, use the [changepassword](#) command.

The following table lists the property name where the obfuscated truststore passwords are stored.

Truststore	Property File	Property Name
Client	client.properties**	ssl.truststore.password.encrypted
Manager*	server.properties	servletcontainer.jetty311.truststore.password.encrypted
Connector	agent.properties**	ssl.truststore.password

*For client-side authentication

** If config/client.properties or user/agent/agent.properties does not exist, create it using an editor of your choice.

Whenever you change a password for the truststore, you must make the same change in the password entry in the corresponding properties file.

Understanding Cipher Suites

In general, cipher suites are a set of authentication, encryption, and data integrity algorithms used for securely exchanging data between an SSL server and a client.

The cipher suites that are enabled are configured by ArcSight Wizards in property files. Although in most cases you do not need to change the cipher suites, you can configure them in the corresponding properties file for an ArcSight component:

Component	Property File	Property
Manager	config/esm.properties	servletcontainer.jetty311.socket.https.ciphersuites
Clients	config/client.properties	ssl.cipher.suites
Connectors	user/agent/agent.properties	ssl.cipher.suites

Cipher suites are set as a comma-delimited list. During the SSL handshake, the endpoints provide these lists as the cipher suites that they can accept, in descending order of preference. One of the cipher suites is chosen by SSL negotiation process and that cipher suite is used for the entire communication session between these two components. This means that in order to limit cipher suites, it is sufficient to restrict the list of enabled cipher suites on one side only, for example, on the Manager side.

For information on specific cipher suites for FIPS encryption, see ["FIPS Encryption Cipher Suites" on page 199](#)

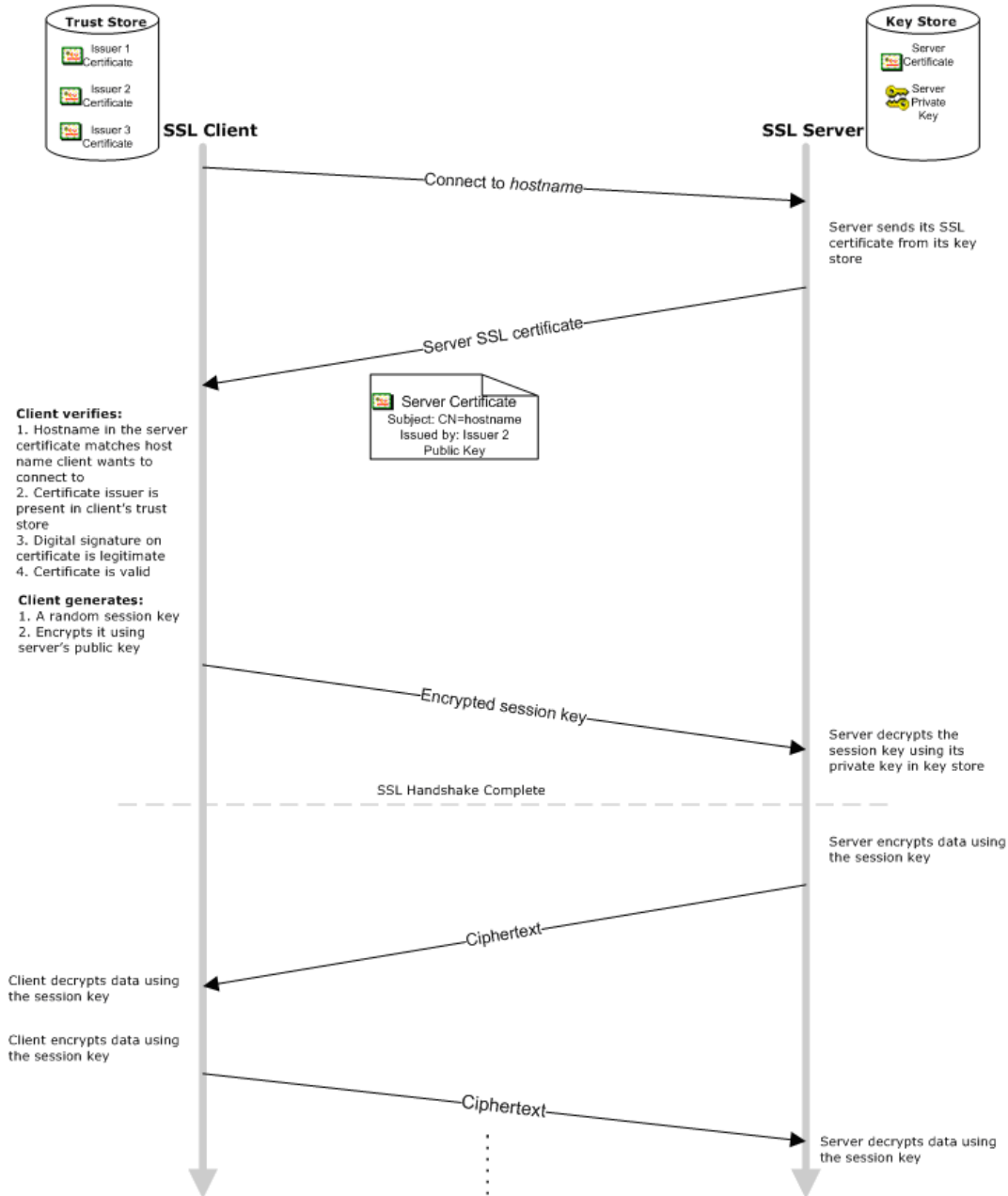
How SSL Works

When a client initiates communication with the SSL server, the server sends its certificate to authenticate itself to the client. The client validates the certificate by verifying:

- The hostname is identical to the one with which the client initiated communication.
- The certificate issuer is in the list of trusted certificate authorities in the client's truststore (<ARCSIGHT_HOME>/jre/lib/security/cacerts) and the client is able to verify the signature on the certificate by using the CA's public key from the certificate in its truststore.
- The current time on the client machine is within the validity range specified in the certificate to ensure that the certificate is valid.

If the certificate is validated, the client generates a random session key, encrypts it using the server's public key, and sends it to the server. The server decrypts the session key using its private key. This session key is used to encrypt and decrypt data exchanged between the server and the client from this point forward.

The following figure illustrates the handshake that occurs between the client and Manager.



With client-side authentication, the server requests the client's certificate when it sends its certificate to the client. The client sends its certificate along with the encrypted session key.

Certificate Types

There are three types of SSL certificates:

- CA-signed
- Self-signed
- Demo (applicable to default mode only)

CA-signed certificates are issued by a third party you trust. The third party may be a commercial Certificate Authority (CA) such as VeriSign and Thawte or you might have designated your own CA. Because you trust this third party, your client's truststores might already be configured to accept its certificate. Therefore, you may not have to do any configuration on the client side. See ["Using a CA-Signed SSL Certificate" on page 95](#).

You can create your own self-signed certificates. A self-signed certificate is signed using the private key from the certificate itself. Each server is an issuer. Configure clients to trust each self-signed certificate you create.

Self-signed certificates are as secure as CA-signed, however, CA-signed certificates scale better as illustrated in this example:

If you have three SSL servers that use self-signed certificates, you configure your clients to accept certificates from all of them (the three servers are three unique issuers). If you add a new server, you configure all the clients, again, to accept the additional certificate. However, if these servers use a CA-signed certificate, all servers use copies of the same one. You only configure the clients once to accept that certificate. If the number of Managers grows in the future, you do not need to do any additional configuration on the clients.

Demo certificates are useful in isolated test environments. Using one in a production environment is not recommended.

SSL Certificate Tasks

The command `<ARCSIGHT_HOME>/bin/arcsight keytool` (runs from the command line in a terminal window) and the command `keytoolgui` (provides a graphical user interface) enable you to perform SSL certificate configuration tasks.

Note: We recommend that you use `bin/arcsight keytool`, which does not require the X Window system. Using the `keytoolgui` interface requires that the X Window system be installed on your system, and only works in a non-FIPS implementation. Using the X Window system is not preferred on the Manager machine. Also, note that the X Window system is not present on an appliance. The command `keytoolgui` is not supported on the Mac, so for managing the keystore and certificates and so on, on a Mac, use `bin/arcsight keytool`. The command `keytoolgui` is not supported in FIPS mode, so for managing the keystore and certificates, use `bin/arcsight keytool`.

The command `bin/arcsight keytool` simplifies usage by pre-populating several command line arguments as defaults of the command based on component's configured values. The following subsections discuss the use of `bin/arcsight keytool`, and show the simplified command lines. The command `bin/arcsight keytool` provides default values for the following parameters based on the value of the `-store` parameter:

- -keystore
- -storetype
- -storepass
- -keypass
- -srckeystore
- -srcstoretype
- -srcstorepass
- -destkeystore
- -deststoretype
- -deststorepass

The table below shows what values each of the different -store values uses by default.

-store	Description	Configuration Files	Password Property	Keystore Property	Keystore non-FIPS	Keystore FIPS
managercerts	Truststore for Manager	config/esm.properties	servletcontainer.jetty311.truststore.password	servletcontainer.jetty311.truststore.file	config/jetty/truststore	config/jetty/keystore.bcfks
managerkeys	Keystore for Manager	config/esm.properties	server.privatekey.password	servletcontainer.jetty311.truststore.file	config/jetty/keystore	config/jetty/keystore.bcfks
clientcerts	Truststore for Console	config/client.properties	ssl.truststore.password	ssl.truststore.path	jre/lib/security/cacerts	config/keystore.client.bcfks
clientkeys	Keystore for Console	config/client.properties	ssl.keystore.password	ssl.keystore.path	config/keystore.client	config/keystore.client.bcfks

Parameters ending in storetype default to JKS in the non-FIPS case, and BCFKS for FIPS. Default values for parameters ending in pass can be found by looking up the password property in the configuration file. Default values for keystore parameters are found by looking up the keystore property in the configuration file. Sometimes it is not defined there, in which case the FIPS or non-FIPS default is used, depending on the case.

The following sections present `bin/arcsight keytool` command lines that are exactly formed to perform the task mentioned in the section. Use only those options to perform the documented tasks.

The command `jre/bin/keytool` can also be used for the SSL certificate tasks. For details on `jre/bin/keytool`, see online vendor documentation. Various vendors have their own version of `keytool`. One reference is

<http://docs.oracle.com/javase/8/docs/technotes/tools/windows/keytool.htm>. Note that if you use `keytool -h` to view Help you will see options that are not covered in this documentation. The

keytool examples presented in this guide do not display all possible keytool options. Refer to the keytool documentation online for the meaning of parameters.

Export a Key Pair

You can use `bin/arcsight keytool` to export a key pair.

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Exporting a Key Pair Using `bin/arcsight keytool`

An example of a `bin/arcsight keytool` command line is provided. Use this example as a basis to form the command line you need. Normally done to import it into a browser or connector.

To export a key pair with the alias `admin` into a file named `admin.p12` from the client keystore :

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -importkeystore -  
destkeystore admin.p12 -deststoretype PKCS12 -srcalias admin
```

Exporting a Key Pair Using `keytoolgui`

To use `keytoolgui`:

1. Start `keytoolgui` from the component from which you want to export the key pair. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory:

```
./arcsight keytoolgui
```

2. Click **File->Open keystore** and navigate to the component's keystore.
3. Enter the password for the keystore when prompted. For the default password see "[Keystore password](#)" on page 76.
4. Right-click the key pair and select **Export**.
5. Select **Private Key and Certificates** radio button and click **OK**.
6. Enter the password for the key pair when prompted. For the default password see "[Keystore password](#)" on page 76.
7. Navigate to the location on your machine to where you want to export the key pair.
8. Enter a name for the key pair with a `.pfx` extension in the **Filename** text box and click **Export**. You get an Export Successful message.
9. Click **OK**.

Import a Key Pair

You can use `keytool` to import a key pair.

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Importing a Key Pair Using `bin/arcsight keytool`

An example of a `keytool` command line is provided. Use this example as a basis to form the command line you need.

To import a key pair with the alias `admin` from a file named `admin.p12` into the client keystore:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -importkeystore -  
srckeystore admin.p12 -srcstoretype PKCS12 -srcalias admin
```

Importing a Key Pair Using `keytoolgui`

1. Start `keytoolgui` from the component to which you want to import the key pair. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory.

```
./arcsight keytoolgui
```
2. Select **File->Open keystore** and navigate to your component's keystore.
3. Enter the keystore password when prompted. For the default password see ["Keystore password" on page 76](#).
4. Select **Tools->Import Key Pair** and navigate to the location of the key pair file, select it and click **Choose**.
5. Enter the password for the key pair file when prompted and click **OK**. For the default password see ["Keystore password" on page 76](#).
6. Select the key pair and click **Import**.
7. Enter an alias for the key pair and click **OK**.
8. Enter a new password for the key pair file to be imported, confirm it, and click **OK**. You see a message saying Key Pair Import Successful.
9. Click **OK**.
10. Select **File->Save keystore** to save the changes to the keystore and exit the `keytoolgui`.

Export a Certificate

You can use `bin/arcsight keytool` to export a certificate.

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Exporting a Certificate Using `bin/arcsight keytool`

An example of a `bin/arcsight keytool` command line is provided. Use this example as a basis to form the command line you need. The example shown below is that of exporting a certificate associated with a key, which applies in most in ESM use cases.

Note that if the alias points to a trusted certificate, the output is that certificate. Also, if the alias points to a key entry, the output is the first certificate from key's certificate chain.

For example:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -exportcert -alias  
admin -file admin.cer -rfc
```

Exporting a Certificate Using `keytoolgui`

1. Start `keytoolgui` from the component from which you want to export the certificate. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory.

```
./arcsight keytoolgui
```
2. Select **File->Open keystore** and navigate to your component's truststore.
3. Enter the truststore password when prompted. For the default password see "[Truststore password](#)" on page 76.
4. Right-click the certificate and select **Export**.
 - a. Select **Head Certificate** as Export Type and **DER Encoded** as the Export Format and click **OK**:
 - b. Navigate to the location where you want to export the certificate, and enter a name for the certificate with a `.cer` extension and click **Export**.
 - c. You see the **Export Successful** message
5. If the component into which you want to import this certificate resides on a different machine than the machine from which you exported the certificate (the current machine), copy this certificate to the to the other machine.

Import a Certificate

You can use `bin/arcsight keytool` to import a certificate.

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Importing a Certificate Using `bin/arcsight keytool`

An example of a `bin/arcsight keytool` command line is provided. Use this example as a basis to form the command line you need. Certificates should always be imported into `clientcerts` or `managercerts`. `bin/arcsight keytool` will ask if you want to trust this certificate; answer **Yes**.

For example:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managercerts -importcert -alias  
admin -file admin.cer
```

Importing a Certificate Using `keytoolgui`

1. Start `keytoolgui` from the component into which you want to import the certificate. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory.

```
./arcsight keytoolgui
```

2. Click **File->Open keystore** and navigate to the truststore (`<ARCSIGHT_HOME>/jre/lib/security`) of the component.
3. Select the store named `cacerts` and click **Open**.
4. Enter the password for the truststore when prompted. For the default password see "[Truststore password](#)" on page 76.
5. Click **Tools->Import Trusted Certificate** and navigate to the location of the certificate that you want to import.
6. Click **Import**.
7. You see the message

Could not establish a trust path for the certificate. The certificate information will now be displayed after which you may confirm whether or not you trust the certificate.

Click **OK**.

8. The Certificate details are displayed. Click **OK**.
9. You see the message **Do you want to accept the certificate as trusted?**. Click **Yes**.
10. Enter an alias for the Trusted Certificate you just imported and click **OK**.
Typically, the alias Name is same as the fully qualified host name (for example `devgroup.topco.com`).
11. You see the message **Trusted Certificate Import Successful..** Click **OK**.
12. Save the truststore file.

Creating a Keystore

You can use `/jre/bin/keytool` to create a keystore.

Using the `keytoolgui` is not preferred, and the interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Note: Generally, you will only need to create the non-FIPS keystore for a client. Also, keystores are created automatically when you generate a keypair to add to a keystore. If a keystore does not exist, it gets created automatically when the first item is put into it.

Creating a Keystore Using `jre/bin/keytool`

An example of a `jre/bin/keytool` command line is provided below. Use this example as a basis to form the command line you need. Note that this command does not use the `bin/arcsight keytool` wrapper and requires more options be specified than some other `keytool` commands.

The abbreviations in the command below denote the following fields: `cn` = Common Name, `ou` = Organizational Unit, `o` = Organization, and `c` = Country.

The command generates a new self-signed certificate with `ALIAS_NAME` in the specified keystore `PATH_TO_KESTORE`.

Example for a new keystore:

```
<ARCSIGHT_HOME>/jre/bin/keytool -genkeypair -keystore config/keystore.client  
-storetype JKS -storepass password -dname "cn=John Smith, ou=ArcSight, o=HP,  
c=US" -alias testKey -validity 365
```

Specify all the options in the above example using the appropriate values for your installation.

As a separate operation, either before or after you run the `genkeypair` command, you have to set the values for the keystore location, keystore type, and password in the `client.properties` file. This file is in `<ARCSIGHT_HOME>/config`. The Console uses this file to access the keystore during authentication.

The `client.properties` file works as an override for the `client.defaults.properties` file. (You do not edit the default properties file because it is overwritten at upgrade time.) Set these properties in `client.properties`, as follows:

- **ssl.keystore.path**= Set this value if it differs from the default in `client.defaults.properties`. It must be the same as the path specified in the `-keystore` option in the command example, above.
- **ssl.keystore.type**= Set this value if it differs from the default in `client.defaults.properties`. It must be the same as the path specified in the `-storetype` option in the command example, above.

- **ssl.keystore.password**=Set this value if it differs from the default in `client.defaults.properties`. It must be the same as the password specified in the `-storepass` option in the command example, above. The default is blank (no password), but having a password is recommended.

However, if you plan to encrypt the password (also recommended), there is no need to set it manually in this file. You specify it and encrypt it using the `changepassword` command, next.

To set an encrypted password, run the following command:

```
arcsight changepassword -f config/client.properties -p ssl.keystore.password
```

This command prompts you for the actual password, adds it to the `client.properties` file, and encrypts it. It must be the same as the password specified in the `-storepass` option in the command example, above.

Creating a Keystore Using `keytoolgui`

1. Start `keytoolgui` from the component into which you want to import the certificate. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory.

```
./arcsight keytoolgui
```

2. Click **File->New keystore**.
3. Select **JKS** and click **OK**.
4. Click **File->Save keystore**.

Generating a Key Pair

You can use `bin/arcsight keytool` to generate a key pair.

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Generating a Key Pair Using `bin/arcsight keytool`

The abbreviations in the command below denote the following fields: `cn` = Common Name, `ou` = Organizational Unit, `o` = Organization, and `c` = Country.

To generate a key for client authorization, make sure that `sssl.keystore.path` is set in `client.properties`, and then run the command shown below:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -genkeypair -dname "cn=John Smith, ou=ArcSight, o=HP, c=US" -keyalg rsa -keysize 2048 -alias admin -startdate -1d -validity 366
```

This creates a key valid starting yesterday (to avoid problems with clock skew between servers), and expiring in about one year. Make sure the `cn` value matches that of the External ID of the user you log in as.

Note: We strongly recommend the use of RSA keys with a keysize of 2048 as client keys. Some browsers have known issues with elliptic curve keys.

About the only time you should need to change the manager key is if you change the hostname of the manager. You should never need to create a manager key in non-FIPS mode; `managersetup` will take care of that. Instructions for creating a manager key for FIPS mode are given below.

Before adding a new manager key, be sure to delete the old one. It has the alias `mykey`.

For FIPS 140-2 create a RSA 2048 key:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managerkeys -genkeypair -dname  
"cn=myhost.mydomain.com, ou=ArcSight, o=HP, c=US" -keyalg rsa -keysize 2048 -  
alias mykey -startdate -1d -validity 366
```

The `cn` value must be the ESM hostname for all manager keys - regardless of the type.

Note: FIPS Suite B requires elliptic curve keys. The minimum length for 128 bit is 256 bits, and for 192 bits it is 384 bits. Some browsers will not work with elliptic curve keys longer than 384 bits. So 384 bits, as shown below is a good choice for FIPS Suite B.

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managerkeys -genkeypair -dname  
"cn=myhost.mydomain.com, ou=ArcSight, o=HP, c=US" -keyalg ec -keysize 384 -  
alias mykey -startdate -1d -validity 366
```

Verifying Whether a Key Pair Has Been Successfully Generated

To verify whether the key pair has been successfully created in the keystore, run the following from the component's `<ARCSIGHT_HOME>/bin` directory:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managerkeys -list
```

Setting the Expiration Date of a Certificate

To set the expiry date of the certificate, do it when generating the key pair. After you have generated the key pair, you cannot change the expiration date on the certificate and the certificate expires in three months by default.

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -genkeypair -dname  
"cn=John Smith, ou=ArcSight, o=HP, c=US" -keyalg rsa -keysize 2048 -alias  
admin -startdate -1d -validity 366
```

You specify the validity of the certificate with the `-validity <number_of_days>` option. The value that you provide with `-validity` calculates the number of days that the certificate is valid starting from the current time.

Generating a Key Pair Using `keytoolgui`

1. Start `keytoolgui` from the component into which you want to import the certificate. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory.

```
./arcsight keytoolgui
```
2. Click **File->Open keystore** and navigate to your keystore.
3. Click **Tools->Generate Key Pair** and fill in the fields in the General Certificate dialog and click **OK**.
4. Enter an alias for the newly created key pair and click **OK**.
5. Save the keystore by clicking **File->Save keystore**.

View Certificate Details From the Store

You can use `bin/arcsight keytool` to view certificate details from the keystore (list the entries in a keystore).

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Viewing a Certificate Details from the Store Using `bin/arcsight keytool`

An example of a `bin/arcsight keytool` command line is provided. Use this example as a basis to form the command line you need.

By default, `clientcerts` has 100 or so certificates in it. The `-v` option lists details about each certificate, so the total output will be approximately 1,000 lines. If you do not use `-v`, the command will return one line per certificate. Add the option `-alias mycert` to only see details about the certificate with the alias `mycert`.

To list details about all keys:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientcerts -list -v
```

To print details for the key with the specified alias:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managerkeys -list -v -alias mykey
```

Viewing a Certificate Details from the Store Using `keytoolgui`

For certificates in the keystore or truststore use the `keytoolgui` command to see certificate information.

1. Start `keytoolgui` from the component from which you want to export the certificate. To do so, run the following command from the component's `<ARCSIGHT_HOME>/bin` directory.

```
./arcsight keytoolgui
```

2. Select **File->Open keystore** and navigate to your component's truststore.
3. Enter the truststore password when prompted. For the default password see "[Truststore password](#)" on page 76.
4. Double-click the certificate whose details you want to view. Details include valid date range, and other information about the certificate.

For the Manager certificate you can also use `tempca -i` command.

Delete a Certificate

You can use `bin/arcsight keytool` to delete a certificate from the keystore.

Use of `bin/arcsight keytool` (which runs from the command line in a terminal window) is recommended. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Also, the X Window system is not present on ESM on an appliance.

Caution: This command will delete the admin certificate that was added in "[Import a Certificate](#)" on page 84. **Note that this command also deletes keypairs, which is much harder to fix.**

Deleting a Certificate Using `bin/arcsight keytool`

An example of a `keytool` command line is provided. Use this example as a basis to form the command line you need.

To remove the ESM certificate `mykey`:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managercerts -delete -alias mykey
```

To remove a third party trusted certificate with alias `rootCA`:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store managercerts -delete -alias  
rootCA
```

Deleting a Certificate Using `keytoolgui`

To delete a certificate from the truststore, start `keytoolgui` and navigate to the certificate, right-click on the certificate, and select **Delete**.

Changing Keystore/Truststore Passwords

It is a good security practice to change the keystore and truststore passwords after installing ESM or ESM console. In addition to changing the keystore password, you need to separately change the value that ESM uses for this password, so that ESM can continue to access the keystore. FIPS has a single shared keystore/truststore, so the keystore and truststore passwords must be the same. Changing passwords using `bin/arcsight changepassword` is recommended since this program will encrypt the passwords in the configuration file.

Note: Key pairs also have passwords. ESM expects that these passwords will be the same as the keystore passwords, so both must be changed.

Below is an example of how to change the passwords on the Manager keystore.

Note: These steps must be performed in the order given.

1. `/etc/init.d/arcsight_services stop manager`
2. `bin/arcsight keytool -store managerkeys -keypasswd -alias mykey`
The command `keytool` will prompt for the new password.
3. `bin/arcsight keytool -store managerkeys -storepasswd`
The command `keytool` will prompt for the new password. Enter the same password as for step 2.
4. `bin/arcsight changepassword -f config/esm.properties -p server.privatekey.password`
The command `changepassword` will prompt for the new password. Enter the same password as for step 2.
5. `/etc/init.d/arcsight_services start all`

Here is an example of how to change the password on a Console truststore to match that of the console keystore. This can be needed to convert a default mode installation (with separate keystore/truststore) to FIPS mode with a single keystore/truststore. The console should not be running. Note that no `keytool -keypasswd` command is needed, as there are no keys in the truststore.

1. `bin/arcsight keytool -store clientcerts -storepasswd`
The command `keytool` will prompt for the new password. Enter the password for the `clientcerts` keystore.
2. `bin/arcsight changepassword -f config/client.properties -p ssl.truststore.password`
The command `changepassword` will prompt for the new password. Enter the password for the `clientcerts` keystore.

Using a Self-Signed Certificate

When dealing with certificate based identification and encryption, components fall into one of two categories: servers and clients. Signed certificates enable these components to verify the validity of communications with the other components. You can use either a self-signed certificate or a CA-signed certificate when setting up SSL authentication on your ESM components.

The procedure you follow depends on the number of Managers with which your clients communicate, because each Manager will have its own self-signed certificate, and any client that has to communicate with different Managers has to be configured to accept all those Manager's certificates.

When Clients Communicate With One Manager

To use a self-signed certificate for deployments in which clients communicate with only one Manager, perform these steps:

1. On the Manager, create a self-signed key pair:

Note: Steps to create a self-signed key pair may be different for a new Manager installation as the Configuration Wizard is launched automatically during the installation process.

- a. In `<ARCSIGHT_HOME>/bin`, run this command:

```
./arcsight managersetup
```
- b. In the Manager Configuration Wizard, select **Replace with new Self-Signed key pair** and click **Next**.
- c. Enter information about the SSL certificate and click **Next**.
- d. Enter the SSL keystore password for the certificate. Click **Next**. Remember this password. You will use it to open the keystore.
- e. Continue through the Configuration Wizard.

The Configuration Wizard does these three SSL-related things:

- It replaces the Manager's keystore at, `<ARCSIGHT_HOME>/config/jetty/keystore`, with the one created using this procedure.
- It generates the `selfsigned.cer` certificate file in the `<ARCSIGHT_HOME>/config/jetty` directory.
- It overwrites the existing Manager truststore file, `<ARCSIGHT_HOME>/jre/lib/security/cacerts`, with one containing the new self-signed certificate to the Manager's truststore file.

The new `cacerts` file contains the information about the Trusted Certificate Authority (CA)

that signed your self-signed certificate.

The self-signed certificate does not take effect until the Manager and clients are restarted later in this procedure.

2. Export the Manager's certificate from `<ARCSIGHT_HOME>/jre/lib/security/cacerts`.
3. Copy the Manager's certificate to each machine from which clients connect to the Manager.
4. On those clients, import the Manager's certificate to the `<ARCSIGHT_HOME>/jre/lib/security/cacerts` directory. See ["Import a Certificate" on page 84](#).

Note: Make sure you have imported the Manager's certificate to all existing clients before proceeding further. Otherwise, after you perform the next steps, only clients with the new Manager's certificate can connect to the Manager.

5. Stop the Manager and start all services so the Manager can start using the self-signed certificate. Run the following commands to do so:

```
/etc/init.d/arcsight_services stop manager  
  
/etc/init.d/arcsight_services start all
```

6. Restart all clients.
7. When installing a new client, repeat Steps 2-4 of this procedure.
8. Optionally, if SSL client-side authentication is needed, on the ArcSight Console, perform the steps listed in section ["Setting up SSL Client-Side Authentication on ArcSight Console- Self-Signed Certificate" on page 103](#)

When Clients Communicate With Multiple Managers

This procedure is for using a self-signed certificate where clients communicate with more than one Manager. In this procedure you get the self-signed certificate files from each manager, copy them to a client, import them all into that client, then copy that client cacerts file to all your other clients.

1. Follow Step 1 of the procedure ["When Clients Communicate With One Manager" on the previous page](#) on all Managers. In each case it generates a certificate file called `selfsigned.cer`.
2. Copy the `selfsigned.cer` file from each Manager to the `<ARCSIGHT_HOME>/jre/lib/security` directory on one of your clients.
The certificate files all have the same name. Rename each one so they do not overwrite another on the client. For example, rename the certificate file from `ManagerA` to `SelfSigned_MgrA.cer`.
3. On that client, use the `keytool` or `keytoolgui` command to import certificates into the truststore (cacerts):

The `keytool` command is preferred. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Note that using the X Window system is not preferred, but if you have it installed and want to use it, you can use `keytoolgui`. The X Window system is not

present on ESM on an appliance. See ["Import a Certificate" on page 84](#) for details on using keytool.

To use the keytoolgui command:

- a. In <ARCSIGHT_HOME>/bin, run this command:

```
./arcsight keytoolgui
```

- b. Click **File->Open keystore**.

- c. In <ARCSIGHT_HOME>/jre/lib/security, select the store named cacerts.

- d. Click **Tools->Import Trusted Certificate**:

- i. Select the self-signed certificate for a Manager and click **Import**.
- ii. You see the message:

Could not establish a trust path for the certificate. The certificate information will now be displayed after which you may confirm whether or not you trust the certificate.

Click **OK**.

The Certificate details are displayed. Click **OK**.

- iii. When asked if you want to accept the certificate as trusted, click **OK**.
 - iv. Enter an alias for the Trusted Certificate you just imported and click **OK**.
Typically, the alias Name is same as the fully qualified host name.
 - v. You see the message **Trusted Certificate Import Successful..** Click **OK**.
 - vi. Save the truststore file (cacerts).
 - vii. Repeat Steps i through vi for all self-signed certificates you copied.
- e. On the client, enter this command in <ARCSIGHT_HOME>/bin to stop the client from using the Demo certificate:

```
./arcsight tempca -rc
```

For SmartConnectors, run:

```
./arcsight agent tempca -rc
```

4. Stop the Manager and start all services so the Manager can start using the self-signed certificate. Run the following commands to do so:

```
/etc/init.d/arcsight_services stop manager
```

```
/etc/init.d/arcsight_services start all
```

5. Restart the client.
6. Copy the cacerts file to all your other clients and restart them. If you install a new client, copy the cacerts file to it as well.

Using a CA-Signed SSL Certificate

Using a certificate signed by a Certificate Authority means replacing your demo or self-signed certificate. Follow the procedures described in this section to obtain and import the certificate into the Manager.

Obtaining and deploying a CA-signed certificate involves these steps:

1. ["Create a Key Pair for a CA-Signed Certificate" below.](#)
2. ["Send for the CA-Signed Certificate" on the next page.](#)
3. ["Import the CA Root Certificate" on page 97.](#)
4. ["Import the CA-Signed Certificate" on page 98.](#)
5. ["Start the Manager Again \(Restart the Manager\)" on page 101.](#)
6. ["Using CA-Signed Certificates with Additional Components" on page 101.](#)
7. Optionally, if SSL client-side authentication is needed, on the ArcSight Console, perform the steps listed in section ["Setting up SSL Client-Side Authentication on ArcSight Console- Self-Signed Certificate" on page 103](#)

Create a Key Pair for a CA-Signed Certificate

To create a key pair, the `keytool` command is preferred. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Note that using the X Window system is not preferred, but if you have it installed and want to use it, you can use `keytoolgui`. The X Window system is not present on ESM on an appliance. See ["Generating a Key Pair" on page 87](#) for details on using `keytool`.

To use the `keytoolgui` command:

1. On the Manager machine, run this command to launch `keytoolgui` in `<ARCSIGHT_HOME>/bin`:

```
./arcsight keytoolgui
```
2. Click **File->New keystore** to create a new keystore.
3. Select **JKS** for the keystore Type, it supports Java keystore:
4. Click **Tools->Generate Key Pair** to create the key pair. This can take some time.
5. Enter key pair information such as the length of time for its validity (in days). Click **OK**.

For **Common Name (CN)**, enter the fully qualified domain name of the Manager. Ensure that DNS servers, used by the clients connecting to this host, can resolve this host name.

For **Email(E)**, provide a valid e-mail address as the CAs typically send an e-mail to this address to renew the certificate.

When you click **OK** it asks you for a new password. Use the password of your existing keystore to save this one. The Manager may fail to start if the password of the Key pair does not match the password of the keystore encrypted in `esm.properties`. If you do not remember the password, run the Manager setup Wizard and change the password of your existing keystore before you proceed. You reuse this file after receiving the reply from the CA.

6. Specify an alias name of *mykey* for referring to the new key pair.
7. Click **File->Save as** and save the keystore with a name such as `keystore.request`.

Send for the CA-Signed Certificate

To send for the CA-signed certificate, first create a certificate signing request (CSR).

You can use `keytool` to send for a CA-signed certificate. Use of `keytool` (which runs from the command line in a terminal window) is preferred. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Note that using the X Window system is not preferred, but if you have it installed and want to use it, you can use `keytoolgui`. The X Window system is not present on ESM on an appliance.

Sending a CA-Signed Certificate Using `keytool`

An example of a `keytool` command line is provided. Use this example as a basis to form the command line you need.

For example:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -certreq -store managerkeys -alias  
testkey -file config/testkey.csr
```

The command creates signing request using the PKCS#10 format for a certificate with alias `<ALIAS_NAME>` from `keystore_path`. Here `<storepass>` is keystore password, and `<keypass>` is a password for the specified alias. No need to be specified for empty values. As a result the command creates a file `<testkey.csr>` that should be sent to certificate authority (CA).

After verifying the information you sent, the CA electronically signs the certificate using its private key and replies with a certification response containing the signed certificate (`cer-file`).

Sending a CA-Signed Certificate Using `keytoolgui`

1. In `keytoolgui`, right-click the *mykey* alias name and select **Generate CSR** to create a Certificate Signing Request.
2. Choose a path and filename, and click **Generate**.
After you enter a file name, the CSR file is generated in the current working directory.
3. Send the CSR to the selected Certificate Authority (CA).

After verifying the information you sent, the CA electronically signs the certificate using its private key and replies with a certification response containing the signed certificate.

Import the CA Root Certificate

When you get the response from the certificate authority, it should include instructions for getting the root CA certificate. You can skip this step if renewing a CA-signed certificate issued by the same root certificate authority. You import the CA root certificate into the truststore file.

To create a key pair, the `keytool` command is preferred. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Note that using the X Window system is not preferred, but if you have it installed and want to use it, you can use `keytoolgui`. The X Window system is not present on ESM on an appliance. See "[Import a Certificate](#)" on page 84 for details on using `keytool`.

1. Save the Root CA certificate as a file `rootca.cer`.
2. Repeat the following procedure on all the machines where the Manager is installed:
 - a. Launch `keytoolgui` on the Manager machine.
 - b. Click **File > Open keystore**.
 - c. Select the Truststore file located at `<ARCSIGHT_HOME>/jre/lib/security/cacerts`. Use the default password to open `cacerts`. For the default password see "[SSL Authentication Terminology](#)" on page 75.
 - d. Click **Tools > Import Trusted Certificate**, and pick the `rootca.cer` file.
 - e. You see the following warning message:
"Could not establish a trust path for the certificate. The certificate information will now be displayed after which you may confirm whether or not you trust the certificate."
 - f. Click **OK** to finish.

Note: Hints on importing the CA root certificate:

- If the CA root certificate has a chain, follow the same procedure to import all intermediate CA certificates into the Truststore.
- Update the CA root certificate on other ESM components, as well.
 - Repeat step 2 of the procedure on one of the Consoles.
 - Copy the updated `cacerts` to any Logger, and other machines with Consoles or Connectors.
- Restart all services after the new `cacerts` is copied.

Import the CA-Signed Certificate

When the CA has processed your request, it sends you a file with the signed certificate. You import this certificate into the Manager's keystore.

The SSL certificate you receive from the Certificate Authority must be a 128-bit X.509 Version 3 certificate. The type of certificate is the same one that is used for common web servers. The signed certificate must be returned by the CA in base64 encoded format. It looks similar to this:

```
-----BEGIN CERTIFICATE-----
MIICjTCCAfagAwIBAgIDWnWvMA0GCSqGSIb3DQEBAUAMIGHMQswCQYDVQQGEwJaQTEiMCAGA1UEC
BMZRk9SIFRFU1RJTkcGUFVSUE9TRVMgT05MWTEdMBsGA1UEChMUVGhhd3RlIENlcnRpZmljYXRpb2
4xZzAVBgNVBA5TDlRFU1QgVEVTVCBURVNUMRwwGgYDVQQDEwNUaGF3dGUgVGVzdCBDQSBSb290MB4
XDTAyMDkyNzIzMzI0MVoXDTAyMTAxODIzMzI0MVoWDELMAkGA1UEBhMCrVMxDTALBgNVBAGTBGJs
YWgxDTALBgNVBAcTBGJsYWgxDTALBgNVBAoTBGJsYWgxDTALBgNVBA5TBGJsYWgxHTAbBgNVBAMTF
HppZXIuc3YyYXJjc2lnaHQyY29tMIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQCZRGNvFQwG1b
+BgABd/p8UhsaNov5AjaagAoBmouJCwgW2vwN4JViC
CSBkDpiqVF7K11Sx4ZVSXX4+VQ6k4gT5G0kDNvQeN05wWkzEMygmB+ZBnYqPA/XtWRZtjxvH
MoqS+JEqHruiMLITC6q0reUB/txby6+S9zNo/fUG1pkIcQIDAQABoyUwIzATBgNVHSUEDDAKBggrB
gEFBQcDATAMBGNVHRMBAG8EAJAAMA0GCSqGSIb3DQEBAUAAA4GBAFY37E60+P4b3zTLnaG7EVM57G
tkED6PwCIi1B6ixjvNL4MNGRubPa8kyaZp5fEDoNUPQVQxnpABjzTa1RfYgjnFJ61tI6ZKjB05kim
9UBeCnKiNNzhIyDyFwbHXOPB/JaLIV+jGugYNS7hf/ay0BXK1fue007EgjhhB/mQFs2JB
-----END CERTIFICATE-----
```

Before proceeding, make sure the name of the issuer that signed your certificate exists as a Trusted CA in cacerts.

Follow these steps to import the signed certificate:

1. If the returned file has the .CER or .CRT file extension, save it to the <ARCSIGHT_HOME>/config/jetty directory and skip to Step 4.
2. If it has a different extension, use a text editor to copy and paste the text string to a file. Include the lines "-----BEGIN CERTIFICATE-----" and "-----END CERTIFICATE-----", and make sure there are no extra spaces before or after the string.
3. Make a backup of the existing keystore by renaming it:
Rename <ARCSIGHT_HOME>/config/jetty/keystore to <ARCSIGHT_HOME>/config/jetty/keystore.old.
If, for any reason, the new keystore does not work properly, you can revert back to the demo keystore you saved as keystore.old.
4. Save it to a file named ca_reply.txt on the Manager in the <ARCSIGHT_HOME>/config/jetty directory.
5. On the Manager machine, run this command in <ARCSIGHT_HOME>/bin:

```
bin/arcsight keytool -store managerkeys -importcert -alias mykey -file  
config/jetty/ca_reply.txt
```

or use keytoolgui:

```
./arcsight keytoolgui
```

6. Click **File->Open keystore** and select the keystore (**keystore.request**) you saved in Step 7 of ["Create a Key Pair for a CA-Signed Certificate" on page 95](#). Provide the password you used to save the keystore in that step.
7. Right-click the key pair you created at the beginning of the process and named *mykey* in Step 6 of ["Create a Key Pair for a CA-Signed Certificate" on page 95](#).

8. Select **Import CA Reply** from the menu.

9. Select the CA reply certificate file you saved in `<ARCSIGHT_HOME>/config/jetty` and click **Import**.

If the CA reply file contains a chain of certificates, `keytool` tries to match the reply's root CA to an existing Trusted Certificate in your cacerts truststore. If this operation fails, the Certificate Details dialog appears for manual verification. Acknowledge the certificate by clicking **OK** and answering **Yes** to the subsequent challenge. Answer **No** if the certificate is not trustworthy for some reason.

After the key pair you generated has been updated to reflect the content of the CA reply, the keystore named `keystore.request` contains both the private key and the signed certificate (in the alias `mykey`).

10. Select **File > Save**. The keystore is now ready for use by the Manager.
11. Copy `<ARCSIGHT_HOME>/config/jetty/keystore.request` to `<ARCSIGHT_HOME>/config/jetty/keystore`.
12. For successful reconfiguration and Manager startup, enter the keystore passwords into the appropriate properties file.

Enter the password into the `esm.properties` file for the Manager using the following command (all on one line):

```
arcsight changepassword  
-f <ARCSIGHT_HOME>/config/esm.properties  
-p server.privatekey.password
```

After entering this command, the system displays the previous password as asterisks and asks you to enter and then confirm your new password. These commands enter the password into the properties file in an encrypted format.

13. If your Manager clients trust the CA that signed your server certificate, go to ["Start the Manager Again \(Restart the Manager\)" on page 101](#).

Otherwise, perform these steps to update the client's cacerts (truststore):

Note: Also perform these steps on the Manager to update the Manager's cacerts so that Manager clients such as the `archive` command can work.

- a. Obtain a root certificate from the CA that signed your server certificate and copy it to your client machine. (you got this in "[Import the CA Root Certificate](#)" on page 97.)
 - b. For one client, use `keytoolgui` to import the certificate into the truststore (cacerts):
 - i. In `<ARCSIGHT_HOME>/bin`, run this command:

```
./arcsight keytoolgui
```
 - ii. Click **File->Open keystore**.
 - iii. Select the store named `cacerts`. Use the default password to open `cacerts`. For the default password see "[SSL Authentication Terminology](#)" on page 75.
 - iv. Click **Tools->Import Trusted Certificate** and select the certificate you copied earlier in this procedure.
 - v. You see the message:

Could not establish a trust path for the certificate. The certificate information will now be displayed after which you may confirm whether or not you trust the certificate.

Click **OK**.
 - vi. Enter an alias for the Trusted Certificate you just imported and click **OK**.
 - vii. Right-click the alias **ca** in the truststore and choose **Delete** from the menu.
 - viii. Save the keystore.
 - c. Copy the `<ARCSIGHT_HOME>/jre/lib/security/cacerts` file from the client in the previous step to all other clients.
14. Import the new certificate into the client truststore on the manager. This is necessary so that manager utilities will continue to work.

Delete the existing manager certificate from the manager's client truststore. To delete a certificate from the truststore, start `keytoolgui` and navigate to the certificate, right-click on the certificate, and select **Delete**.

For `bin/arcsight keytool`:

```
bin/arcsight keytool -store clientcerts -delete -alias <hostname>
```

Then add the new certificate by exporting it and importing it. See "[Export a Certificate](#)" on page 83, subtopic "Exporting a Certificate using `keytoolgui`", and "[Import a Certificate](#)" on page 84, subtopic "Importing a Certificate Using `keytoolgui`".

Or, the commands for `bin/arcsight keytool`:

```
bin/arcsight keytool -store managerkeys -exportcert -alias mykey -file mykey.cer
```

```
bin/arcsight keytool -store clientcerts -importcert -alias <hostname> -file mykey.cer
```

Start the Manager Again (Restart the Manager)

When you start the Manager again, clients cannot communicate with it until their keystores are populated with the new certificate.

1. Start the Manager.

First, stop the Manager:

```
/etc/init.d/arcsight_services stop manager
```

Then start all services:

```
/etc/init.d/arcsight_services start all
```

The Manager may fail to start if the password of the Key pair does not match the password of the keystore, which is encrypted in `esm.properties`. If you do not remember the keystore password, run the Manager setup wizard and change the password of your existing keystore.

2. Restart all clients.

3. To verify that the new certificate is in use:

- a. From the command line navigate to `<ARCSIGHT_HOME>` and enter the command: `arcsight tempca -i`

The output shows which CA issuer signed the SSL CA-signed certificate, certificate type, status of a validation of the certificate, and so on.

- b. Point a web browser to `https://<manager_hostname>:8443`. to test it.

Using CA-Signed Certificates with Additional Components

Perform these extra steps to use CA-signed certificates with additional ESM components such as the ArcSight Console, or SmartConnectors.

- Adding additional Managers

You do not need to add the CA root certificate to the Truststore-cacerts file again. Just copy the cacerts file from the existing Manager to the new Manager.

- Other ArcSight Components (Console and SmartConnectors).

When installing a new Console, copy the cacerts file from an existing Console to the new Console.

Removing a Demo Certificate

You can remove the demo certificate by using the `tempca` script located in `<ARCSIGHT_HOME>/bin`. Issue the following command on all Manager and Console installations:

```
./arcsight tempca -rc
```

For SmartConnectors, run the tempca script using the following command:

```
./arcsight agent tempca -rc
```

Replacing an Expired Certificate

When a certificate in your truststore/cacerts expires, replace it with a new one as follows.

To delete an expired certificate, the `keytool` command is preferred. Using the `keytoolgui` interface requires that the X Window system be installed on your system. Note that using the X Window system is not preferred, but if you have it installed and want to use it, you can use `keytoolgui`. The X Window system is not present on ESM on an appliance. To replace an expired certificate, you must delete the current certificate and import a new one. See ["Delete a Certificate" on page 90](#) and ["Import a Certificate" on page 84](#) for details on using `keytool`.

1. Delete the expired certificate from the truststore/cacerts.
To delete a certificate from the truststore/cacerts, start `keytoolgui` and navigate to the certificate, right-click on the certificate, and select **Delete**.
2. Replace the certificate by importing the new certificate into truststore/cacerts. Use `keytoolgui` to import the new certificate into the truststore/cacerts. See ["Using a Self-Signed Certificate" on page 92](#), or ["Using a CA-Signed SSL Certificate" on page 95](#) section (depending on the type of certificate you are importing) for steps on how to import the certificate.

Since the common name (CN) for the new certificate is the same as the old certificate, you cannot have both of them in the truststore, cacerts.

Establishing SSL Client Authentication

This section describes the required steps for enabling client-authentication for ArcSight Console.

All communications between ESM and Console are performed over SSL connections. Which protocols and cipher suites to use for SSL connection is decided in the very beginning, during the initial SSL handshake. SSL handshake always validates that server could be trusted by reviewing and challenging its certificate. Optionally SSL handshake could validate client's certificate to ensure that connection was requested from a legitimate client. For that purpose the client provides SSL certificate and SSL handshake verifies that the client owns the corresponding private key.

Depending on the selected authentication mode the described below configuration steps might have effect on overall user authentication. These are the implications of the various modes:

1. **Password Based Authentication:** No impact
2. **Password Based and SSL Client Based Authentication:** In this mode, the client sends the SSL certificate and password-based credentials. Both of them should identify exactly the same user.

3. **Password Based or SSL Client Based Authentication:** In this mode, the result depends on your choice. For this authentication mode Console's login dialog provides two buttons: "Login" and "SSL Client Login" to send either the username and password or the SSL certificate.
4. **SSL Client Only Authentication:** In this mode, authentication is performed based on SSL certificate only.

Unless it's PKCS#11 login in the modes 2 and 4 described above with configured client-side authentication, SSL Login will always be performed under the same user, because the login dialog will always use the same client certificate.

For PKCS#11 logins the authentication process uses the certificates from PKCS#11 token, so the result will depend on the provided token.

Regardless of PKCS#11 mode, SSL login authentication is performed on server-side in two steps by validating SSL certificate and then by looking up the ArcSight user with the external ID that matches CN (Common Name) from the provided certificate.

Note: Client-side authentication could be helpful when you want to establish connection from a client to ESM always under the same user account. That eliminates the need to provide username/password. If it's what you need use the following instructions and once the client certificate is created, select "SSL Client Only Authentication" mode for that client, and create ArcSight User (in ESM) with externalID matching CN from client certificate. Do not forget to secure access to this certificate. If keystore with the certificate is stolen, it could be used to access ESM from other clients.

Setting up SSL Client-Side Authentication on ArcSight Console- Self-Signed Certificate

To enable client-side authentication for ArcSight Console running in default mode, perform these steps in addition to the ones you perform for setting up server authentication:

1. Set the External ID of the ArcSight user to the Common Name (CN) of the certificate that you will create when you generate a new key pair in a subsequent step. It is easiest to set the External ID to the user name. Note the External ID because you will need it shortly:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -genkeypair -dname "cn=admin, ou=ArcSight, o=HP, c=US" -keyalg rsa -keysize 2048 -alias testkey -startdate -1d -validity 366
```
2. Run `consolesetup` to select the desired client authentication method. See the section "Reconfiguring the ArcSight Console" in the *ESM Installation Guide*.
3. Export the Console's certificate:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -exportcert -store clientkeys -alias testkey -file console.cer
```
4. Copy the Console's certificate to the manager machine, and import it into the Manager's truststore:

```
bin/arcsight keytool -importcert -store managercerts -alias testkey -file console.cer
```

5. Stop the Manager as user *arcsight* by running:

```
/etc/init.d/arcsight_services stop manager
```
6. From the <ARCSIGHT_HOME>/bin directory, run:

```
./arcsight managersetup
```
7. Change the SSL selection to the appropriate setting.
8. Start all services so the Manager can start using the self-signed certificate. Run the following commands to do so:

```
/etc/init.d/arcsight_services start all
```

Setting up SSL Client-Side Authentication on ArcSight Console- CA-Signed Certificate

To enable client-side authentication for ArcSight Console running in default mode, perform these steps in addition to the ones you perform for setting up server authentication:

1. Set the External ID of the ArcSight user to the Common Name (CN) of the certificate that you will create when you generate a new key pair in a subsequent step. It is easiest to set the External ID to the user name. Note the External ID because you will need it shortly:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -genkeypair -dname "cn=admin, ou=ArcSight, o=HP, c=US" -keyalg rsa -keysize 2048 -alias testkey -startdate -1d -validity 366
```

2. Run `consolesetup` to select the desired client authentication method. See the section "Reconfiguring the ArcSight Console" in the *ESM Installation Guide*.
3. On each Console generate a key pair, making sure to set the Common Name (CN) to the External ID of the user that you updated above:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -store clientkeys -genkeypair -dname "cn=admin, ou=ArcSight, o=HP, c=US" -keyalg rsa -keysize 2048 -alias testkey -startdate -1d -validity 366
```
4. Create a Signing Request by following the steps in ["Send for the CA-Signed Certificate" on page 96](#) and ["Import the CA-Signed Certificate" on page 98](#).

5. Send a request to the certificate authorities. Example for `keytool` command line to create a certificate request:

```
<ARCSIGHT_HOME>/bin/arcsight keytool -certreq -store clientkeys -alias testkey -file config/testkey.csr
```

6. Follow the steps in ["Import the CA Root Certificate" on page 97](#). Import the CA Root Certificate into both the Console's and the Manager truststore.
7. After receiving a response, enter it into the client keystore. Example for `keytool` command line:


```
<ARCSIGHT_HOME>/bin/arcsight keytool -importcert -store clientkeys -alias  
testkey -file /tmp/signedcert.cer
```

8. Stop the Manager as user *arcsight* by running:

```
/etc/init.d/arcsight_services stop manager
```
9. From the `<ARCSIGHT_HOME>/bin` directory, run:

```
./arcsight managersetup
```
10. Change the SSL selection to the appropriate setting.
11. Start all services so the Manager can start using the self-signed certificate. Run the following commands to do so:

```
/etc/init.d/arcsight_services start all
```

Setting Up Client-Side Authentication for ArcSight Command Center

To set up client-side authentication for the Arcsight Command Center, you must export the Console's private key into a p12-file, and then import that file into the browser's internal truststore.

1. Export the Console's private key:

```
bin/arcsight keytool -importkeystore -store clientkeys -destkeystore  
config/consolekey.p12 -deststoretype PKCS12 -srcalias consolekey
```

The above command creates a new file `config/consolekey.p12` with keystore of the type **PKCS12** and stores there a private key for alias **consolekey** from client's keystore file `config/keystore.client`.

2. Use keystore `config/consolekey.p12` that contains Console's private key to import the certificate into internal browser's keystore.

Setting Up Client-Side Authentication on SmartConnectors

In order to enable client-side authentication on SmartConnectors running in default mode:

1. Create a new keypair in the `config/keystore.client` of the SmartConnector. Note that when you create the keypair, a keystore is created as well, if it does not already exist.

An example of a `keytool` command line:

```
jre/bin/keytool -genkeypair -keystore config/keystore.client -storetype  
JKS -storepass password -dname "cn=John Smith, ou=ArcSight, o=HP, c=US" -  
alias testKey -validity 365
```

2. Create a client SSL configuration text file in the `user/agent` directory and name it

`agent.properties` for a connector. The contents of this file (whether client or agent) should be as follows:

```
auth.null=true
ssl.client.auth=true
cac.login.on=false
ssl.keystore.path=config/keystore.client
ssl.keystore.password=<client.keystore_password>
```

Note: Make sure that this password is identical to the password that you set for `/config/keystore.client` when creating it.

3. Export the SmartConnector's (the client's) certificate:

An example of a `keytool` command line:

```
bin/arcsight agent keytool -exportcert -store clientkeys -alias testkey -file /tmp/agent-certificate.cer
```

4. Import the CA's certificate of the client's certificate (in case you are using CA-signed certificate) or the client's certificate itself (in case you are using a self-signed certificate) into the Manager's truststore, `/config/jetty/truststore`.

Example command for `keytool` command line:

```
bin/arcsight keytool -importcert -store managercerts -alias testkey -file /tmp/agent-certificate.cer
```

5. Stop the Manager:

```
/etc/init.d/arcsight_services stop manager
```

Then start all services:

```
/etc/init.d/arcsight_services start all
```

6. Restart the SmartConnector.

Setting Up Client-Side Authentication for Utilities on the ESM Server

Some ArcSight commands, such as `arcsight managerinventory` require you to log into the server. To support these commands, you must set up SSL client-side authentication on the console. This requires you to set up a SSL keypair for these commands in order to use them in the tasks described in the subtopics "Password Based and SSL Client Based Authentication" and "SSL Client Only Authentication" in ["Password-Based Authentication" on page 116](#).

Ensure that the client truststore contains the manager certificate. This normally happens automatically, but there are two cases in which you must copy the certificate in manually. These are for a CA signed manager certificate, and for FIPS mode installations. When SSL authentication is not required (in the

tasks described in the subtopics "Password Based Authentication" or "Password Based or SSL Client Based Authentication") no additional configuration is required.

The type of authentication used by utilities is controlled by settings in `config/client.properties`. `managersetup` will put the correct values for client authentication in `client.properties` when it first creates it, but, to preserve any custom modifications you have made in that file, it will not subsequently modify that file. If you need to change your settings after initial installation, you need to remove the `client.properties` before running `managersetup`, or edit `client.properties` as shown below.

- For "Password Based Authentication" remove the two properties: `auth.null` and `ssl.client.auth` from the `client.properties` file.
- For "SSL Client Only Authentication" set the two properties: `auth.null` and `ssl.client.auth` in the `client.properties` file to **true**.
- For "Password and SSL Client Based Authentication" set the properties in the `client.properties` file: `auth.null` to **false** and `ssl.client.auth` to **true**.
- For "Password or SSL Client Based Authentication" set the properties in the `client.properties` file: `auth.null` to **false** and `ssl.client.auth` to **optional**.

To support SSL Client Authentication for ArcSight commands:

1. Set the external ID of the user that tools will use to a known value. For example, set the admin external ID to admin.
2. Stop the Manager:

```
/etc/init.d/arcsight_services stop manager
```
3. Run `managersetup` to select the appropriate value for SSL Authentication.
4. Create a keypair in the client keystore:

```
bin/arcsight keytool -store clientkeys -genkeypair -dname "cn=admin" -keyalg rsa -keysize 2048 -alias admin -startdate -1d -validity 366
```
5. Export the certificate

```
bin/arcsight keytool -store clientkeys -exportcert -alias admin -file admin.cer
```
6. Import the certificate into the `managercerts` truststore.

```
bin/arcsight keytool -store managercerts -importcert -alias admin -file admin.cer
```
7. Start all services:

```
/etc/init.d/arcsight_services start all
```
8. Additionally, in a FIPS installation, you must import the manager certificate into the client keystore. This is done automatically for you in default mode.
Export the certificate with this command:

```
bin/arcsight keytool -store managerkeys -exportcert -alias mykey -file mykey.cer
```


Then import the certificate:

```
bin/arcsight keytool -store clientcerts -importcert -alias mykey -file  
mykey.cer
```

SSL Authentication - Migrating Certificate Types

When you migrate from one certificate type to another on the Manager, update all Consoles, and SmartConnectors.

Migrating from Demo to Self-Signed

To migrate from a demo to self-signed certificate:

1. Follow the steps described in ["Using a Self-Signed Certificate" on page 92](#).
2. Follow the instructions in ["Verifying SSL Certificate Use" below](#) to ensure that a self-signed certificate is in use.

Migrating from Demo to CA-Signed

To migrate from a demo to CA-Signed certificate:

1. Follow the steps described in ["Using a CA-Signed SSL Certificate" on page 95](#).
2. Follow the instructions in ["Verifying SSL Certificate Use" below](#) to ensure that CA-signed certificate is in use.

Migrating from Self-Signed to CA-Signed

To migrate from a self-signed to CA-signed certificate:

1. Follow the steps described in ["Using a CA-Signed SSL Certificate" on page 95](#).
2. Follow the instructions in ["Verifying SSL Certificate Use" below](#) to ensure that a CA-signed certificate is in use.

Verifying SSL Certificate Use

After the migration, run this command in `<ARCSIGHT_HOME>/bin` on the client to ensure the certificate type you intended is in use:

```
./arcsight tempca -i
```

In the resulting output, a sample of which is available below, do the following:

1. Review the value of the line: Demo CA trusted.
The value should be "no."
If the value is "yes," the demo certificate is still in use. Follow these steps to stop using the demo certificate:
 - a. In <ARCSIGHT_HOME>/bin, enter the following command to make the client stop using the currently in use demo certificate:

```
./arcsight tempca -rc
```

For SmartConnectors, run:

```
./arcsight agent tempca -rc
```
 - b. Restart the client.
2. Verify that the Certificate Authority that signed your certificate is listed in the output. For a self-signed certificate, the Trusted CA is the name of the machine on which you created the certificate

Sample Output for Verifying SSL Certificate Use

This is a sample output of the `arcsight tempca -i` command run from a Console's bin directory:

```
ArcSight TempCA starting...
```

```
SSL Client
```

```
truststore C:\arcsight\Console\current\jre\lib\security\cacerts
```

Type	JKS
Demo CA trusted	no
Trusted CA	DigiCert Assured ID Root CA

```
[digiCertAssuredIDRootCA]
```

Trusted CA	TC TrustCenter Class 2 CA II
------------	------------------------------

```
[trustcenterclass2caii]
```

```
.  
.
.
```

```
Demo CA
```

```
keystore C:\arcsight\Console\current\config\keystore.tempca
```

```
Exiting...
```

Using Certificates to Authenticate Users to the Manager

Instead of using a user name and password to authenticate a user to the Manager, you can configure these systems to use a digitally-signed user certificate. This section tells you how to do that. This capability is useful in environments that make use of Public Key Infrastructure (PKI) for user authentication.

The Manager accepts login calls with empty passwords and use the Subject CN (Common Name) from the user's certificate to identify the user.

Note: Before you enable client-side authentication, make sure that you log in to the Console and create a new user or modify an existing user such that you set the user's `external_id` to the one specified in the certificate created on the Console. The external id should be set to the users name set as the CN (Common Name) setting when creating the certificate.

You must enable SSL client authentication as described in the previous section to use digitally-signed user certificates for user authentication.

To configure the Manager to use user certificates, do the following:

1. On the Console, make sure that External ID field in the User Editor for every user is set to a value that matches the CN in their user certificate.
2. Restart the system you are configuring.
3. Restart the Consoles.

When you start the Console, the user name and password fields are grayed out. Simply select the Manager to which you want to connect and click **OK** to log in.

Using the Certificate Revocation List (CRL)

ESM supports the use of CRL to revoke a CA-signed certificate which has been invalidated. The CA that issued the certificates also issues a CRL file which contains a signed list of certificates which it had previously issued that it now considers invalid. The Manager checks the client certificates against the list of certificates listed in the CRL and denies access to clients whose certificates appear in the CRL.

Be sure these conditions exist for the CRL functionality to work properly:

- Your certificates are issued and signed by a valid Certificate Authority or an authority with an ability to revoke certificates.
- The CA's certificate is present in the Manager's trust store.

In the case of client-side authentication, the Manager validates the authenticity of the client certificate using the certificate of the signing CA.

- You have a current CRL file provided by your CA.

The CA updates the CRL file periodically when subsequent certificates are invalidated.

How CRL works:

1. CRL verification is performed by the SSL handshake. When started, ESM reads the value of the property `auth.crl.dir` (default value `config/jetty/crls`) and starts monitoring for any changes to the files with the `.crl` extension in the specified folder.
2. When there are changes (for example, a new CRL file), ESM reloads the full content of that folder and updates the current set of CRLs.
3. The current set of CRLs is used by ESM each time it initializes SSL Context.

Further considerations:

Be sure that the property `auth.crl.dir` points to the appropriate folder and have that property in the corresponding properties file (for example, `console.properties` for the ArcSight Console).

When a component starts, it reads the CRL files from the specified folder and includes them into the SSL Context. The only difference between ESM and the clients is that CRL files are read once, during startup; after the ArcSight Console started you cannot change the CRL list. The ArcSight Console does not monitor changes in the CRL folder. For example, to add an additional CRL to the ArcSight Console, you need to restart the ArcSight Console after copying the CRL file to the designated folder.

To use the CRL functionality:

1. For components other than ESM, log out of those components.
2. Copy the CA-provided CRL file into the folder specified in the property `auth.crl.dir` of that component (the property is set in the corresponding properties file).
3. Restart the components (Console, or ESM utilities) so that the current set of provided CRL files is read. For ESM, restart is not required. After adding the CRL file, it takes about a minute for the Manager to be updated with the current CRL files.

Chapter 5: Running the Manager Configuration Wizard

After you have installed and configured your system, you can change some configuration parameters by running the `managersetup -i console` command in a terminal window to launch the Manager Configuration Wizard. Running the command in console mode is the preferred way of launching the wizard. Using the X Window system to run the wizard in graphical user interface mode is not preferred, but if you have the X Window system installed and want to use it, you can run the `managersetup` command without options to launch the wizard. The X Window system is not present on an appliance.

If issues occur while running the Manager Configuration Wizard, this command logs troubleshooting information in a log file: `/opt/arcsight/var/logs//manager/default/serverwizard.log`.

Important: When you run `managersetup`, you will see:

Do you want to run ESM in Compact or Distributed mode?

In this case, accept the default and keep moving through the wizard. You cannot change the ESM mode in the wizard after the initial installation of ESM. If you want to change ESM from compact to distributed mode, see the topic "Converting Compact Mode to Distributed Correlation Mode" in the *ESM Upgrade Guide* and follow that conversion process. Note that conversion from distributed correlation mode to compact mode is not supported.

Running the Wizard

Run the wizard as user `arcsight`. Before you run the Manager Configuration Wizard, stop your Manager by running the following command:

```
/etc/init.d/arcsight_services stop manager
```

Verify that the Manager has stopped by running the following command (as user `arcsight`):

```
/etc/init.d/arcsight_services status all
```

To start the wizard, run the following from `<ARCSIGHT_HOME>/bin` directory:

```
./arcsight managersetup -i console
```

The Manager Configuration Wizard establishes parameters required for the Manager to start up when you reboot.

1. Select either **Run manager in default mode** or **Run manager in FIPS mode**. For information on FIPS, see ["Configuration Changes Related to FIPS" on page 199](#)
2. You can enter **Manager Host Name**, **Manager Port**, and **Physical Location**. To change the hostname or IP address for your Manager host, enter the new one. The Manager host name that

you enter appears on the Manager certificate. If you change the host name, be sure to regenerate the Manager's certificate in by selecting Replace with the new Self-Signed key pair in the screen that allows you to select key pair options (make a note of this if you change your host name). We recommend that you do not change the Manager Port number.

The **IP Version** selection (IPv4 or IPv6) appears if you have a dual-stack machine, such as an appliance. If you see this option, your selection has the following effects:

- It controls what IP Address is used by third party software if a hostname is given. for example, the e-mail server in Manager Setup.
 - It sets the preferred IP version to choose if there are multiple IP addresses available for the different IP versions.
 - It controls which IP Address is tried on the peering page if a hostname is specified.
 - It controls whether an IPv4 or IPv6 Address is chosen for the manager asset.
3. If you would like to replace your license file with a new one, select **Replace current license file**. Otherwise, accept the default option of **Keep the current license file**.
If you selected **Replace the current license file**, you are prompted for the new one.
 4. Select the Java Heap memory size. The Java Heap memory size is the amount of memory that ESM allocates for its heap. (Besides the heap memory, the Manager also uses some additional system memory.)
 5. Select a key pair option. The Manager controls SSL certificate type for communications with the Console, so the wizard prompts you to select the type of SSL certificate that the Manager is using. If you changed the Manager host name in the first or second step above, select **Replace with new Self-Signed key pair**, otherwise select **Do not change anything**.
If you selected **Replace with new Self-Signed key pair**, you are prompted to enter the password for the SSL key store and then details about the new SSL certificate to be issued.
 6. Accept the **Logger JDBC URL** and **Database Password** defaults.
 7. Select whether to set up connection to the Event Broker (if Event Broker is part of your implementation of ESM). Select **Yes** to set up the connection; select **No** to continue. If you select **Yes**, specify:
 - a. **Host: Port** for the Event Broker you want to connect to.
 - b. **Topic** in the Event Broker you want to read from. This will determine the data source.
 - c. **Path** on your local machine that contains the Event Broker certificate to enable secure connection.
 8. Select whether to set up integration with ArcSight Investigate. Select **Yes** to enable the integration; select **No** to continue. If you select **Yes**, specify the **Search URL** for the ArcSight Investigate implementation.
 9. Select the desired authentication method as described in "[Establishing SSL Client Authentication](#)" on page 102.

10. Select the method for authenticating the users. See "[Authentication Details](#)" on the next page for more details on each of these options.
11. Accept the default (**Internal SMTP server**) or configure a different email server for notification.

Caution: You must set up notification and specify notification recipients in order to receive system warnings. The importance of this step is sometimes overlooked, leading to preventable system failures.

If you choose External SMTP Server, additional options are requested, to which the following steps apply:

- a. Enter the name of the outbound **SMTP Server** to use for notifications.
- b. Enter the **From Address** that the Manager is to place in the From field of outgoing emails.
- c. Enter the **Error Notification Recipients** as a comma-separated list of email addresses to which the Manager should send error notifications.

Emails are sent when the system detects the following occurrences:

- The subsystem status is changed. The email shows the change and who did it.
- The report has been successfully archived.
- The account password has been reset.
- The Archive report generation fails.
- There is too many notifications received by a destination.
- The event archive location has reached the cap space. It will ask you to free up some space by moving the event archives to some other place.
- The user elects to email the ArcSight Console settings.
- The user sends partition archival command.
- An archive fails because there is not enough space.
- The Connection to the database failed.

- d. Select **Use my server for notification acknowledgements**.
 - e. Enter the SMTP server and account information. This includes the incoming email server and the server protocol, and the username and password for the email account to be used.
12. The Manager can automatically create an asset when it receives an event with a new sensor or device information. The default, **Enable Sensor Asset Creation**, ensures that assets are automatically created. If you want to disable this feature, select **Disable Sensor Asset Creation**.
 13. You have completed the Manager setup program. Start all services by running the following as user *arcsight*:

```
/etc/init.d/arcsight_services start all
```

Authentication Details

The authentication options enable you to select the type of authentication to use when logging into the Manager.

Caution: In order to use PKCS#11 authentication, note that PKCS#11 authentication is not supported with Radius, LDAP and Active Directory authentication methods.

By default, the system uses its own, built-in authentication, but you can specify third party, external authentication mechanisms, such as RADIUS Authentication, Microsoft Active Directory, or LDAP.

How External Authentication Works

The Manager uses the external authentication mechanism for authentication only, and not for authorization or access control. That is, the external authenticator only validates the information that users enter when they connect to the Manager by doing these checks:

- The password entered for a user name is valid.
- If groups are applicable to the mechanism in use, the user name is present in the groups that are allowed to access ArcSight Manager.

Users who pass these checks are authenticated.

After you select an external authentication mechanism, all user accounts, including the *admin* account, are authenticated through it.

Guidelines for Setting Up External Authentication

Follow these guidelines when setting up an external authentication mechanism:

- Users connecting to the Manager must exist on the Manager.
- User accounts, including *admin*, must map to accounts on the external authenticator. If the accounts do not map literally, you must configure internal to external ID mappings in the Manager.
- Users do not need to be configured in groups on the Manager even if they are configured in groups on the external authenticator.
- If user groups are configured on the Manager, they do not need to map to the group structure configured on the external authenticator.
- Information entered to set up external authentication is *not* case sensitive.
- To restrict information users can access, set up Access Control Lists (ACLs) on the Manager.

Password-Based Authentication

Password-based authentication requires users to enter their User ID and Password when logging in. You can select the built-in authentication or external authentication.

Built-In Authentication

This is the default authentication when you do not specify a third party external authentication method. If you selected this option, you are done.

Setting up RADIUS Authentication

To configure ArcSight Manager for RADIUS Authentication, choose **RADIUS Authentication** and supply the following parameter values:

Parameter	Description
Authentication Protocol	Which authentication protocol is configured on your RADIUS server: PAP, CHAP, MSCHAP, or MSCHAP2.
RADIUS Server Host	Host name of the RADIUS server. To specify multiple RADIUS servers for failover, enter comma-separated names of those servers in this field. For example, server1, server2, server3. If server1 is unavailable, server2 is contacted, and if server2 is also unavailable, server3 is contacted.
RADIUS Server Type	Type of RADIUS server: <ul style="list-style-type: none">• RSA Authentication Manager• Generic RADIUS Server• Safeword PremierAccess
RADIUS Server Port	Specify the port on which the RADIUS server is running. The default is 1812.
RADIUS Shared Secret	Specify the RADIUS shared secret string used to verify the authenticity and integrity of the messages exchanged between the Manager and the RADIUS server.

Setting up Active Directory User Authentication

To authenticate users using a Microsoft Active Directory authentication server, choose **Microsoft Active Directory**. Communication with the Active Directory server uses LDAP and optionally SSL.

The next panel prompts you for this information.

Parameter	Description
Active Directory Server	Host name of the Active Directory Server.
Enable SSL	Whether the Active Directory Server is using SSL. The default is True (SSL enabled on the AD server). No further SSL configuration is required for the AD server. Whether you selected SSL earlier for communications with the Console is irrelevant. Certificate type is set on the AD server side, not the manager.
Active Directory Port	Specify the port to use for the Active Directory Server. If the AD server is using SSL (Enable SSL=true), use port 636. If SSL is not enabled on the AD server, use port 389.
Search Base	Search base of the Active Directory domain; for example, DC=company, DC=com.
User DN	Distinguished Name (DN) of an existing, valid user with read access to the Active Directory. For example, CN=John Doe, CN=Users, DC=company, DC=com. The CN of the user is the "Full Name," not the user name.
Password	Domain password of the user specified earlier.
Allowed User Groups	Comma-separated list of Active Directory group names. Only users belonging to the groups listed here will be allowed to log in. You can enter group names with spaces.

Specify any user who exists in AD to test the server connection.

Specify the user name used to log in to the Manager and the External ID name to which it is mapped on the AD server.

Configuring AD SSL

If you are using SSL between the Manager and your authentication server, you must ensure that the server's certificate is trusted in the Manager's trust store <ARCSIGHT_HOME>/jre/lib/security/cacerts, whether the authentication server is using self-signed or CA certificates. For CA certificates, if the Certificate Authority (CA) that signed your server's certificate is already listed in cacerts, you do not need to do anything. Otherwise, obtain a root certificate from the CA and import it in your Manager's cacerts using the `keytoolgui` command.

Setting up LDAP Authentication

The ArcSight Manager binds with an LDAP server using a simple bind. To authenticate users using an LDAP authentication server, choose **Simple LDAP Bind** and click **Next**. The next panel prompts you for this information.

Parameter	Description
LDAP Server Host	Specify the host name of the LDAP Server.
Enable SSL	Whether the LDAP Server is using SSL. The default is True (SSL enabled on the LDAP server). No further SSL configuration is required for the LDAP server. Whether you selected SSL earlier for communications with the Console is irrelevant. Certificate type is set on the LDAP server side, not the manager.
LDAP Server Port	Specify the port to use for the LDAP Server. If the LDAP server is using SSL (Enable SSL=true), use port 636. If SSL is not enabled on the LDAP server, use port 389.

Specify any user who exists in LDAP to test the server connection.

Enter a valid Distinguished Name (DN) of a user (and that user's password) that exists on the LDAP server; for example, CN=John Doe, OU= Engineering, O=YourCompany. This information is used to establish a connection to the LDAP server to test the validity of the information you entered in the previous panel.

Note: LDAP groups are not supported. Therefore, you cannot allow or restrict logging into the Manager based on LDAP groups.

If you configure your Manager to use LDAP authentication, ensure that you create users on the Manager with their Distinguished Name (DN) information in the external ID field. For example, CN=John Doe, OU= Engineering, O=YourCompany.

Specify the user name used to log in to the Manager and the External ID name to which it is mapped on the LDAP server.

Configuring LDAP SSL

If you are using SSL between the Manager and your authentication server, you must ensure that the server's certificate is trusted in the Manager's trust store <ARCSIGHT_HOME>/jre/lib/security/cacerts, whether the authentication server is using self-signed or CA certificates. For CA certificates, if the Certificate Authority (CA) that signed your server's certificate is already listed in cacerts, you do not need to do anything. Otherwise, obtain a root certificate from the CA and import it in your Manager's cacerts using the `keytoolgui` command.

Password Based and SSL Client Based Authentication

Your authentication will be based both upon the username and password combination as well as the authentication of the client certificate by the Manager.

Note: Using PKCS#11 provider as your SSL Client Based authentication method within this option is not currently supported.

Password Based or SSL Client Based Authentication

You can either use the username/password combination or the authentication of the client certificate by the Manager (for example PKCS#11 token) to login if you select this option.

For more detail on SSL authentication for browser logins, see "Login in with SSL Authentication" in the chapter "Starting the Command Center" in the ArcSight Command Center Guide.

SSL Client Only Authentication

You must manually set up the authentication of the client certificate by the Manager. You can either use a PKCS#11 Token or a client keystore to authenticate.

Appendix A: Administrative Commands

ArcSight_Services Command - Compact Mode

The `arcsight_services` command syntax and options are described below.

Note: Do not start or stop services that are listed in the category Background Component Services. They are listed for information only.

Description	This command manages component services.																			
Applies to	All components																			
Syntax	<code>/etc/init.d/arcsight_services <action> <component></code>																			
Service Actions	<code>start</code>	Start the specified component, and any components it depends on.																		
	<code>stop</code>	Stop the specified component and any components that depend on it.																		
	<code>status</code>	<p>This provides a service status value:</p> <table border="1"> <thead> <tr> <th>Status Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><code>initializing</code></td> <td>Preparing to provide service.</td> </tr> <tr> <td><code>available_and_initializing</code></td> <td>Providing some service while coming up.</td> </tr> <tr> <td><code>available</code></td> <td>Providing service</td> </tr> <tr> <td><code>available_unresponsive</code></td> <td>Service is running, but is not responding to the service request.</td> </tr> <tr> <td><code>stopping</code></td> <td>Service is in the process of exiting.</td> </tr> <tr> <td><code>unavailable</code></td> <td>Service is not running.</td> </tr> <tr> <td><code>unknown</code></td> <td>Status of service could not be determined.</td> </tr> <tr> <td><code>mixed_status</code></td> <td>Service is partially up.</td> </tr> </tbody> </table>	Status Value	Description	<code>initializing</code>	Preparing to provide service.	<code>available_and_initializing</code>	Providing some service while coming up.	<code>available</code>	Providing service	<code>available_unresponsive</code>	Service is running, but is not responding to the service request.	<code>stopping</code>	Service is in the process of exiting.	<code>unavailable</code>	Service is not running.	<code>unknown</code>	Status of service could not be determined.	<code>mixed_status</code>	Service is partially up.
	Status Value	Description																		
	<code>initializing</code>	Preparing to provide service.																		
	<code>available_and_initializing</code>	Providing some service while coming up.																		
	<code>available</code>	Providing service																		
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	<code>stopping</code>	Service is in the process of exiting.																		
<code>unavailable</code>	Service is not running.																			
<code>unknown</code>	Status of service could not be determined.																			
<code>mixed_status</code>	Service is partially up.																			
<code>help</code>	Provides command usage (no component). The information displayed depends on where you are in ESM when you run the command with the <code>help</code> action.																			
<code>version</code>	Print the complete version numbers of all components.																			

Component Services	all	This is the default if no component is specified.
	logger_httpd logger_servers logger_web manager mysqld	Logger Apache httpd service Logger service Logger Web service ESM Manager MySQL database
Background Component Services (for information only)	aps	ArcSight Platform Services; functions in background to perform configuration tasks; you can start this service, but do not stop it unless you are stopping all services
	postgresql	Open source database, which functions in the background; you can start this service, but do not stop it unless you are stopping all services
	execprocsvc	Helper service for the Manager; actions not supported on this service
Examples	<pre> /etc/init.d/arcsight_services stop /etc/init.d/arcsight_services start /etc/init.d/arcsight_services stop manager /etc/init.d/arcsight_services start manager /etc/init.d/arcsight_services status all </pre>	

ArcSight_Services Command - Distributed Correlation Mode

The `arcsight_services` command syntax and options are described below for use in the context of distributed correlation only.

Note: Do not start or stop services that are listed in the category Background Component Services. They are listed for information only.

Description	This command manages ArcSight services processes.
Applies to	All components
Syntax	<code>/etc/init.d/arcsight_services <action> <distributed - correlation - service></code>

Service Actions	<code>start</code>	Start the specified component, and any components it depends on.																
	<code>stop</code>	Stop the specified component and any components that depend on it.																
	<code>status</code>	Provides a service status value: <table border="1" data-bbox="889 430 1414 1010"> <thead> <tr> <th>Status Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>initializing</td> <td>Preparing to provide service.</td> </tr> <tr> <td>available_and_initializing</td> <td>Providing some service while coming up.</td> </tr> <tr> <td>available</td> <td>Providing service</td> </tr> <tr> <td>available_unresponsive</td> <td>Service is running, but is not responding to the service request.</td> </tr> <tr> <td>stopping</td> <td>Service is in the process of exiting.</td> </tr> <tr> <td>unavailable</td> <td>Service is not running.</td> </tr> <tr> <td>cannot_determine</td> <td>Repository is down or is up but not available, so the status of cluster node service is not known.</td> </tr> </tbody> </table>	Status Value	Description	initializing	Preparing to provide service.	available_and_initializing	Providing some service while coming up.	available	Providing service	available_unresponsive	Service is running, but is not responding to the service request.	stopping	Service is in the process of exiting.	unavailable	Service is not running.	cannot_determine	Repository is down or is up but not available, so the status of cluster node service is not known.
	Status Value	Description																
	initializing	Preparing to provide service.																
	available_and_initializing	Providing some service while coming up.																
	available	Providing service																
	available_unresponsive	Service is running, but is not responding to the service request.																
stopping	Service is in the process of exiting.																	
unavailable	Service is not running.																	
cannot_determine	Repository is down or is up but not available, so the status of cluster node service is not known.																	
<code>statusByNode</code>	Provides status of a node in a cluster, with all of the services running on it. Use <code>service</code> to see the hostname of the node. If no node is specified, the status of all nodes (and all services grouped by node) are displayed.																	
<code>checkSshSetup</code>	Checks for key-based passwordless ssh; use <code>service</code> to specify the hostname. If a hostname is not specified, performs this task on all of the hosts in the cluster.																	
<code>sshSetup</code>	Sets up key-based passwordless ssh; use <code>service</code> to specify the hostname. If a hostname is not specified, performs this task on all of the hosts in the cluster. Prompts for ArcSight password for each host.																	
<code>help</code>	Provides command usage. The information displayed depends on where you are in ESM when you run the command with the <code>help</code> action.																	
<code>version</code>	Print the complete version numbers of all components. Provides version information grouped by node for distributed correlation.																	

Component Services	<p>all</p> <p>logger_httpd logger_servers logger_web manager mysqld</p>	<p>This is the default if no component is specified.</p> <p>Logger Apache httpd service Logger service Logger Web service ESM Manager MySQL database</p>
Background Component Services (for information only)	<p>aps</p> <p>postgresql</p> <p>execprocsvc</p>	<p>ArcSight Platform Services; functions in background to perform configuration tasks; you can start this service, but do not stop it unless you are stopping all services</p> <p>Open source database, which functions in the background; you can start this service, but do not stop it unless you are stopping all services</p> <p>Helper service for the Manager; actions not supported on this service</p>
Distributed Correlation Component Services	<p>correlator# aggregator# mbus_data# mbus_control# repo# dcache#</p> <p>The # after the service name indicates there can be more than one of these services running at a time. Specify a number for the service (for example, <i>correlator2</i>) to work with a specific service. If no number is provided, the command applies to all services of the type specified.</p>	<p>Service performing correlation in a cluster Services performing aggregation in a cluster Manages message bus data in a cluster Manages message bus data in a cluster Repository of cluster service information Distributed cache for a cluster</p>
Examples	<pre>/etc/init.d/arcsight_services stop /etc/init.d/arcsight_services start /etc/init.d/arcsight_services stop manager /etc/init.d/arcsight_services start manager /etc/init.d/arcsight_services status all</pre>	

ArcSight Commands

To run an ArcSight command script on a component, open a command window and switch to the <ARCSIGHT_HOME> directory. The arcsight commands run using the file (on Windows) or arcsight.sh in <ARCSIGHT_HOME>\bin. The general syntax is as follows:

```
bin/arcsight <command_name> [parameters]
```

In general, commands that accept a path, accept either a path that is absolute or relative to <ARCSIGHT_HOME>. Running the command from <ARCSIGHT_HOME> and prefixing it with bin/ enables you to use the shell's capabilities in looking for relative paths.

Not all parameters are required. For example, username and password may be a parameter for certain commands, such as the Manager and Package commands, but the username and password are only required if the command is being run from a host that does not also host the Manager.

ACLReportGen

This command generates a report on ACLs either at the group level or at the user level. By default, the generated report is placed in the <ARCSIGHT_HOME>/ACLReports directory.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

ACLReportGen

Applies to	Manager	
Syntax	ACLReportGen [parameters]	
Parameters	Optional:	
	-config <config>	The primary configuration file (config/server.defaults.properties).
	-locale	The locale under which to run the command.
	-mode <mode>	Mode in which this tool is run to generate the ACLs report. Supported modes are grouplevel and userlevel. The default value is grouplevel.
	-pc <privateConfig>	The name of the override configuration file (config/server.properties).
	-h	Help
Example	arcsight ACLReportGen	

agent logfu

This command runs a graphical SmartConnector log file analyzer.

agent logfu

Applies to	SmartConnectors	
Syntax	agent logfu -a [parameters]	
Parameters	-a	SmartConnector log, which is required. For other parameters, see the description of the logfu command for the Manager.
Example	arcsight agent logfu -a	

agent tempca

This command allows you to inspect and manage temporary certificates for a SmartConnector host machine.

agent tempca

Applies to	SmartConnectors
Syntax	<code>agent tempca</code>
Parameters	For parameters, see the description of the <code>tempca</code> command for the Manager.
Example	<code>arcsight agent tempca</code>

agentcommand

This command allows you to send a command to SmartConnectors.

agentcommand

Applies to	SmartConnectors
Syntax	<code>agentcommand -c (restart status terminate)</code>
Parameters	<code>-c</code> Valid parameters are <code>restart</code> , <code>status</code> , or <code>terminate</code> .
Examples	To retrieve status properties from the SmartConnector: <code>arcsight agentcommand -c status</code> To terminate the SmartConnectorprocess: <code>arcsight agentcommand -c terminate</code> To restart the SmartConnectorprocess: <code>arcsight agentcommand -c restart</code>

agents

This command runs all installed ArcSight SmartConnector on the host as a standalone application.

agents

Applies to	SmartConnectors
Syntax	<code>agents</code>
Parameters	None
Example	<code>arcsight agents</code>

agentsvc

This command installs an ArcSight SmartConnector as a service.

agentsvc

Applies to	SmartConnectors	
Syntax	<code>agentsvc -i -u <user></code>	
Parameters	<code>-i</code>	Install the service.
	<code>-u <user></code>	Run service as specified user.
Example	<code>arcsight agentsvc</code>	

agentup

This command allows you to verify the current state of a SmartConnector. It returns 0 if the SmartConnector is running and accessible, and returns 1 if it is not.

agentup

Applies to	SmartConnectors	
Syntax	<code>agentup</code>	
Parameters	None	
Example	<code>arcsight agentup</code>	

aggregatorthreaddump

This command applies to ESM in distributed mode. Run this command on the node where the aggregator is configured.

The command runs a script to dump current threads from a specified aggregator instance. The threads go into `/opt/arcsight/var/logs/aggregator<instanceid>/aggregator.std.log`.

aggregatorthreaddump

Applies to	aggregator	
Syntax	<code>aggregatorthreaddump</code>	
Parameters	<code><aggregator instanceid></code>	
Examples	To run: <code>bin/arcsight aggregatorthreaddump aggregator1</code>	

arcdt

This command allows you to run diagnostic utilities such as session wait times, and thread dumps about your system, which can help Customer Support analyze performance issues on your components.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

arcdt

Applies to	Manager
Syntax	<code>arcdt diagnostic_utility utility_Parameters</code>
Parameters	<code>diagnostic_utility</code> Utilities you can run are: <code>runsql</code> —Run SQL commands contained in a file that is specified as a parameter of this command. Required Parameter: <code>-f <sqlfile></code> —The file containing the sql statements to be executed. Optional Parameters: <code>-fmt <format></code> —The format the output should be displayed in (where relevant), choices are html or text <code>-o <outputfile></code> —File name to save output to. 0 <code>-rc <row_count></code> —The number of rows to be shown as a result of a select. (10000)

arcdt, continued

	<p>-se <sessionEnd>— if type is EndTime or mrt, value is like yyyy-MM-dd-HH-mm-ss-SSS-zzz; if type is EventId, value is a positive integer indicating the end of eventId. (2011-06-30-01-00-00-000-GMT)</p> <p>-sr <start_row> —The row number from which you want data to be shown (0)</p> <p>-ss <sessionStart> —if type is StartTime or mrt, value is like yyyy-MM-dd-HH-mm-ss-SSS-zzz; if type is EventId, value is a positive integer indicating the start of eventId. (2011-06-30-00-00-00-000-GMT)</p> <p>-t <terminator> —The character that separates SQL statements in the input file. (;)</p> <p>-type <type> —Session type for sql query: EndTime, mrt, or EventId (EndTime)</p> <p>-cmt — Flag indicating whether all inserts and updates should be committed before exiting.</p> <p>-sp — Flag specifying whether output should be saved to disk or not.</p> <p>Required Parameter:</p> <p>-sp — Flag specifying whether output should be saved to disk or not.</p> <p>Optional Parameters:</p> <p>-c <count> — The number of times we want to query the various session tables. (5)</p> <p>-f <frequency> — The time interval (in seconds) between queries to the session tables. (20)</p>
	<p>-fmt <format> — The format the output should be displayed in (where relevant), choices are: html/text (text)</p> <p>-o <outputfile> — File name to save output to. O</p>

arcdt, continued

		<p>thread-dumps—Obtain thread dumps from the Manager. Optional parameters which can be specified</p> <p>-c <count>— The number of thread dumps to request. (3)</p> <p>-f <frequency> —The interval in SECONDS between each thread dump request. (10)</p> <p>-od <outputdir>— The output directory into which the requested thread dumps have to be placed. 0</p>
	<p>help</p> <p>help commands</p> <p>help <command></p>	<p>Use these help Parameters (no dash) to see the Parameters, a list of commands, or help for a specific command.</p>
Examples	<p>To find out the number of cases in your database:</p> <ol style="list-style-type: none"> 1. Create a file called <code>sample.txt</code> in <code><ARCSIGHT_HOME>/temp</code> on the Manager with this SQL command: <pre>select count(*) from arc_resource where resource_type=7;</pre> 2. Run this command in <code><ARCSIGHT_HOME>/bin</code>: <pre>arcsight arcdt runsql -f temp/sample.txt</pre> 	

If not done correctly, you might get no result querying the `ArcSight.events` table from `arcdt`. For example, to run SQL to query events for a specific time period, follow the steps below:

1. Create a file such as `1.sql` in `/tmp/` containing this SQL:

```
"select * from arcsight.events where arc_deviceHostName = 'host_name'
limit 2;"
```

2. Run `arcdt` and pass the created SQL file as parameter, and also specify the time period to examine.

```
./arcsight arcdt runsql -f /tmp/1.sql -type EndTime -ss <start time> -se
<end time>
```

The result will be empty if there are no events in the specified time period.

archive

This command imports or exports resources (users, rules, and so on) to or from one or more XML files. Generally, there is no need to use this command. The Packages feature in the ArcSight Console is more robust and easier to use for managing resources.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

archive

Description		
Applies to	Manager, Console	
Syntax	archive -f <archivefile> [Parameters]	
Required Parameter	-f <archivefile>	The input (import) or the output (export) file specification. File name paths can be absolute or relative. Relative paths are relative to <ARCSIGHT_HOME>, not the current directory.
Optional Parameters	-action <action>	Possible actions include: diff, export, i18nsync, import, list, merge, sort, and upgrade. Default: export.
	-all	Export all resources in the system (not including events).
	-autorepair	Check ARL for expressions that operate directly on resource URI's.
	-base <basefile>	The basefile when creating a migration archive. The new archive file is specified with -source (the result file is specified with -f).
	-config <file>	Configuration file to use. Default: config/server.defaults.properties
	-conflict <conflictpolicy>	The policy to use for conflicts resolution. Possible policies are: default: Prompts user to resolve import conflicts. force: Conflicts are resolved by the new overwriting the old. overwrite: Merges resources, but does not perform any union of relationships.
	-exportaction <exportaction>	The action to assign to each resource object exported. Export actions are: insert: Insert the new resource if it doesn't exist (this is the default). update: Update a resource if it exists. remove: Remove a resource if it exists.

archive, continued

	<code>-format <fmt></code>	<p>Specifies the format of the archive. If you specify nothing, the default is default.</p> <p>default: Prompts user to resolve import conflicts.</p> <p>preferarchive: if there is a conflict, it prefers the information that is coming in over what is there.</p> <p>install: Use this for the first time.</p> <p>update: Merges the archive with the existing content.</p> <p>overwrite: Overwrites any existing content.</p>
	<code>-h</code>	Get help for this command.
	<code>-i</code>	(Synonym for <code>-action import</code> .)
	<code>-m <manager></code>	The Manager to communicate with.
	<code>-o</code>	Overwrite any existing files.
	<code>-p <password></code>	Password with which to log in to the Manager.
	<code>-param <archiveparamsfile></code>	The source file for parameters used for archiving. Any parameters in the named file can be overridden by command line values.
	<code>-pc <configfile></code>	Private configuration file to override <code>-config</code> . Default: <code>config/server.properties</code>
	<code>-pkcs11</code>	Use this option when authenticating with a PKCS#11 provider. For example, <code>arcsight archive -m <hostname> -pkcs11 -f <file path></code>
	<code>-port <port></code>	The port to use for Manager communication. Default: 8443
	<code>-q</code>	Quiet: do not output progress information while archiving
	<code>-source <sourcefile></code>	The source file. This is used for all commands that use the <code>-f</code> to specify an output file and use a separate file as the input.
	<code>-standalone</code>	Operate directly on the Database, not the Manager. Warning: Do not run archive in <code>-standalone</code> mode when the Manager is running; database corruption could result.
	<code>-u <username></code>	The user name to log in to the Manager
	<code>-uri <includeURIs></code>	<p>The URIs to export. No effect during import. All dependent resources are exported, as well—for example, all children of a group.</p> <p>Separate multiple URIs (such as <code>"/All Filters/Geographic/West Cost "</code>) with a space, or repeat the <code>-uri</code> switch</p>

archive, continued

	<code>-urichildren <includeURIchildren></code>	The URIs to export (there is no effect during import). All child resources of the specified resources are exported. A parent of a specified resource is only exported if the specified resource is dependent on it.
	<code>-xrefids</code>	Exclude reference IDs. This option determines whether to include reference IDs during export. This is intended only to keep changes to a minimum between exports. Do not use this option without a complete understanding of its implications.
	<code>-xtype <excludeTypes></code>	The types to exclude during export. No effect during import. Exclude types must be valid type names, such as Group, Asset, or ActiveChannel.
	<code>-xtyperef <excludeTypeRefs></code>	The types to exclude during export (there is no effect during import). This is the same as <code>-xtype</code> , except it also excludes all references of the given type. These must include only valid type names such as Group, Asset, and ActiveChannel.

archive, continued

	-xuri <excludeURIs>	The URIs to exclude during export. No effect during import. Resources for which all possible URIs are explicitly excluded are not exported. Resources which can still be reached by a URI that is not excluded are still exported.
	-xurichildren <excludeURIchildren>	The URIs to exclude during export (there is no effect during import). These exclusions are such that all URIs for the children objects must be included in the set before the object will be excluded. In other words, they can still be exported if they can be reached through any path that is not excluded.
Examples	<p>To import resources from an XML file (on a Unix host):</p> <pre>arcsight archive -action import -f /user/subdir/resfile.xml -u admin -m mgrName -p pwd</pre> <p>To export certain resources (the program displays available resources):</p> <pre>arcsight archive -f resfile.xml -u admin -m mgrName -p pwd</pre> <p>To export all resources to an XML file in quiet, batch mode:</p> <pre>arcsight archive -all -q -f resfile.xml -u admin -m mgrName -p password</pre> <p>To export a specific resource:</p> <pre>arcsight archive -uri "/All Filters/Geographic/West Coast" -f resfile.xml -u admin -m mgrName -p pwd</pre> <p>Manual import (program prompts for password):</p> <pre>arcsight archive -i -format preferarchive -f resfile.xml -u admin -m mgrName</pre> <p>Scheduled or batch importing:</p> <pre>arcsight archive -i -q -format preferarchive -f resfile.xml -u admin -m mgrName -p password</pre> <p>Scheduled or batch exporting:</p> <pre>arcsight archive -f resfile.xml -u admin -m mgrName -p password -uri "/All Filters/Geographic/East Coast" -uri "/All Filters/Geographic/South"</pre>	

Make sure that the archive tool client can trust the Manager's SSL certificate. See "[SSL Authentication](#)" on page 75 for information on managing certificates.

From the <ARCSIGHT_HOME>/bin/directory, you can enter the command, `arcsight archive -h` to get help.

Archive Command Details

Note: Ordinarily, you should use the packages feature to archive and import resources. For more information about packages and how to use them, see the "Managing Packages" topic in ArcSight

Console Online Help. Also, see the `packages` command.

You can use the `archive` command line tool to import and export resources. It is useful for managing configuration information, for example, importing asset information collected from throughout your enterprise. You can also use this tool to archive resources so you can restore it after installing new versions of this system.

The `archive` command automatically creates the archive files you specify, saving resource objects in XML format. This documentation does not provide details on the structure of archive files and the XML schema used to store resource objects for re-import into the system. Generally it is easier to use packages.

This command displays a resource in the archive menu list of resources only if the user running the utility has top-level access to the resource. Access is different for each mode.

Remote Mode

In remote mode, you can import or export from either a Manager or ArcSight Console installation and can perform archive operations while the Manager is running.

```
arcsight archive -u Username -m Manager [-p Password] -f Filename  
[-i | -sort] [-q] ...
```

Caution: The `cacerts` file on the Manager host must trust the Manager's certificate. You may have to update `cacerts` if you are using demo certificates by running:

```
arcsight tempca -ac
```

You do not need to run the above command if you run the `archive` command from the Console.

When you run the archive utility in the remote mode, it runs as the user specified in the command line. However, even users with the highest privilege level (administrator) do not have top level access to, for example, the user resource (All Users). Thus, the User resource does not show up in the list of resources. You can export users with the `-uri` option, but if you want to use the `-u` option, use the Standalone mode.

To export user resources, you can use the `-uri` option and specify a user resource to which you have direct access. For example:

```
arcsight archive -u <username> -m <manager_hostname> -format exportuser -f  
exportusers.xml -uri "/All Users/Administrators/John
```

Standalone Mode

In standalone mode, from the computer where the Manager is installed, you can connect directly to the database to import or export resource information, however, the Manager must be shut down before you perform archive operations.

Caution: Do not run the archive tool in standalone mode against a database currently in use by a Manager as it is possible to corrupt the database.

The basic syntax for the archive command in standalone mode is the following:

```
arcsight archive -standalone -f Filename [-i | -sort] [-q] ...
```

Note: Both remote and standalone archive commands support the same optional arguments.

Note that the standalone mode only works from the archive command found in the Manager installation, and does not work remotely. For example:

```
arcsight archive -standalone -format exportuser -f exportusers.xml
```

Exporting Resources to an Archive

1. Make sure the archive tool client can trust the Manager's SSL certificate. Refer to "[SSL Authentication](#)" on page 75 for information on managing certificates.

From the <ARCSIGHT_HOME>/bin directory, you can enter the command, `arcsight archive -h` to get help.

2. From the <ARCSIGHT_HOME>/bin directory, enter the `arcsight archive` command along with any parameters you want to specify.

This command logs into the Manager then displays a list of Resources available for archiving.

Note: If the Manager is running, you must specify archive commands in remote mode, entering your user name, password, and Manager name to connect to the Manager. To run the archive command in standalone mode, accessing resources directly from the ArcSight Database, enter `-standalone` rather than `-u <username> -p <password> -m <manager>`.

3. Enter the number of the resource type to archive.

The archive command displays a list of options that let you choose which resource or group within the resource type that you want to archive.

4. Choose the resource or group to archive.

After making your selection, you are prompted whether you want to add more resources to the archive.

5. You can continue adding additional resources to the archive list. When you've finished, answer no to the prompt

```
Would you like to add more values to the archive? (Y/N)
```

After it is finished writing the archive file, you are returned to the command prompt.

Importing Resources from an Archive

1. Make sure the archive tool client can trust the Manager's SSL certificate. Refer to "[SSL Authentication](#)" on page 75, for information on managing certificates.

2. From the <ARCSIGHT_HOME>/bin directory, type `arcsight archive` with its parameters and attach `-i` for import.

Note: If the Manager is running, you must specify archive commands in remote mode, entering your user name, password, and Manager name to connect to the Manager. To run the archive command in standalone mode, accessing resources directly from the database, enter `-standalone` rather than `-u <username> -p <password> -m <manager>`.

3. Select one of the listed options if there is a conflict.

Importing is complete when the screen displays `Import Complete`.

Syntax for Performing Common Archive Tasks

For manual importing, run this command in <ARCSIGHT_HOME>/bin:

```
arcsight archive -i -format preferarchive -f <file name>  
-u <user> -m <manager hostname>
```

Before performing the import operation, you are prompted for a password to log in to the Manager.

For exporting:

```
arcsight archive -f <file name>  
-u <user> -m <manager hostname>
```

Before performing the import operation, you are prompted for a password to log in to the Manager and use a series of text menus to pick which Resources are archived.

For scheduled/batch importing:

```
arcsight archive -i -q -format preferarchive  
-f <file name> -u <user>  
-p <password> -m <manager hostname>
```

For scheduled/batch exporting:

```
arcsight archive -u admin -p password -m arcsightserver  
-f somefile.xml -uri "/All Filters/Geographic Zones/West Coast"  
-uri "/All Filters/Geographic Zones/East Coast"
```

Note: You can specify multiple URI resources with the URI parameter keyword by separating each resource with a space character, or you can repeat the URI keyword with each resource entry.

archivefilter

This command changes the contents of the archive. The archivefilter command takes a source archive xml file as input, applies the filter specified and writes the output to the target file.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

archivefilter

Applies to	Manager	
Syntax	archivefilter -source <sourcefile> -f <archivefile> [Parameters]	
Parameters	-a <action>	Action to perform can be insert, or remove}. if you specify nothing, no action is performed.
	-e <element_list>	Elements to process (Default: "*" which denotes all elements)
	-extid <regex>	Regular expression to represent all of the external IDs to include. This is the external ID of the archival object. (Default: none)
	-f <file>	Target file (required). If a file with an identical name already exists in the location where you want to create your target file, the existing file is overwritten. If you would like to receive a prompt before this file gets overwritten, use the -o option
	-o	Overwrite existing target file without prompting (Default: false)
	-relateduri <regex>	Regular expression to get all of the URIs found in references to include. This checks all attribute lists that have references and if any of them have a URI that matches any of the expressions, that object is included
	-source <file>	Source file (required)
	-uri <regex>	Regular expression to represent all of the URIs to include. This is the URI of the archival object
	-xe <element_list>	Elements to exclude
	-xextid <regex>	Regular expression to represent all of the external IDs to exclude
	-xgroup <types>	The group types to exclude.

archivefilter, continued

	-xuri <regex>	Regular expression to represent all of the URIs to exclude
	-h	Help
Examples	<p>To include any resources, for example all Active Channels, whose attributes contain the URI specified by the <code>-relateduri</code> option:</p> <pre>arcsight archivefilter -source allchannels.xml -f t0.xml -relateduri "/All Active Channels/ArcSight Administration/"</pre> <p>To include any resources whose parent URI matches the URI specified by the <code>-uri</code> option:</p> <pre>arcsight archivefilter -source allchannels.xml -f t0.xml -uri "/All Active Channels/ArcSight Administration/*.*"</pre> <p>To exclude resources whose parent URI matches the URI specified by the <code>-xuri</code> option:</p> <pre>arcsight archivefilter -source allchannels.xml -f t0.xml -xuri "/All Active Channels/*.*"</pre> <p>To include all the resources that contain either URIs specified by the two <code>-relateduri</code> Parameters:</p> <pre>arcsight archivefilter -source allchannelsFilter.xml -f t0.xml -relateduri "/All Active Channels/ArcSight Administration/" -relateduri .*Monitor.*</pre>	

bleep

This command is an unsupported stress test to supply a Manager with security events from replay files (see `replayfilegen`). Replay files containing more than 30,000 events require a lot of memory on the bleep host.

Do not run `bleep` on the Manager host. Install the Manager on the bleep host and cancel the configuration wizard when it asks for the Manager's host name.

Run `arcsight tempca -ac` on the bleep host if the Manager under test is using a demo certificate.

Create the file `config/bleep.properties` using the descriptions in `bleep.defaults.properties`.

bleep

Applies to	Manager	
Syntax	<code>bleep [-c <file>] [-D <key>=<value> [<key>=<value>...]]</code>	
Parameters	<code>-c file</code>	Alternate configuration file (default: <code>config/bleep.properties</code>)
	<code>-D <key>=<value></code>	Override definition of configuration properties
	<code>-m <n></code>	Maximum number of events to send. (Default: -1)
	<code>-n <host></code>	Manager host name
	<code>-p <password></code>	Manager password

bleep, continued

	-t <port>	Manager port (Default: 8443)
	-u <username>	Manager user name
	-h	Help
Examples	To run: <code>arcsight bleep</code>	

bleepsetup

This command runs a wizard to create the `bleep.properties` file.

bleepsetup

Applies to	Manager	
Syntax	<code>bleepsetup</code>	
Parameters	-f	Properties file (silent mode)
	-i	Mode: {swing, console, recorderui, silent} Default: swing
	-g	Generate sample properties file
Examples	To run: <code>arcsight bleepsetup</code>	

changepassword

This command changes obfuscated passwords in properties files. The utility prompts for the new password at the command line.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

changepassword

Description	This command changes obfuscated passwords in properties files. The utility prompts for the new password at the command line.	
Applies to	Manager	
Syntax	<code>changepassword -f <file> -p <property_name></code>	

changepassword, continued

Parameters	-f <file>	Properties file, such as config/server.properties
	-p <property_name>	Password property to change, such as server.privatekey.password
Examples	To run: arcsight changepassword	

checklist

This command is the ArcSight Environment Check. Used internally by the installer to see if you have the correct JRE and a supported operating system.

This can run from the Manager.

certadmin

This command only applies to ESM in distributed mode. Run this command in the persistor node of the cluster.

The command launches the tool that shows all certificates based on status: submitted, approved, or revoked. Use this command to approve or revoke SSL certificates used by the aggregator, correlator, and persistor services. It uses an internal certificate administrator user that is configured in the First Boot Wizard when you are starting a cluster.

On the persistor node only, you can run this command on the CLI or use the -i option to launch the GUI.

certadmin

Description	Tool to list all SSL certificates and to change status of these certificates. Also used to change or recover the certadmin password.	
Applies to	aggregator, correlator, and persistor services, in their respective cluster where those services are running.	
Syntax	certadmin -[parameter]	
Parameters	-approve -<id>	Approves a single certificate of the given ID, which then changes the status from Submitted to Approved.
	-approveall	Approves all certificates currently in the Submitted state.
	-changepassword	Changes the password for the certificate administrator login. You must know the existing password before you can change it. Run this command on the persistor node. Note: This is different from the Manager-level changepassword command that applies to obfuscated passwords in ESM properties files.

certadmin, continued

	-count	<p>Displays the number of certificates per status in the repository. For example:</p> <pre>Submitted: 2 Approved: 0 Revoked: 0</pre>
	-help	<p>Displays all the possible commands and options with short descriptions for the certadmin tool.</p> <p>Note: The -recoverpassword option is Contact Tech Support and request the password recovery output for you.</p>
	-init	<p>Initializes the certification administration repository. Use this only when converting from compact to distributed mode, or when upgrading from a previous ESM release (assumed to be in compact mode) to ESM in distributed mode.</p> <p>Note: If ESM is installed in distributed mode from the start, the repository is automatically initialized.</p>
	-list	<p>Displays certificates in the repository. The output shows entries in short form which includes the ID and the alias (a user-friendly name for the certificate), according to status.</p>
	-list <status>	<p>Where <status> can be submitted, approved, or revoked. This limits the list to certificates with the specified status.</p>
	-list -id <certificateid>	<p>Where <certificateid> is the certificate's unique identifier for the repository.</p> <p>You can use -id after <status> to further limit the resulting list to the status of a specific certificate with the matching ID.</p>
	<p>-list -v</p> <p>or</p> <p>-list -<subargument> -v</p>	<p>Use the -v option to display all details of all entries;</p> <p>Or</p> <p>Use <i>after</i> another -list subargument to display all details of the specified entries.</p>
	-recoverpassword	<p>Use this to generate an output, then contact Tech Support for help with password recovery. Provide the generated output along with your request.</p>

certadmin, continued

	-revert -<id>	Applies to certificates that are in either Approved or Revoked state. This changes the status of the specified ID to Submitted.
	-revoke -<id>	Applies to certificates that are in either Submitted state. This changes the status of the specified ID to Revoked.
Examples	To run: <pre> arcsight certadmin -count arcsight certadmin -list arcsight certadmin -list approved arcsight certadmin -list approved -id <somecertificateID> arcsight certadmin -list revoked -v arcsight certadmin -changepassword arcsight certadmin -recoverpassword </pre>	

console

This command runs the ArcSight Console.

console

Applies to	Console	
Syntax	console [-i] [parameters]	
Parameters	-ast <file>	
	-debug	
	-i	
	-imageeditor	
	-laf <style>	Look and feel style: metal, plastic, plastic3d. The default style is plastic3d.
	-p <password>	Password
	-port	Port to connect to Manager (default: 8443)
	-redirect	
	-relogin	
	-server	Manager host name
	-slideshow	
	-timezone <tz>	Timezone: such as "GMT" or "GMT-8:00"

console, continued

	-trace	Log all Manager calls
	-u <name>	User name
Examples	To run the console: ArcSight Console	

consolesetup

This command runs the ArcSight Console Configuration Wizard to reconfigure an existing installation.

consolesetup

Applies to	Console	
Syntax	consolesetup [-i <mode>] [-f <file>] [-g]	
Parameters	-i <mode>	Mode: console, silent, recorderui, swing
	-f <file>	Log file name (properties file in -i silent mode)
	-g	Generate sample properties file for -i silent mode
Examples	To change some console configuration parameters: ArcSight Consolesetup	

correlationsetup

This command applies to ESM in distributed mode. It allows you to setup correlation and aggregation services in a distributed correlation environment. This command is described in the topic "[Configuring Services in a Distributed Correlation Cluster](#)" on page 53, "Configuring Correlators and Aggregators".

correlatorthreaddump

This command applies to ESM in distributed mode. Run this command on the node where the correlator is configured.

The command runs a script to dump current threads from a specified correlator instance. The threads go into /opt/arcsight/var/logs/correlator<instanceid>/correlator.std.log.

correlatorthreaddump

Applies to	correlator
Syntax	correlatorthreaddump

correlatorthreaddump, continued

Parameters	<correlatorinstanceid>
Examples	To run: bin/arcsight correlatorthreaddump correlator1

dcachesetup

This command applies to ESM in distributed mode. It allows you to setup distributed cache services in a distributed correlation environment. This command is described in the topic "[Configuring Services in a Distributed Correlation Cluster](#)" on page 53, "Configuring a Distributed Cache".

downloadcertificate

This command runs a wizard for importing certificates from another server.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

This command is primarily for downloading a certificate from one ESM server to a Console to facilitate communications between them. When you run this command it prompts you for:

- Host name (or IP address) of the server to download from
- Port number
- Path to the keystore to which to download the certificate
This is typically <ARCSIGHT_HOME>/jre/lib/security/cacerts

For FIPS mode, It needs to go to
 <ARCSIGHT_HOME>/config/jetty/keystore.bcfks.

- Keystore password
- A new alias (name) for the certificate you are downloading

downloadcertificate

Applies to	Manager
Syntax	downloadcertificate
Parameters	-i <mode> Mode: console, silent, recorderui, swing

downloadcertificate, continued

	-f <file>	Log file name (properties file in -i silent mode)
	-g	Generate sample properties file for -i silent mode
Examples	To run: <code>arcsight downloadcertificate</code>	

exceptions

This command allows you to search for logged exceptions in ArcSight log files.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

exceptions

Applies to	Manager, Console, SmartConnectors	
Syntax	<code>exceptions logfile_list [parameters] [path to the log file]</code> The path to the log file must be specified relative to the current working directory.	
Parameters	-x	Exclude exceptions/errors that contain the given string. Use @filename to load a list from a file.
	-i	Include exceptions/errors that contain the given string. Use @filename to load a list from a file.
	-r	Exclude errors.
	-q	Quiet mode. Does not display exceptions/errors on the screen.
	-e	Send exceptions/errors to the given email address.
	-s	Use a non-default SMTP server. Default is <code>bynari.sv.arcsight.com</code> .
	-u	Specify a mail subject line addition, that is, details in the log.
	-n	Group exceptions for readability.
	-l	Show only exceptions that have no explanation.
	-p	Suppress the explanations for the exceptions.
Example	To run: <code>arcsight exceptions /opt/home/arcsight/manager/logs/default/server.log*</code>	

export_system_tables

This command exports your database tables. On completion, the command generates two files: a temporary parameter file and the actual database dump file, which is placed in <ARCSIGHT_HOME>/tmp.

For best results stop the Manager before running this command.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

export_system_tables

Applies to	Manager	
Syntax	export_system_tables <username> <password> <DBname> [-s]	
Parameters	<username>	CORR-Engine username
	<password>	Password for the CORR-Engine user
	<DBname>	Name of the CORR-Engine from which you are exporting the system tables
	-s	Include session list tables
Examples	<p>To run:</p> <pre>/etc/init.d/arc_sight_services stop manager</pre> <pre>arc_sight export_system_tables <DB username> <password> <DBname></pre> <p>Trend resources are exported, but not trend data from running them. After you import, re-run the trends to generate new data.</p> <p>When you are done.</p> <p>Stop the Manager:</p> <pre>/etc/init.d/arc_sight_services stop manager</pre> <p>Start all services:</p> <pre>/etc/init.d/arc_sight_services start all</pre>	

flexagentwizard

This command generates simple ArcSight FlexConnectors.

flexagentwizard

Applies to	SmartConnectors
Syntax	flexagentwizard

flexagentwizard, continued

Parameters	None
Examples	To run: arcsight flexagentwizard

groupconflictingassets

This command groups asset resources with common attribute values (the Group Conflicting Attribute Assets Tool). Assets can have conflicting IP addresses or host names within a zone.

groupconflictingassets

Applies to	Manager	
Syntax	groupconflictingassets	
Parameters	-c	Clean (delete the contents of) the group to receive links to assets before starting. (Default: false)
	-m <host>	Manager host name or address
	-o <name>	Name for group to receive links to assets which have conflicting attributes. (Default: "CONFLICTING ASSETS")
	-p <password>	Password
	-port <n>	Port to connect to Manager (Default: 8443)
	-prot <string>	Protocol; only use https (Default: https)
	-u <name>	User name
	-h	Help
Examples	To run: arcsight groupconflictingassets	

import_system_tables

This command imports database tables. The file you import from must be the one that export_system_tables utility created. This utility looks for the dump file you specify in <ARCSIGHT_HOME>/tmp/.

For best results stop the Manager before running this command.

import_system_tables

Applies to	Manager
Syntax	import_system_tables <arcsight_user> <password> <DBname> <dump_file_name>

import_system_tables, continued

Parameters	<arcsight_user>	The database username, as set when you ran the first-boot wizard.
	<password>	Password for the database, as set when you ran the first-boot wizard.
	<DBname>	This is the name of the CORR-Engine, and it is always arcsight.
	<dump_file_name>	Use arcsight_dump_system_tables.sql, which is the name the system gave this dump file when you exported it. If you specify no path, the file is located in <ARCSIGHT_HOME>/tmp/. To specify a different path, use an absolute path. Do not specify a relative path.
Examples	<pre>/etc/init.d/arcsight_services stop manager</pre> <pre>arcsight import_system_tables dbuser mxyzptlk arcsight arcsight_dump_system_tables.sql</pre> <p>Note: Trend resources are exported, but not trend data from running them. After you import, re-run the trends to generate new data.</p> <p>When you are done.</p> <p>Stop the Manager:</p> <pre>/etc/init.d/arcsight_services stop manager</pre> <p>Start all services:</p> <pre>/etc/init.d/arcsight_services start all</pre>	

keytool

This command runs the Java Runtime Environment keytool utility to manage key stores.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

keytool

Applies to	Manager, Console, SmartConnectors
Syntax	keytool -store <name>

keytool, continued

Parameters	-store <name>	<p>(Required) The specific store can be managerkeys, managercerts, clientkeys, clientcerts, ldapkeys, or ldapcerts.</p> <p>(original parameters) All parameters supported by the JRE keytool utility are passed along. Use arcsight keytool</p>
	-help	For a list of parameters and arguments. Also, use the command keytool without arguments or the arcsight prefix for more-detailed help.
Examples	<p>To view Console key store:</p> <pre>arcsight keytool -store clientkeys</pre> <p>The parameters for this command are actually sub-commands and many of them have their own sub-commands or parameters. To see all the possible sub-commands use -help followed by the sub-command for which you want to see all sub sub commands or parameters.</p> <p>For example, if you have a keystore called "managercerts," you could type keytool -help -store managercerts to see a list of all 16 additional subcommands. Then you could run:</p> <pre>keytool -help -store managercerts -list</pre> <p>to get additional help with the sub sub-command -list.</p>	

keytoolgui

This command runs a graphical user interface command for manipulating key stores and certificates. It is recommended that you use bin/arcsight keytool.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators, as well as on the persistor node.

Note: Using keytoolgui requires that the X Window System be installed on your system. The X Window System is not present on ESM on an appliance. Also, keytoolgui is not supported on FIPS.

keytoolgui

Applies to	Manager, Console	
Syntax	keytoolgui	
Parameters	None	
Examples	<p>To run:</p> <pre>arcsight keytoolgui</pre>	

kickbleep

This command runs a simple, standardized test using the bleep utility..

kickbleep

Applies to	Manager	
Syntax	kickbleep	
Parameters	-f	Properties file (silent mode)
	-g	Generate sample properties file
	-i	Mode: {swing, console, recorderui, silent} Default: swing
Examples	To run: arcsight kickbleep	

listsubjectdns

This command displays subject distinguished names (DN) from a key store.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

listsubjectdns

Applies to	Manager, SmartConnectors	
Syntax	listsubjectdns	
Parameters	-store name	Specific store { managerkeys managercerts clientkeys clientcerts ldapkeys ldapcerts} (Default: clientkeys.)
Examples	To list Distinguished Names in the Console key store: arcsight listsubjectdns	

logfu

This command runs a graphical tool for analyzing log files. It generates an HTML report (logfu.html) and, in SmartConnector mode, includes a graphic view of time-based log data. Logfu pinpoints the time of the problem and often the cause as well.

Note: Using logfu requires that the X Window system be installed on your system. The X Window system is not present on ESM on an appliance.

Running logfu

1. Open a command or shell window in `<ARCSIGHT_HOME>/logs/default`. This refers to the logs directory under the ArcSight installation directory. Note that `logfu` requires an X Windows server on Unix platforms.
2. It is recommended that you increase the log size before executing the `logfu` command by running:

```
export ARCSIGHT_JVM_OPTIONS=" -Xms1024m -Xmx1024m -  
Djava.security.policy=$ARCSIGHT_HOME/config/agent/agent.policy"
```
3. Run `logfu` for the type of log to analyze:
For Manager logs, run: `../../bin/arcsight logfu -m`
For SmartConnector logs, run: `../../bin/arcsight agent logfu -a`
4. Right-click in the grid and select **Show Plot/Event Window** from the context menu.
5. Check at least one attribute (such as **Events Processed**) to be displayed.

Working with logfu

The initial `logfu` display is an empty grid; loading large log files can take a few minutes (a 100 MB log might take 5 or 10 minutes). After log files are scanned, their information is cached (in files named `data.*`), which makes subsequent log file loading faster. If something about the log changes, however, you must manually delete the cache files to force `logfu` to reprocess the log.

Right-click the grid and choose **Show Plot/Event Window** from the context menu. Select what to show on the grid from the **Plot/Event Window** that appears.

The tree of possible items to display is divided into **Plot** (attributes that can be plotted over time, like events per second) and **Event** (one-time events, like exceptions, which are shown as vertical lines). Check items to display.

Because SmartConnectors can talk to multiple Managers and each can be configured to use multiple threads for events, the **Plot** hierarchy includes nodes for each SmartConnector and each Manager. Within the SmartConnector, threads are named E0, E1, and so on. Each SmartConnector has one heartbeat thread (H0) as well. Different types of SmartConnector (firewall log SmartConnector, IDS SNMP SmartConnector, and so on) have different attributes to be plotted.

The interactive Chart uses sliders to change the view. Hovering over a data point displays detailed information. There are two horizontal sliders; one at the top of the grid, one underneath. The slider at the top indicates the time scale. Drag it to the right to zoom in, or widen the distance between time intervals (vertical lines). The slider at the bottom changes the interval between lines—anywhere from 1 second at the far left to 1 day at the far right. The time shown in the grid is listed below the bottom slider:

Showing YY/MM/DD HH:MM:SS – YY/MM/DD HH:MM:SS (Interval= X)

Click anywhere in the grid area and drag a green rectangle to zoom in, changing both the vertical and horizontal scales. Hold the `Ctrl` key as you drag to pan the window in the vertical or horizontal direction, and hold both the `Shift` and `Ctrl` keys as you drag to constrain the pan to either vertical or horizontal movement. When you are panning, only sampled data is shown, but when you stop moving, the complete data fills in. You can change this by unchecking **Enable reduced data point rendering** by

right-clicking and selecting **Preferences**. You can change the rendering back to the default behavior by right-clicking and selecting **Enable fast rendering**.

For each attribute being plotted, a colored, vertical slider appears on the right of the grid. This slider adjusts the vertical (value) scale of the attribute plotted.

By default, data points are connected by lines. When data is missing, these lines can be misleading. To turn off lines, uncheck **Connect dots** by right-clicking and selecting **Preferences**.

After you have specified attributes of interest, scaled the values, centered and zoomed the display to show exactly the information of concern, right-click and select **Save as JPG** to create a snapshot of the grid display that you can print or email. The size of the output image is the same as the grid window, so maximize the window to create a detailed snapshot, or reduce the window size to create a thumbnail.

To return to a previous data view, right-click and select **Bring to Front, Send to Back, Undo Zoom, or Zoom out**, depending on context. Use **Auto Scale** to fit data into the grid. **Go to** allows you to display the specific log file line that corresponds to a data point. **Reset** clears all checked attributes and empties the grid.

logfu Analysis Example - Peak Event Volume

In this example, a SmartConnector is sending 10 events per second (EPS) to the Manager, but is later sending 100, then 500, then 1000 EPS before dropping back down to 10. Logfu lets you plot the SmartConnector's EPS over time; in this case the result is a peak in event volume.

When you plot the Manager's receipt of these events, you might see that it keeps up with the SmartConnector until 450 EPS or so. You notice that the Manager continues consuming 450 EPS even as the SmartConnector's EPS falls off. This is because the Manager is consuming events that were automatically cached.

By plotting the estimated cache size, you can see that the SmartConnector experienced a peak event volume and the cache stepped in to make sure that the Manager did not lose events, even when it could not keep up with the SmartConnector.

Use the vertical sliders on the right to give each attribute a different scale to keep the peak EPS from the SmartConnector from obscuring the plot of the Manager's EPS.

logfu Analysis Example - SmartConnector Down

In this example, a Check Point SmartConnector that was down for almost seven days. Logfu plotted the event stream from the SmartConnector and it was flat during the seven days, pinpointing the outage as well as the time that the event flow resumed. By overlaying Check Point Log Rotation events on the grid, it became clear that the event outage started with a Log Rotation and that event flow resumed coincident with a Log Rotation.

Further investigation revealed what had happened: the first Check Point Log Rotation failed due to lack of disk space, which shut down event flow from the device. When the disk space problem had been resolved, the customer completed the Log Rotation and event flow resumed.

If the Manager suddenly stops seeing events from a SmartConnector, `logfu` can help determine whether the SmartConnector is getting events from the device. Another common complaint is that not all events are getting through. `logfu` has a plot attribute called `ZFilter` (zone filter) that indicates how many raw device events are being filtered by the SmartConnector. Events processed (the number of events sent by the device) minus `ZFilter` should equal **Sent** (the number of events sent to the Manager).

logfu

Applies to	Manager (See also agent <code>logfu</code> .)	
Syntax	<code>logfu {-a -m} [parameters]</code>	
Parameters	<code>-a</code>	Analyze SmartConnector logs
	<code>-f <timestamp></code>	From time
	<code>-i</code>	Display information about the log files to be analyzed
	<code>-l <timespec></code>	Analyze only the specified time (Format: <code><time>{smhd}</code>) Examples: 1d = one day, 4h = four hours
	<code>-m</code>	Analyze Manager logs
	<code>-mempercent <n></code>	Percent of memory messages to consider for plotting. (Default: 100)
	<code>-noex</code>	Skip exception processing
	<code>-noplot</code>	Skip the plotting
	<code>-t <timestamp></code>	To time
	Examples	To analyze Manager logs for the last 12 hours: <code>arcsight logfu -m -l 12h</code>

managerinventory

This command displays configuration information about the installed Manager.

managerinventory

Applies to	Manager	
Syntax	<code>managerinventory</code>	
Parameters	<code>-a <filter></code>	Attribute filter. Default: <code>""</code>
	<code>-f <filter></code>	Object filter. Default: <code>"Arcsight:*</code>
	<code>-m <host></code>	Manager host name or address
	<code>-o <op></code>	Operation {list, show}. Default is list
	<code>-out <file></code>	Output filename. Default is stdout
	<code>-p <password></code>	Password

managerinventory, continued

	-port <n>	Port to connect to Manager (Default: 8443)
	-prot <string>	Protocol; only use https (Default: https)
	-u <name>	User name
	-append	Append to the output file rather than create a new one and overwrite any existing one
	-sanitize	Sanitize the IP addresses and host names
	-h	Help
Examples	To run: arcsight managerinventory	

manager-reload-config

This command loads the `server.defaults.properties` and `server.properties` files on the Manager.

manager-reload-config

Applies to	Manager	
Syntax	<code>arcsight manager-reload-config</code>	
Parameters	-diff	Displays the difference between the properties the Manager is currently using and the properties that this command loads
	-as	Forces the command to load properties that can be changed without stopping and starting the Manager. The properties that require a Manager restart are updated in the <code>server.properties</code> but are not effective until the Manager is stopped and all services are started.
	-t <seconds>	Number of seconds after which the <code>manager-reload-config</code> command stops trying to load the updated properties file on the Manager
Examples	To reload config: <code>arcsight manager-reload-config</code> To view the differences between the properties the Manager is currently using and the properties that this command loads: <code>arcsight manager-reload-config -diff</code>	

managersetup

This command allows you to configure the manager by launching the Manager Configuration Wizard. You can launch the wizard in console mode by using the `-i console` option while running the command in a terminal window. Run it without any option to launch the wizard in the graphical user

interface mode when you have the X Window system installed and wish to use it. For more information about using the wizard, see ["Running the Manager Configuration Wizard" on page 112](#). The options are all optional.

Note that using the X Window system (to run the Manager Configuration Wizard) is not preferred, but if you have it installed and want to use it, you do not have to use the `-i console` option. The X Window system is not present on ESM on an appliance.

If issues occur while running the Manager Configuration Wizard, this command logs troubleshooting information in a log file: `/opt/arcsight/var/logs/manager/default/serverwizard.log`.

Distributed Correlation Cluster Only: You can only run this command on a configured persistor node.

Important: When you run `managersetup`, you will see:

Do you want to run ESM in Compact or Distributed mode?

In this case, accept the default and keep moving through the wizard. You cannot change the ESM mode in the wizard after the initial installation of ESM. If you want to change ESM from compact to distributed mode, see the topic ["Converting Compact Mode to Distributed Correlation Mode"](#) in the *ESM Upgrade Guide* and follow that conversion process. Note that conversion from distributed correlation mode to compact mode is not supported.

managersetup

Applies to	Manager	
Syntax	<code>managersetup [options]</code>	
Parameters	<code>-i <mode></code>	<code>console</code> -- you answer configuration questions in a terminal window. Use no other options. This is the preferred mode of operation, and the only mode available for ESM on an appliance. Use the <code>-i console</code> mode if you get this error when you attempt to run in the Manager Configuration Wizard: <code>Could not initialize class sun.awt.X11GraphicsEnvironment</code> . <code>swing</code> -- You answer the same questions in a graphical user interface. Use no other options. <code>silent</code> -- Followed by the <code>-f</code> option, the configuration is read from a file that was created by the <code>recordui</code> mode or the <code>-g</code> option. Use no other options besides <code>-f</code> . <code>recordui</code> -- You provide a file path and name and then answer questions in GUI mode while configuring this system. Your configuration is recorded in the specified file for use with the <code>silent</code> mode on some other system. Use no other options. Blank (no <code>-i</code> option at all) means Swing mode.

managersetup, continued

	-f <file>	The name of the file to use when running in <code>-i silent</code> mode.
	-g	Generate sample properties for <code>-i silent</code> mode. The sample properties are sent to <code>stdout</code> , but you can redirect this output to a file. If you edit the file to provide your own configuration information, you can use it as the file in the <code>-f</code> option in <code>silent</code> mode. Use no other options.
Examples		To run: <code>arcsight managersetup -i console</code> (runs in console mode) <code>arcsight managersetup</code> (runs in GUI mode) <code>arcsight managersetup -g > /opt/mysetup.file</code> (generate sample to edit) <code>arcsight managersetup -i silent -f /opt/mysetup.file</code> (configures system from file)

managertreaddump

This command runs a script to dump the Manager's current threads. The threads go into `manager/logs/default/server.std.log`. Do not inadvertently add a space between `manager` and `treaddump`, doing so causes the Manager to restart. Specify this file when running `treaddumps`, which provides a convenient HTML file with links to all the thread dumps in a summary format.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

managertreaddump

Applies to	Manager
Syntax	<code>managertreaddump</code>
Parameters	None
Examples	To run: <code>arcsight managertreaddump</code>

managerup

This command gets the current state of the Manager. Returns 0 if the Manager is running and reachable. Returns 1 if it is not.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

managerup

Applies to	Manager
Syntax	managerup
Parameters	None
Examples	To check that the Manager is up, running, and accessible: arcsight managerup

mbussetup

This command applies to ESM in distributed mode. It allows you to setup message bus services in a distributed correlation environment. This command is described in the topic "[Configuring Services in a Distributed Correlation Cluster](#)" on page 53, "Configuring a Message Bus Control and Message Bus Data".

monitor

This command is used with the Network Management Systems.

monitor

Applies to	Manager
Syntax	monitor
Parameters	-a <filter> Attribute filter. Default: ""
	-append Append to output file instead of overwriting (Default: false)
	-f <filter> Object filter. Default: "Arcsight:*"
	-m <host> Manager host name or address
	-o <op> Operation {list, show}. Default is list
	-out <file> Output filename for management service information. Default is stdout
	-p <pwd> Password
	-sanitize Sanitize IP address and host names (Default: false)
	-u <name> User name
Examples	To run: arcsight monitor

netio

This command is a simple network throughput measurement utility.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

netio

Applies to	Manager	
Syntax	netio	
Parameters	-c	Client mode (Default: false)
	-n <host>	Host to connect to (Client mode only)
	-p <port>	Port (Default: 9999)
	-s	Server mode
Examples	To run: arcsight netio	

package

This command imports or exports resources (users, rules, and so on) to or from one or more XML files (.arb files).

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

Use this command instead of the archive command. Refer to the "Managing Packages" topic in the *ArcSight Console User's Guide* for information on performing these and other functions from the ArcSight Console.

package

Applies to	Manager, Database, Console	
Syntax	package -action <action-to-be-taken> -package <package URI> -f <package-file>	
Parameters	- action <action>	Creates a new package based upon one or more packages that you specify. The possible actions include bundle, convertarchives, export, import, install, uninstall. The default is export
	-config <file>	The primary configuration file to use. Default is config/server.defaults.properties
	-convertbaseuri <baseuri>	The base URI for packages that are converted from archives. This option is only used in conjunction with the -actionconvertarchives option
	-f <path>	The location of the package .arb bundle file. File name paths can be absolute or relative. Relative paths are relative to <ARCSIGHT_HOME>

package, continued

-m <manager>	The Manager to communicate with
-p <password>	The password with which to log in to the Manager. A password is not needed and not used in standalone mode, because the connection is made using the stored database account. Password is required otherwise.
-package <packagerefs>	The URI(s) of the package(s). This option is used in conjunction with <code>-action install</code> and <code>-action uninstall</code> in order to list which packages to operate upon
-pc <privateConfig>	This configuration file overrides the <code>server.defaults.properties</code> file. The default location is <code>config/server.properties</code>
-pkcs11	Use this option when authenticating with a PKCS#11 provider. For example, <code>arcsight package -m <hostname> -pkcs11 -f <file path></code>
-port <port>	The port to use for communication. The default port used is 8443
-source <sourcefile>	The source file. This is used in conjunction with the <code>-f</code> command which specifies an output file

package, continued

	-u <username>	The user name used for logging in to the Manager
	-standalone	Operate directly on the Database not the Manager
Examples	<p>To convert a previously archived package:</p> <pre>arcsight package -action convertarchives -convertbaseuri "/All Packages/Personal/Mypackage" -source sourcefile.xml -f packagebundle.arb</pre> <p>To install a package:</p> <pre>arcsight package -action install -package "/All Packages/Personal/Mypackage" -u username -p password -m managename</pre> <p>To uninstall a package:</p> <pre>arcsight package -action uninstall -package "/All Packages/Personal/Mypackage" -standalone -config /config/server.defaults.properties -pc /config/server.properties</pre> <p>To import a package through the Manager:</p> <pre>arcsight package -action import -f packagebundle.arb -u username -p password -m managename</pre> <p>To export a package:</p> <pre>arcsight package -action export -package "/All Packages/Personal/Mypackage" -f packagebundle.arb -u username -p password -m managename</pre> <p>To export multiple packages:</p> <pre>arcsight package -action export -package "/All Packages/Personal/PackageOne" -package "/All Packages/Personal/PackageTwo" -f packagebundle.arb -u username -p password -m managename</pre> <p>To export packages in a standalone mode (directly from the database) Make sure that the Manager is not running:</p> <pre>arcsight package -action export -package "/All Packages/Personal/Mypackage" -f packagebundle.arb -u username -p password -standalone -config server.default.properties -pc server.properties</pre> <p>To combine xml files from multiple packages into one package:</p> <pre>arcsight package -action bundle -f myPkgNew.arb -source chnpkg.xml -source filterpkg.xml -source rulepkg.xml</pre> <p>In the above example, chnpkg.xml, filterpkg.xml, and rulepkg.xml files are extracted from their respective packages and are bundled in one package bundle called myPkgNew.arb.</p>	

portinfo

This command runs a script used by the portinfo tool of the Console. Displays common port usage information for a given port.

portinfo

Applies to	Console	
Syntax	portinfo port	
Parameters	port	Port number
Examples	To run: arcsight portinfo	

reenableuser

This command re-enables a disabled user account.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

reenableuser

Applies to	Manager	
Syntax	reenableuser <username>	
Parameters	<username>	The name of the user resource to re-enable
Examples	To re-enable a disabled user: arcsight reenableruser <username>	

refcheck

This command is a resource reference checker.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

refcheck

Applies to	Manager	
Syntax	refcheck	
Parameters	None	
Examples	To run: arcsight refcheck	

regex

This command is a graphical tool for regex-based FlexConnectors.

regex

Applies to	SmartConnectors	
Syntax	regex	
Parameters	None	
Examples	To run: arcsight regex	

replayfilegen

This command runs a wizard for creating security event data files ("replay files") that can be run against a Manager for testing, analysis, or demonstration purposes.

Note: This is a client side command only and should be executed from the Console's ARCSIGHT_HOME/bin directory.

replayfilegen

Applies to	Console	
Syntax	replayfilegen -m mgr [parameters]	
Parameters	-f <file>	Log file name (properties file in -i silent mode)
	-g	Generate sample properties file for -i silent mode
	-i <mode>	Mode: console, silent, recorderui, swing
Examples	Run from the Console's <ARCSIGHT_HOME>/bin directory: arcsight replayfilegen To run in console mode: arcsight replayfilegen -i console	

reposest

This command applies to ESM in distributed mode. It allows you to setup information repository services in a distributed correlation environment. This command is described in the topic ["Configuring Services in a Distributed Correlation Cluster" on page 53](#), "Configuring a Repository".

resetpwd

This command runs a wizard to reset a user's password and optionally notify the user of the new password by e-mail.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

resetpwd

Applies to	Manager	
Syntax	resetpwd	
Parameters	-f <file>	Log file name (properties file in -i silent mode)
	-g	Generate sample properties file for -i silent mode
	-i <mode>	Mode: console, silent, recorderui, swing
	-h	Display command help
Examples	To reset a user's password: arcsight resetpwd	

resvalidate

This command checks for whether there are any invalid resources in the database. The utility generates two reports called validationReport (with .xml and .html extensions) that are written to the directory from which you run the resvalidate command. Make sure you stop the Manager before you run this command. If you have more than 50,000 actors you should first increase your Java heap size to 8 GB before running this command.

Note: After running the resvalidate command, check `/opt/arcsight/var/logs/manager/default/resource-validation.log` to determine resources that were skipped due to incorrect definitions.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

resvalidate

Applies to	Manager, Database	
Syntax	resvalidate	
Parameters	-excludeTypes <exclude_resource_names>	Resource type to exclude from being checked; for example, Rule, DataMonitor
		If specifying multiple resource types to exclude, use comma to separate them.
		Resource type – Rule,DataMonitor(comma separated)

resvalidate, continued

	<code>-out <output_dir></code>	Output directory for validation report. If none is specified, the report is placed in the directory from which you run the <code>resvalidate</code> command
	<code>-persist [false true]</code>	If a resource is found to be invalid, whether to mark it invalid or only report it as invalid. For example, a rule depends on a filter that is missing. When you run the <code>resvalidate</code> command and <code>-persist=false</code> , the rule is reported as invalid but not marked invalid. However if <code>-persist=true</code> , the rule is marked as invalid. Default: <code>persist=true</code> .
Examples	<p>In general, if you need to run the resource validation script, run it twice: the first time with <code>'-persist true'</code> (default) to validate and fix invalid resources, and the second time with <code>'-persist false'</code> to generate a correct report:</p> <pre>arcsight resvalidate arcsight resvalidate -persist false</pre>	

searchindex

This command creates or updates the search index for resources.

If you provide the credentials for the Manager, it automatically associates with the newly created or updated index. However, if you do not specify any credentials, manually configure the Manager to use the updated index.

The `searchindex` command must be deployed on the machine where the ESM Manager is installed.

Distributed Correlation Cluster Only: You can only run this command on a persistor node.

searchindex

Applies to	Manager
Syntax	<code>searchindex -a action</code>

searchindex, continued

Parameters	<code>-a <action></code>	Possible actions: create, update, or regularupdate. The <code>-a</code> parameter is required. <code>create</code> —Creates a new search index. <code>update</code> —Updates all resources in the index that were touched since the last daily update was run. Although "update" is a scheduled task that runs daily, you can run it manually. <code>regularupdate</code> —Updates all resources in the index that were touched since the last regular update was run. Although "regular update" is a scheduled task that runs every 5 minutes, you can run it manually.
	<code>-t <time></code>	Time stamp that indicates starting when the resources should be updated
Examples	To run: <code>arcsight searchindex -a <action></code> For example, <code>arcsight searchindex -a create</code>	

Note: If you get an error in the server log for the `searchindexutility` that says `outofmemoryError`, you can increase the cap on the Java heap size. Go to your environment variables and increase the value for the variable called `ARCSIGHT_SEARCH_INDEX_UTILITY_JVM_OPTIONS`.

Set the variable like the following example:

```
ARCSIGHT_SEARCH_INDEX_UTILITY_JVM_OPTIONS="-Xms512m -Xmx8192m"  
export ARCSIGHT_SEARCH_INDEX_UTILITY_JVM_OPTIONS
```

Xms is the initial Java heap size. Xmx is the maximum. The above values are the defaults.

When that variable is set, it takes priority over the default settings as well as `ARCSIGHT_JVM_OPTIONS`.

sendlogs

This command runs a wizard to sanitize and save ArcSight log files so that you can send them to customer support for analysis, if they instruct you to do so. **Note:** the command does not actually *send* the log files anywhere.

Note: For ESM in **distributed mode**, run this command only on the persistor node.

sendlogs

Applies to	Manager, Database, Console	
Syntax	sendlogs	
Parameters	-f <file>	Log file name
	-i <mode>	The mode can be console, recorderui, or swing.
	-n <num>	Incident number (Quick mode)
Examples	arcsight sendlogs	

tee

This command displays the output of a program and simultaneously writes that output to a file.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

tee

Applies to	Manager	
Syntax	-f <filename>	
Parameters	-a	Append to the existing file
Examples	To run: arcsight tempca -i arcsight tee -f sslinfo.txt	

tempca

This command allows you to inspect and manage demo certificates.

tempca

Applies to	Console	
Syntax	tempca	
Parameters	-a <alias>	Key store alias of the private key to dump
	-ac	Add the demo CA's certificate to the client truststore
	-ap	Create demo SSL key pair and add it to the Manager key store
	-dc	Dump/export the demo CA's certificate to a file (demo.crt) for browser import
	-dpriv	Dump private key from the Manager key store
	-f <file>	Filename to write the demo CA's certificate to

tempca, continued

	-i	Display summary of current SSL settings
	-k <n>	Key store: Manager (1)
	-n <host>	Host name of the Manager (opt for the creation of a demo key pair)
	-nc	No chain: Do not include certificate chain (option for creation of a demo key pair)
	-rc	Reconfigure not to trust demo certificates. Removes the demo CA's certificate from the client truststore
	-rp	Remove pair's current key pair from the Manager key store
	-v <days>	Validity of the new demo certificate in days (Default: 365)
Examples	To run: arcsight tempca	

threaddumps

This command extracts and reformats thread dumps from the file to which you wrote the thread dumps in the `managertthreaddump` command (`manager/logs/default/server.std.log`). The output is an html file in the bin directory from which you run this command. It provides a list of links to all the thread dumps in a summary format.

Distributed Correlation Cluster Only: You can run this command on a cluster node that is running instances of aggregators and correlators.

threaddumps

Applies to	Manager	
Syntax	threaddumps <file>	
Parameters	<filename>	Specify the name of the thread-dump file.
	-h	Display command help
Examples	To run: arcsight threaddumps	

tproc

This command is a standalone Velocity template processor.

tproc

Applies to	Manager
Syntax	tproc

tproc, continued

Parameters	-d <file>	Definitions file
	-Dname=value	Defines
	-h	Display command help
	-l	Keep log file
	-o <file>	Output file
	-p <file>	Properties file
	-t <file>	Template file
	-v	Verbose mode
Examples	To run: arcsight tproc	

updaterepohostconfig

This command applies to distributed correlation mode only.

This command prompts for new hostnames corresponding to old hostnames in the distributed correlation cluster and makes changes to the configuration.

updaterepohostconfig

Applies to	Manager	
Syntax	consolesetup [-i <mode>]	
Parameters	-i <mode>	Mode: console, silent, recorderui, swing

whois

This command is used by the whois command of the console

whois

Applies to	Console	
Syntax	whois [-p <port>] [-s <host>] <target>	
Parameters	-p <port>	Server port
	-s <host>	Name or address of 'whois' server
	<target>	Name or address to lookup
Examples	To run: arcsight whois	

zoneUpdate

This command updates IPv4 address allocations and dark space information that are provided in the periodic Zone Update Subscription Package, contained in the `.Zone_Updates_<version>.zip` file. Then, at the command line, run the `zoneUpdate` command to apply the zone updates. Use of this command is optional. You can use `zoneUpdate` after a successful Manager installation or upgrade. This command is available from the command line only, and has no GUI functionality.

Distributed Correlation Cluster Only: Run this command from the persistor node **only**.

Running `zoneUpdate` requires an ESM administrator login and password. While the process is running, do not use the same administrator account to access the ArcSight Console or ArcSight Command Center for other administrative tasks. Allow up to 50 minutes or longer for a first-time zone update, depending on the manager workload and the number of assets assigned to the global network. Subsequent incremental updates should not take as long. While `zoneUpdate` is running, other ESM administrators and users may access the Console or Command Center.

`zoneUpdate` performs these actions in the Global network:

- Inventories affected assets
- Removes old zones
- Installs and updates zones
- Auto-zones assets that appeared in the inventory of affected assets in the Global network

`zoneUpdate` updates zones in the Global network only. Local zones are not updated by this command. The behavior of `zoneUpdate` is the same for both dynamic and static zones.

Best Practices for Importing Packages

If you need to perform zone updates and/or operate under high loads, disable the `resource.move` property (which means to set it to `true`) and perform the package import. This can help prevent failure of import for large packages, in some cases. Before attempting a zone update, be sure to verify that the `resource.move` property is set to `true` in `server.properties`.

To set the `resource.move` property to `true`, add this statement to `server.properties`:

```
esm.manager.disable.resource.move=true
```

Refer to the ESM Administrator's Guide, "Editing Properties Files," for details on editing the `server.properties` file.

Recommendations

- Allocate assets to the local network only and that the Global network does not contain assets. Also, zones that have categories assigned to them, and then are removed and reinstalled as part of the zone update process lose the category assignments. Do not assign categories to the system zones.
- Perform a full system database table backup (`export_system_tables`) and export the current

ArcSight Network package before using `zoneUpdate`, to ensure that you have a usable snapshot of your network model. If the zone update process is interrupted or a problem occurs and you must revert your data, be sure to use this backup to restore your ArcSight resources before attempting to run `zoneUpdate` again.

- Run `zoneUpdate` during non-peak system time.

Running `zoneUpdate`

Note: Zone Groups belonging to Regional Internet Registries (RIR) that contain more than 1000 zones will place their corresponding zones in subgroups, each group containing up to 950 zones, to enable you to better manage those zones, and content related to them, from within the ArcSight Console.

1. Log in as user `arcsight`.
2. Verify that the Manager is running.
3. Extract the `Zone_Updates_<version>.zip` file into a directory. The directory can be of your choice. The zipped files extract into the folder `ArcSight_Networks_<version>`, which contains the files `ArcSight_Networks.arb` and `Zone_Removal_Tool.xml`. Do not change the name of this folder or the names of the extracted files.
4. Verify that the user `arcsight` has write permissions to the directory into which you extracted `Zone_Updates_<version>.zip`.
5. As user `arcsight`, run this command:

```
<ARCSIGHT_HOME>/bin/arcsight zoneUpdate -m <Manager hostname or IP address> -  
u <user with administrative privileges> -f <folder where zip file was  
extracted>
```

You are prompted for the user password. **Be sure to enter the correct password.** `zoneUpdate` uses the entered password several times, and temporarily locks you out if you use the wrong password. If this happens, you can reenble the user or wait for the user to be reenbled automatically.

Running `zoneUpdate` can take longer than 50 minutes, depending on Manager workload and the number of assets assigned to the Global network.

Warning: Do not interrupt or kill `zoneUpdate` after the process starts. Allow `zoneUpdate` to complete, and then make a determination of the condition of your zones and whether to install another version of the Zone Update Subscription package.

Recovery and Troubleshooting

Zone Updates Not Applied

If `zoneUpdate` runs with errors, and does not apply the zone updates from the Zone Update Subscription Package, follow these steps:

1. Stop the Manager and then start all services. Run the following commands to do so:

```
/etc/init.d/arcsight_services stop manager
```

```
/etc/init.d/arcsight_services start all
```

2. Run zoneUpdate again.
3. If the above steps do not work, and you encounter the same errors as before, import the full system database table backup (export_system_tables) and the current ArcSight Network package that you exported before initially running zoneUpdate.
4. Run zoneUpdate again.

Package Exists Error When Applying the Zone Update Subscription Package

If you encounter these messages when running zoneUpdate:

```
Reading bundle 'Common Bundle Alias' Done. 0 min 0 sec 41 ms
Importing 1 packages
Importing package 1/1 '/All Packages/ArcSight System/ArcSight Networks'
Parsing archive 'ArcSight Networks.xml'... Done. 0 min 1 sec 19 ms
Package Already Exists with Newer Content
```

```
-----
Package '/All Packages/ArcSight System/ArcSight Networks' already exists in
the system with newer content
```

- 1: Leave newer package
- 2: Never override newer packages
- 3: Update package
- 4: Always update Packages
- 5: Abort

```
-----
Choose option 3, Update Package.
```

Asset Zoning

Assets that were zoned in the Global network before you run zoneUpdate will be zoned after the command completes.

Asset Ranges

Asset ranges are not auto-zoned by zoneUpdate. Asset ranges will be unzoned by the running of the zoneUpdate; you must manually rezone asset ranges after you run zoneUpdate if you had asset ranges in the Global network.

For example, if you had an asset range in Zone A in a previous version of ESM, the asset range is unzoned after you run zoneUpdate. For this example, suppose Zone A was split into two zones, Zone A and Zone B, and after upgrade your asset range spans the last part of Zone A and first part of Zone B. In this case, the asset range becomes unzoned. To recover zoning, you must open each unzoned

asset range resource and map it to the correct zone, or split it into two asset ranges that map to the new Zones A and B.

Asset ranges are not auto-zoned by zoneUpdate. Asset ranges will be unzoned by the running of the zoneUpdate; you must manually rezone asset ranges after you run zoneUpdate if you had asset ranges in the Global network.

For example, if you had an asset range in Zone A in a previous version of ESM, the asset range is unzoned after you run zoneUpdate. For this example, suppose Zone A was split into two zones, Zone A and Zone B, and after upgrade your asset range spans the last part of Zone A and first part of Zone B. In this case, the asset range becomes unzoned. To recover zoning, you must open each unzoned asset range resource and map it to the correct zone, or split it into two asset ranges that map to the new Zones A and B.

zoneUpdate

Applies to	Manager, Console	
Syntax	<code><ARCSIGHT_HOME>/bin/arcsight zoneUpdate -m <Manager hostname or IP address> -u <user with administrative privileges> pr-f <folder where zip file was extracted></code>	
Parameters	<code>-m <manager></code>	The Manager hostname or IP address. Use of a hostname or an IP address depends on whether your Manager was configured using a hostname or an IP address.
	<code>-u <username></code>	The name of a user with administrative privileges. For example, admin1 or admin2.
	<code>-f <folder></code>	Folder name or the path to the folder that contains the unzipped Zone Update Subscription package. For example, /opt/arcsight/manager. Extract the file Zone_Updates_<version>.zip into this folder, and give the folder write permission.
	<code>-h</code>	Help
Example	To update zones: <code><ARCSIGHT_HOME>/bin/arcsight zoneUpdate -m 192.0.2.0 -u admin2 -f <ARCSIGHT_HOME></code>	

CORR-Engine ArcSight Commands

These commands are used to manage data in the CORR-Engine. They are located in /opt/arcsight/logger/current/arcsight/logger/bin.

To run a CORR-Engine ArcSight command script, open a command window and switch to the /opt/arcsight/logger/current/arcsight/logger/bin directory. These arcsight commands run using the file arcsight.sh in that location. The general syntax is as follows:

```
arcsight <command_name> [parameters]
```

configbackup

Description	The <code>configbackup</code> command backs up certain essential configuration information such as search settings and the configuration of archives (not the archives themselves). It places this backup in a file called <code>configs.tar.gz</code> which you can find in <code>/opt/arcsight/logger/current/arcsight/logger/tmp/configs</code> .
Applies to	CORR-Engine
Syntax	<code>arcsight configbackup</code>
Parameters	none
Example	To run: <code>/opt/arcsight/logger/current/arcsight/logger/bin/arcsight configbackup</code>

Make sure you are familiar with these guidelines before you create a backup file:

The `configbackup` command creates the `configs.tar.gz` file, which you must then copy to a safe location.

Make a note of the following, which must match exactly on the machine to which you restore:

- Operating system and version
- Path to the archive locations for each storage group
- ESM version
- MySQL password

disasterrecovery

Description	This command restores the data backed up using the <code>configbackup</code> command.
Applies to	CORR-Engine
Syntax	<code>arcsight disasterrecovery start</code>
Parameters	start
Example	To run: <code>/etc/init.d/arcsight_services stop logger_servers</code> <code>cp ~/configs.tar.gz /opt/arcsight/logger/current/backups/configs.tar.gz</code> <code>/opt/arcsight/logger/current/arcsight/logger/bin/arcsight disasterrecovery start</code> <code>/etc/init.d/arcsight_services start logger_servers</code>

Make sure you are familiar with these guidelines before you restore a backup file:

- When you restore this data, the existing data is deleted.

This command restores the specific settings that were current at the time the backup was taken. Any configuration settings that were updated between the time of the backup and the time of the restore are lost.

This includes event data. The assumption is that you are restoring this configuration to a new, clean installation with no event data, or at least none that needs to be preserved. Restore the content to a machine where the following characteristics are exactly the same as the backup machine:

- The version of ESM must be the same
- The version of the operating system (and the time zone to which it is set) must be the same
- The archive locations for the backed-up storage groups must already exist and be the same
- The MySQL password must be the same

exportdatausage

Description	ESM keeps track of event counts and size from each connector. Use this command to export this event data as a comma-separated values (CSV) file. You can use this information to track the event throughput by connector. Note: This command has to be run from a different location than the other <code>arcsight</code> commands. Run it from: <code>/opt/arcsight/logger/current/arcsight/logger/bin</code>	
Applies to	CORR-Engine	
Syntax	<code>./exportdatausage <path/file></code>	
Optional Parameter	<code><path/file></code>	Specify the path and name of the CSV file to which to export the usage data. It can be a relative or absolute path. You do not need to specify the <code>.csv</code> extension. If you do not specify this parameter, the data is displayed on screen.
Examples	To create a file called <code>usagefile.csv</code> in <code>/opt/arcsight</code> , run: <code>arcsight exportdatausage /opt/arcsight/usagefile</code>	

Appendix B: Troubleshooting

The following information may help solve problems that occur while operating the ArcSight system. In some cases, the solution can be found here or in specific ArcSight documentation, but Customer Support is available if you need it.

If you intend to have Customer Support guide you through a diagnostic process, prepare to provide specific symptoms and configuration information.

General Troubleshooting

You changed your File system format from XFS to EXT4 or back and now you have problems.

Note: You cannot change the file system type on ESM.

Both XFS and EXT4 file system formats are supported during installation. However, ESM configures itself to the file system upon which it is first installed; you therefore cannot change file system type after installation, even during an upgrade. Roll your file system back to what it was before.

Your license expired and you cannot start the ArcSight Command Center to specify a new license file.

Run the `arcsight managersetup` command as documented in ["Running the Manager Configuration Wizard" on page 112](#).

Report is empty or missing information

Check that the user running the report has inspect (read) permission for the data being reported.

Running a large report crashes the Manager

A very large report (for example, a 500 MB PDF report) might require so much virtual machine (VM) memory that it can cause the Manager to crash and restart. To prevent this scenario, you can set up the Manager to expose a special report parameter for generating the report in a separate process. The separate process has its own VM and heap, so the report is more likely to generate successfully. Even if the memory allocated is still not enough, the report failure does not crash the Manager.

This option must be set up on the Manager to expose it in the Console report parameters list. The steps are as follows:

1. On the Manager in the `server.properties` file, set `report.canarchiveinseparateprocess=true`. This makes a new report parameter available on the Console.
2. Save the `server.properties` file.

3. Stop the Manager:

```
/etc/init.d/arcsight_services stop manager
```

Then start all services:

```
/etc/init.d/arcsight_services start all
```

4. On the ArcSight Console, open the report that you want to run in a separate process in the Report Editor, and click the **Parameters** tab. Set the parameter **Generate Report In Separate Process** to true.
5. Run the report. The report should run like a normal report, but it does not consume the resources of the Manager VM.

Note: Use this parameter only if you experience a Manager crash when running large reports such as the ones that contain tables with more than 500,000 rows and 4 or 5 columns per row.

Scheduled rules take too long or time out

If you have a system, perhaps one with a high EPS, in which the scheduled rules are not running quickly enough, you can enable them to run in parallel (multi-threading) to speed them up. Add the following property to the `server.properties` file:

```
rules.replay.run.parallel=true
```

You can also set the number of threads to use, as follows (the default if you do not use this property is four threads):

```
rules.replay.numthreads=<number of threads to use>
```

Some Central European, Cyrillic, and Asian language fonts do not display properly when generating reports in PDF

This problem occurs because some Central European, Cyrillic, or Asian language fonts that are TrueType fonts are not supported directly by versions of Adobe Reader earlier than version 8.0. In order to work around this, each TrueType font must be mapped to an OpenType font supported in Adobe Reader 8.0. ArcSight provides this mapping in the `<ARCSIGHT_HOME>/i18n/server/reportpdf_config_<locale>.properties` file. You have the option to change the default mapping of any TrueType font to the OpenType font by modifying the respective font mapping in this file.

To work around this issue:

1. Install a localized Adobe Reader 8.0 depending on the language of your platform on your Manager machine. This version of the Adobe Reader installs the OpenType fonts by default.
2. Edit the `server.properties` file as follows:
 - a. Set `report.font.true.type.path` property to point to the directory that contains the TrueType and OpenType font. Use ":" as a path separator in Unix. On Unix platforms, the

TrueType font path may differ depending on the specific Unix platform, but it is typically `/usr/lib/font`. The CIDFont directory is always the same relative to the Adobe Reader installed directory. So, the default directory would be `/usr/lib/font:<adobe_reader_dir>/Resource/CIDFont`.

- b. Set `report.font.cmap.path` property to point to Adobe Reader's CMap directory. On Unix, the CMap path is relative to the Adobe Reader installation -- `<adobe_reader_dir>/Resource/CMap`.

E-mail notification doesn't happen

If you receive the following error:

```
[2009-12-03 14:31:33,890][WARN ]  
[default.com.arcsight.notification.NotifierBase][send] Unable to send out e-  
mail notification, notifications have not been configured.
```

- Verify the following properties are set in the `server.properties` file:

```
notifications.enable=true
```

and

```
notifications.incoming.enable=true
```

- Check `server.properties` file to find which SMTP server is associated with the Manager. Make sure that the SMTP server is up and running.

Review the Notification resource and confirm the e-mail address and other configuration settings.

Notification always escalates

Check the `server.properties` file to find which POP3 or IMAP server is associated with the Manager. Make sure that the POP3 or IMAP server is up and running, in order to process acknowledgements from notification recipients.

Event IDs have negative numbers

Negative event ID numbers can occur, and are normal. Event IDs are 64-bit values. The less-significant 48 bits are assigned to a newly received event by the receiving Manager; these bits uniquely identify the event in the database of that Manager. The more-significant 16 bits are used to store forwarding information. When an event ID with '1' in the topmost bit is represented as Java 'long' value, the event ID value is interpreted as a negative number according to JVM rules. When displayed, such an event ID appears as a decimal number with a sign '-' in front of it.

Rule Recovery Timeout Occurs

Rule recovery can timeout if there is a high EPS on the system, which causes the server to stop loading events from the database for checkpoint. You can modify the

`rules.recovery.time-limit` property in `server.properties` to set a higher recovery time limit to attempt to prevent this timeout. The default value for the `rules.recovery.time-limit` property is 120 seconds (two minutes).

Note: The timeout can still occur even after you increase the time limit, due to overall system load, high EPS, or a large number of rules to recover.

For details on editing the `server.properties` file, see ["Editing Properties Files" on page 15](#).

Manager uses decoupled process execution on UNIX-based systems

On UNIX-based systems, Manager uses decoupled process execution to perform specific tasks, for example, to run a very large report. Decoupled process execution uses a stand-alone process executor (instead of using "in process" or "direct process" execution) and sends commands to be executed via the file system. The process executor uses the `<ARCSIGHT_HOME>/tmp` directory, so restrict system level access for this directory.

The process executor is used, by default, on all Unix platforms. The Manager scripts ensure that the process executor runs as a daemon before the Manager is started. This has some implications with regards to troubleshooting Manager startup and runtime problems. The Manager, if configured to use the process executor, does not start unless it detects the presence of a running process executor. The process executor runs within its own watchdog, like the Manager, so if the process stops for any reason, it restarts automatically. The process executor is transparent to users regarding how the Manager is started or stopped.

The `stdout` and `stderr` of the executed process are written into the following two files:

`<ARCSIGHT_HOME>/tmp/[commandfile-name].stdout`

`<ARCSIGHT_HOME>/tmp/[commandfile-name].stderr`

Automatic ArcSight system tasks

These system tasks are scheduled to run automatically one or more times per day, depending on the task.

AUP Updater: This task runs in the manager and pushes to connectors any updated AUP packages it might have.

Dependent Resource Validator: This task runs validations on resources in the system and disables the ones that have problems.

PurgeStaleMarkSimilarConfigs: This task does maintenance work on the 'mark similar' annotation criteria, removing the ones that are stale.

Resource Search Index Updater: This task updates the resource search index.

Sortable Fields Updater: This task keeps sortable event fields synchronized, based on the current indexes in the database.

Table Stats Updater: This task updates statistics on the non-partitioned schema tables, which includes the resource tables.

In a Windows 7 environment, you receive the error message 'findstr' is not recognized as an internal or external command when you attempt to start the ArcSight Console.

Verify that Java is setup correctly in your Windows environment.

Pattern Discovery Performance Troubleshooting

Note: Pattern Discovery is not supported on ESM on an appliance.

Note: Pattern Discovery is not supported in distributed correlation mode.

Time spread calculations can take up a lot of CPU time, especially if Pattern Discovery has been running for a long time. If performance is degraded as a result of this feature, you can find out by checking the `system.log` for the start and end times of the Pattern Discovery process. If it is taking longer than expected, and if that is a problem for you, turn the Time Spread feature off.

To turn it off, add the property `patterns.timeSpreadCalculation=False` to the Manager's `server.properties` file.

Query and Trend Performance Tuning Troubleshooting

To improve query execution in high-EPS systems, various queries used by the trends in the default ESM system have been optimized. The scheduler allocates two threads for processing system tasks. This alleviates performance issues caused by conflicts between system tasks and user level tasks within the scheduler.

The following sections provide some troubleshooting tips.

server.defaults.properties Entries for Trends

- `trends.query.timeout.seconds=7200`
This is the amount of time that a trend query is allowed to run, in seconds, before the SQL statement times out and the trend query fails. If absent or 0, no time-based timeout is applied.
- `trends.query.timeout.percent=50`
This is the amount of time that a trend query is allowed to run, as a percentage of the query interval for interval trends, before the SQL statement times out and the trend query fails. If absent or 0, no percentage-based timeout is applied.

As an example, with a 50 percent setting, a query covering a start/end time range of 1 hour times out after 30 minutes. A start/end time range covering 1 day would time out after 12 hours.

If both timeouts are specified, the system uses the smaller of the two.

- `trends.query.failures.deactivation.threshold=3`

If this many consecutive "accumulate" (not refresh) runs fail for any reason, the system automatically disables the trend. The check is always performed after any accumulate query run fails. After the threshold is reached, any remaining queries to be executed by this task are skipped. If this setting is absent or 0, the checking mechanism is turned off.

If a trend or query is stopped because of any of the above reasons, an audit event reflects this.

Troubleshooting checklist after stopping the Manager and starting all services

- Use the Console Trend Editor to manually disable any trends that you do not need or that you notice have excessive query times. Disabling these trends helps reduce scheduler and database contention.
- As trend data gathering tasks wake up, the trend attempts to fill in the gaps for missing intervals. Depending on the size of the gaps, this may take some time before the trends catch up.
- A trend does not usually re-run any previously failed runs. If you want to re-run a particular time, you need to manually request it from the Trend Editor.

Disable trend on high-throughput systems

If your system environment typically processes a very large number of events per second (EPS) (such as more than 1000 EPS or 100 million events per day), we recommend that you manually disable the following trend:

```
/All Trends/ArcSight Administration/ESM/User Access/ArcSight User Login  
Trends - Hourly (Installed by default)
```

How do you know when a trend is caught up?

You can use either of the following techniques, both using the ArcSight Console UI:

- Using the Trend Data Viewer from within the Trends resource tree, you can see at most 2000 rows of data. (Select a trend in the resource tree, right-click, and choose **Data Viewer**.) Sort the trend timestamp column so that the timestamps show newest to oldest and observe when the newest value indicates it has caught up.
- Using the **Refresh...** button in the Trend Editor, set the start time as far back as needed (days or weeks) to see any entries and click Refresh to see which runs show up as available to be refreshed. Only the most recent ones should show first. Note that you should not actually refresh any runs, but only use this technique to see what has been run.

How long does it take for a trend to catch up?

This depends on how long the underlying query interval is, but a trend typically does up to 48 runs, as needed, when it wakes up.

For a trend that queries an entire day and runs once a day, this would allow for more than a month's worth of data to be queried. The data must be present on the system, however, or the query returns no results (but it does not fail).

SmartConnectors Troubleshooting

My device is not one of the listed SmartConnectors

ArcSight offers an optional feature called the FlexConnector Development Kit which may enable you to create a custom SmartConnector for your device.

ArcSight can create a custom SmartConnector. Contact Customer Support.

My device is on the list of supported products, but it does not appear in the SmartConnector Configuration Wizard

Your device is likely served by a Syslog sub-connector of either file, pipe, or daemon type.

Device events are not handled as expected

Check the SmartConnector configuration to make sure that the event filtering and aggregation setup is appropriate for your needs.

SmartConnector not reporting all events

Check that event filtering and aggregation setup is appropriate for your needs.

Some Event fields are not showing up in the Console

Check that the SmartConnector's Turbo Mode and the Turbo Mode of the Manager for the specific SmartConnector resource are compatible. If the Manager is set for a faster Turbo Mode than the SmartConnector, some event details are lost.

SmartConnector not reporting events

Check the SmartConnector log for errors. If the SmartConnector cannot communicate with the Manager, it caches events until its cache is full.

ArcSight Console Troubleshooting

Can't log in with any Console

Check that the Manager is up and running. If the Manager is not running, start it.

If the Manager is running, but you still can't log in, suspect any recent network changes, such as the installation of a firewall that affects communication with the Manager host.

Can't log in with a specific Console

If you can log in from some Console machines but not others, focus on any recent network changes and any configuration changes on the Console host in question.

Console cannot connect to the Manager

If you start an ArcSight Console that could previously connect to the Manager with no trouble, but now it can't, see if the error is similar to:

"Couldn't connect to manager - improper authorization setup between client and manager."

If so, it's likely that the manager has been reconfigured in such a way that it now has a new certificate. Especially if the Console asked you to accept a new certificate when you started it. To fix this, find and delete the certificate that the Console was using before, and then manually import another certificate from the Manager.

Console reports out of memory

If your ArcSight Console is so busy that it runs out of memory, change the memory settings in the `console.bat` or `console.sh` file. This file (for Windows or Linux, respectively) is located in the directory in which you installed the ArcSight Console, in `Console/current/bin/scripts`.

Find the line that starts with `set ARCSIGHT_JVM_OPTIONS=`

Find the parameter `-Xmx512m` (`Xmx` controls the maximum JVM memory).

Change the value to 1024: `-Xmx1024m`.

Restart the Console for the new setting to take effect.

Acknowledgement button is not enabled

The Acknowledgement button is enabled when there are notifications to be acknowledged and they are associated with a destination that refers to the current user. To enable the button, add the current user to the notification destination.

The grid view of live security events is not visible

To restore the standard grid view of current security events, select **Active Channels** from the Navigator drop-down menu. Double-click **Live**, found at `/Active channels/Shared/All Active channels/ArcSight System/Core/Live`

The Navigator panel is not visible

Press **Ctrl+1** to force the Navigator panel to appear.

The Viewer panel is not visible

Press **Ctrl+2** to force the Viewer panel to appear.

The Inspect/Edit panel is not visible

Press **Ctrl+3** to force the Inspect/Edit panel to appear.

Internal ArcSight events appear

Internal ArcSight events appear to warn users of situations such as low disk space for the ArcSight Database. If you are not sure how to respond to a warning message, contact Customer Support.

The Manager Status Monitor reports an error

The Console monitors the health of the Manager and the ArcSight Database. If a warning or an error occurs, the Console may present sufficient detail for you to solve the problem. If not, report the specific message to Customer Support.

Console logs out by itself

Check the Console log file for any errors. Log in to the Console. If the Console logs out again, report the error to Customer Support.

Duplicate audit events or rule actions after a crash recovery

When you stop ESM, it takes a checkpoint of the rules engine so that it knows where it stopped. If ESM crashes in such a way that it cannot take a checkpoint (power failure, for example), it returns to the last checkpoint when it restarts, and replays events from there. Any actions that occurred between that checkpoint and the ESM crash will therefore be repeated. Repeated actions that generate audit events generate duplicate audit events.

You should investigate repeated actions that do not duplicate well. For example, if an action adds an item to an Active List, that item's counter will be incremented. If the action runs a command, it will run it again, and so on.

You can reduce duplicates by including a rule condition that checks if the relevant entry is already in the active list.

Case data fields appear blank

A number of case fields accept up to 4,000 bytes. However, if you fill too many such fields to the maximum, then you can exceed the limit and the fields can appear blank when you view the case.

This is because of a database limitation on the size of a row (a case, for example), which is about 8k bytes. For large fields, only 768 bytes are stored in the row, along with a 20 byte pointer to the rest, which is stored outside the table. This enables you to have considerably more than 8K of data, but you can still exceed the limit for the database row for a resource.

As a guideline, keep the number of large fields in a case (or other resource with large fields) below ten. The data in the smaller fields contributes to the total, so if you still encounter the problem, consider them as well.

Hostname Shown as IPv6 Address in Dashboard

This can occur due to a mismatch between the system hostname, the network configuration, and your environment's name resolution. Review your system's hosts file and DNS configuration, as well as the addresses found in the DNS for the system hostname.

Manager Troubleshooting

Can't start Manager

The Manager provides information on the command console which may suggest a solution to the problem. Additional information is written to <ARCSIGHT_HOME>/logs/default/server.std.log.

Manager shuts down

The Manager stops when it encounters a fatal error. The file <ARCSIGHT_HOME>/logs/default/server.std.log has more details about the error condition.

Services do not start after a power failure during "start all"

An unexpected power-off during services startup may result in unavailable postgresql, logger, and manager services. Those services might not start even after rebooting the server.

To resolve the problem, delete the postgresql lock file. The location of the postgresql lock file, is given in the pgsqlog file in /opt/arcsight/logger/userdata/logs/pgsql/serverlog. If this problem occurs, the text "could not create lock file" can be written to the server log. To verify, search the server log for instances of the text "could not create lock file".

Reboot the server after removing the postgresql lock file.

Asset aging not working as expected (not all aged assets deleted)

If you are using ESM's asset auto-deletion feature to remove assets from the system, some aged assets may remain in the system. This can occur in environments that have more than 10,000 assets in an asset group. Best practice is not to exceed 10,000 resources for any resource group. If there are more than 10,000 assets in a group, the auto-deletion process slows down and times out without deleting these assets. For details on asset aging see, ["Configuring Asset Aging" on page 40](#).

To solve this problem, you can set certain `asset.aging.task` parameters to gradually delete the unwanted aged assets off of the system. This gradual deletion allows you to delete a relatively small number of assets at a time, keeping the transaction time short and the database load low while the cleanup occurs. This process will gradually delete the aged assets, but can take several days, depending on the number of assets involved and the system load. Stop the manager before making the parameters changes and restart it when you are done; see ["Restarting the Manager - Stop the Manager and Start All Services" on page 11](#) for details.

To configure the Manager to start the gradual asset deletion process:

1. Add the following properties to the `server.properties` file (in this example, assets will be aged after 4 days and 500 assets will be deleted each hour). See ["Editing Properties Files" on page 15](#) for details.

```
asset.aging.daysbeforedisable=4
asset.aging.task.operation=delete
asset.aging.task.maxassetsprocess=500
asset.aging.task.maxassetsload=500
asset.aging.task.period=Hourly
asset.aging.task.minute=0
```

Notes:

- For the property `asset.aging.daysbeforedisable` note that the default value of -1 means that asset aging is turned off, not that assets will be disabled and deleted. The value for `asset.aging.daysbeforedisable` is expressed in days that define how long an asset is allowed to age before it is disabled and deleted.
 - For the deletion of aged assets to work properly, verify that the `asset.aging.task.operation` property is set to `delete`.
 - Set the properties `asset.aging.task.maxassetsprocess` and `asset.aging.task.maxassetsload` to the same value. The value depends on your hardware and system load. The higher the number specified, the faster the asset deletion will occur. We recommend starting with the value 500 for these two properties, and after the number of assets falls to around 100,000, you can try increasing these properties to 1000.
2. In the `server.defaults.properties` file, verify the value of the property `dbconmanager.provider.logger.pool.maxcheckout`. If the value is less than 3600, add this line to the `server.properties` file:
`dbconmanager.provider.logger.pool.maxcheckout=3600`
 3. Monitor the progress of the asset deletion. When the desired asset limit is reached, stop the process by deleting the properties you added to the `server.properties` file (`asset.aging.daysbeforedisable`, `asset.aging.task.operation`, `asset.aging.task.maxassetsprocess`, `asset.aging.task.maxassetsload`, `asset.aging.task.period`, `asset.aging.task.minute`, and `dbconmanager.provider.logger.pool.maxcheckout`).
- The property settings described above are not standard configurations. In the future, monitor the number of assets in groups and do not let them exceed the recommended maximum of 10,000 resources for any resource group.

Switching between daylight savings and standard time can skip a scheduled task

- If the trigger time for a particular scheduled task run happens to fall during the transition time from DST to ST or vice versa, the interval for that particular run gets thrown off. The interval calculation for subsequent scheduled runs are not affected.
- Currently, there are four time zones that are not supported in ESM:
 - Kwajalein
 - Pacific/Kwajalein
 - Pacific/Enderbury
 - Pacific/Kiritimati

These time zones fall in two countries, Marshall Islands and Kiribati.

CORR Engine Troubleshooting

Temporary Sort Space Exceeded

Under some circumstances you can get an error that includes the following:

```
Encountered persistence problem while fetching data: Unable to execute query:  
Temporary sort space limit exceeded
```

Possible solutions include eliminating unnecessary trends, if any, avoid running too many at the same time, and trim queries to return more refined data sets. If the problem persists, try increasing the value of `sort_temp_limit` in `/opt/arcsight/logger/data/mysql/my.cnf`.

For information on creating queries, trends, and reports, refer to the "Building Reports" chapter in the ArcSight Console User's Guide.

If increasing the `sort_temp_limit` is insufficient, and the following circumstance applies, there are two additional remedies.

Excessive temporary file space gets used when Group By (or sorting) is performed on the Event table. If you use Group By (or sorting), use the ArcSight substring function on varchar/string event fields to minimize the data manipulation during grouping. You can use existing local or global variables to achieve this behavior and replace the existing field in the query with the variable. Search in the ArcSight Console User's Guide, in the "Reference Guide" section, for information in variables and substrings.

If the file space usage is still not satisfactory, you can convert the character set automatically to Latin which uses less space. To do so, set the `event.query.charset.conversion` property to 1 in the `/opt/arcsight/manager/config/server.properties` file to convert the existing character set to latin1. Alternatively, set the property to 2 for conversion to binary and then to Latin (to minimize conversion error for non-English character set). The default value of this property is 0 (zero).

If you use this conversion on multi-byte character sets, it will truncate the characters to single-byte Latin characters, which is likely to render them meaningless. Only use this approach if it's appropriate.

How do I know if my Reactivated Archives are Corrupted?

ESM uses SHA-256 hashing algorithm to create the event data archives.

When the user reactivates the events in an offline archive, ESM validates the hashing of the data in the archive. If the hashes do not match, ESM logs the following error messages in the `logger_server.log` file:

```
A FATAL message "The original archive has: <hash value> , and the files  
have: <different hash value>
```

and/or

An ERROR message "supplementalhash computed from data files does not match hash in metadata"

ESM does not periodically scan for hash mismatches, as the archives may even be moved to external storage, outside of ESM's view. When an archive is moved back and re-activated, it is checked.

SSL Troubleshooting

Cannot connect to the SSL server: IO Exception in the server logs

Causes:

The SSL server may not be running.

- A firewall may be preventing connections to the server.

Resolutions:

- Ensure that the SSL server is running.
- Ensure that a firewall is not blocking connections to the server.

Cannot connect to the SSL server

The hostname to which the client initiates an SSL connection should exactly match the hostname specified in the server SSL certificate that the server sends to the client during the SSL handshake.

Causes:

- You may be specifying Fully Qualified Domain Name (FQDN) when only hostname is expected, or the other way around.
- You may be specifying IP address when hostname is expected.

Resolutions:

- Type exactly what the server reports on startup in `server.std.log` ("Accepting connections at `http://...`")
- For Network Address Translation (NAT) or multi-homed deployments, use hosts file to point client to correct IP.

PKIX exchange failed/could not establish trust chain

Cause:

Issuer cannot be found in trust store, the cacerts file.

Resolution:

Import issuer's certificate (chain) into the trust store.

Issuer certificate expired

Cause:

The certificate that the SSL server is presenting to the client has expired.

Resolution:

Import the latest issuer's certificate (chain) into the trust store.

Cannot connect to the Manager: exception in the server log

Cause:

If you replaced the Manager's key store, it is likely that the old key store password does not match the new password.

Resolution:

Make sure the password of the new key store matches the old key store. If you do not remember the current key store's password, run the Manager Configuration Wizard on the Manager to set the password of the current key store to match the new key store's password.

Certificate is invalid

Cause:

The timestamp on the client machine might be out of the bounds of the validity range specified on the certificate.

Resolution:

Make sure that the current time on the client machine is within the validity range on the certificate. To check the certificate's valid date range see "[View Certificate Details From the Store](#)" on page 89.

Appendix C: Event Data Transfer Tool

The Event Data Transfer Tool exports ESM events in three formats, cef, csv, and key-value pairs. Getting event data from ESM allows more flexibility to combine analysis with unstructured data in addition to the structured CEF data. Using the Event Data Transfer Tool to export ArcSight ESM events to Hadoop allows you to access Hadoop ecosystem technologies.

ESM and Hadoop - Benefits

After exporting events to Hadoop, you can use Hadoop technologies in the following scenarios:

- Build a security data warehouse using the Hadoop Distributed File System (HDFS), a Hadoop capability that enables inexpensive, long-term storage for Petabytes of data.
- The Event Data Transfer Tool can export ESM events in multiple formats, which enable the usage of Apache Hive to query and manage the security data warehouse. Hive provides HiveQL, a SQL-like language to query and manipulate large events stored on HDFS. See <https://hive.apache.org/>.
- Once the event data is in Hadoop, you can still run searches quickly. There are powerful search engines such as Elasticsearch or Solr open-source technologies. These search engines can provide results in less than a second, which is good for forensics analysis on the data archives. These platforms are built on top of Apache Lucene, the high-performance text engine library. Both technologies also provide visualization platforms.

For more information, refer to the following links:

<https://lucene.apache.org/core/>

<https://www.elastic.co/products/hadoop>

<http://lucene.apache.org/solr/>

- You can detect novel attacks by adopting Machine-learning approaches on the security data. For example, you can identify new botnet activities in your network by using machine-learning algorithms on large security events data. You can run clustering algorithms such as K-means that Apache Mahout provides to discover attack patterns in your big data. Apache Mahout is a suite of machine-learning libraries designed for big data analysis on Hadoop. You can also send your analysis results as alerts back to ESM by using the SmartConnector for ArcSight Common Event Format Hadoop. Refer to the configuration guide for that SmartConnector. This improves the enterprise's attack-detection capabilities. For more information, refer to the following link:

<http://mahout.apache.org/>

- Run your own, homegrown analytics scripts to process and analyze large security data by using Pig Latin scripting language that Apache Pig platform provides. You can send your analysis results as alerts back to ESM by using the SmartConnector for ArcSight Common Event Format Hadoop. Refer to the configuration guide for that SmartConnector. For more information, refer to the following link:

<https://pig.apache.org/>

Setting Up the Event Data Transfer Tool

The Event Data Transfer Tool is provided with ESM. To set up this tool:

1. Under `/opt/arcsight/logger/current/arcsight/logger/config`, create a folder called `hadoop`.
2. On the Hadoop cluster, find the file `core-site.xml` and copy it into the folder `/opt/arcsight/logger/current/arcsight/logger/config/hadoop`.
3. In the file `core-site.xml`, verify that the property `fs.default.name` is set to the correct DNS/IP address of the master Hadoop node.

Using the Event Data Transfer Tool Command

Use the following `arcsight` command from the current Logger installation path (`/opt/arcsight/logger/current/arcsight/logger/bin`) to initiate the data transfer:

Syntax: `arcsight event_transfer [parameters]\`

Required Parameters:

- `-dpath <dpath>`
Specify the path and file name to the destination.
 - If the format is CSV, the extension must be `csv`, `gz`, or `bz2`.
 - If the format is keyvalue of CEF, the extension must be `txt`, `gz`, or `bz2`.
 - When the extension is `gz` or `bz2` the file is compressed.
 - When the extension is `csv` or `txt`, the file is not compressed.
- `-dtype <dtype>`
Specify the type of destination. `File` means a local path and `Hadoop` means a path to a Hadoop system.

Optional Parameters:

- `-format <format>`
Specify the format as `cef` (common event format), `csv` (comma-separated values), or `keyvalue` (key-value pairs).
 - The default is `keyvalue`.
 - Use all lower case letters.
 - If you use the CSV format, the file name extension in `-dpath` must be `csv`, `gz`, or `bz2`.
 - If you use `keyvalue` or CEF formats, the file extension must be `txt`, `gz`, or `bz2`.
- `-columns <columns>`
List the CEF column names to include in the transfer. Separate column names with spaces. The default is all columns.

- `-start <start>`
Specify the start of the range of events to transfer as a time (mm/dd/yyyy hh:mm:ss) or by event ID. The default is yesterday at this time (`$NOW-1d`). The time format is for a 24-hour clock. That is, hh is 00 - 24.
- `-end <end>`
Specify the end of the range of events to transfer as a time (mm/dd/yyyy hh:mm:ss) or by event ID. The default is the time specified by `$NOW`. The time format is for a 24-hour clock. That is, hh is 00 - 24.
- `-qtype <qtype>`
Specify the type of entries you used in `-start` and `-end`. For times, the parameters can be `EndTime` or `ManagerReceiptTime` (the default). For event IDs use `EventId`.
- `-sg "<storageGroup>"`
Specify one or more storage groups, in double quotes, and separated by a space. If omitted, events in all storage groups are transferred.
- `-threads <threads>`
Specify the number of threads to use for the transfer. The default is 5. See ["Threads" on the next page](#).
- `--h`
Help

Examples:

```
arcsight event_transfer -dpath <***path***> -dtype Hadoop -sg "storage group 1" "storage group 2"
```

```
arcsight event_transfer -dtype Hadoop -dpath <***path***> -format cef -start "05/04/2016 15:45:00" -end "05/04/2016 16:45:00"
```

Note:

- The `-start`, `-end`, and `-qtype` parameters must be of the same type: either event ID or time. If you mix them up, the tool cannot tell and you get unexpected results.
- The command parameters are case sensitive; use them as shown.

Event Data Transfer Tool Usage Notes

File Names

When the data is transferred to Hadoop, the filename you specify in `-dpath`, such as `abc.gz`, has the start and end appended in front of the extension in the form `abc_<start>_<end>.gz`.

More threads generate more files.

The file extension (.gz, in this example), specifies the compression used. If you do not want any compression, use a file extension such as .txt or .csv.

Threads

The number of threads selected for the transfer affects the rate of transfer in events per second (EPS). Tests have shown that increasing the number of threads increases throughput, but at some point, more threads actually reduce EPS due to resource limitations. The point at which this occurs depends on the number of processors and the amount of other work on that machine. The default of five threads should be satisfactory in most cases.

If you increase to 10 threads you need 6 GB of memory available and another 3 GB for each additional 10 threads. The memory used for this process is controlled by a line in a script used by the Event_Transfer command. You can edit the `DirectMemorySize` value in the file, `/opt/arcsight/logger/current/arcsight/logger/config/event_transfer/eventdatatransfertools_config.sh`.

To change the memory used:

1. Comment this line:
`#JVM_HEAP_SIZE="-Xms3g -Xmx6g"`
2. Un-comment this line, which sets direct memory size to 9 GB by default:
`DIRECT_MEMORY_SIZE="-XX:MaxDirectMemorySize=9g"`
3. Optionally change the `DirectMemorySize` value as applicable.
The configuration file itself provides suggestions for size based on threads.

Data Compression

You can specify a Hadoop compression codec by using the file name extension or suffix that corresponds to that codec. Compression occurs before the data is transferred. The compression codecs supported by this transfer tool are:

Suffix	Codec
.bz2	Bzip2Codec
.gz	GzipCodec

The Bzip2Codec appears to have better compression, but the GzipCodec appears to provide a higher EPS value for transfer to the Hadoop system. For more information on these compression codecs, refer to your Hadoop documentation. The `event_transfer` command removes the CORR-Engine compression and then applies the Hadoop compression before, but as part of, the transfer.

If you do not specify a codec-specific file extension, the data is not compressed. Without Hadoop compression, the data in Hadoop is larger than the archive size in the CORREngine. This is because the CORREngine data is uncompressed when it is transferred to the Hadoop cluster and the Hadoop file format is larger.

This event migration tool does not transfer Binary Large Object (BLOB) or Character Large Object (CLOB) data.

Transfer Failures

If the transfer fails, you must delete all the data that was transferred in the attempt, before you retry the operation.

The number of files transferred depends on the number of threads used.

File names can be identified by their timestamp.

Transfer Performance

Whether transferring data to Hadoop impacts normal ESM performance depends on how many events you transfer, which event columns you opt to transfer, how often you transfer data, and the number of threads used for data transfer.

However, there is no way to recommend settings that will work in all environments. Try various settings until you settle on the ones that work best for you.

Transferring data to Hadoop is somewhat slower than transferring data to the local machine, but the difference is minimal.

Size of Transferred Files

You may notice a difference in file sizes between Hadoop Distributed File System (HDFS) and Linux local file system. This difference appears only when you use the command `ls -lh`. Instead, verify file sizes using the basic `ls` command.

Column Names

The column (field) names assigned in Hadoop are the Common Event Format (CEF) names. For a description of the CEF field names, refer to the document entitled *Implementing ArcSight Common Event Format (CEF)*, which is available on <https://community.softwaregrp.com/t5/ArcSight-Product-Documentation/ct-p/productdocs>.

Appendix D: Creating Custom E-mails Using Velocity Templates

ESM supports the use of *velocity templates* or scripts as defined by The Apache Velocity Project. Velocity templates are a means of specifying dynamic or variable inputs to, or outputs from, underlying Java code.

Velocity templates have many potential applications in ESM. This section describes one such application, E-mail Notification Messages, which you can use Velocity templates on your Manager to create custom e-mail messages to suit your needs.

Note: Velocity templates are an advanced user feature:

- Velocity templates can have wide-ranging effects, so misapplication or inappropriate application is possible. HPE cannot assume responsibility for adverse results caused by user-created Velocity templates.
- ESM does not provide error checking or error messaging for user-created velocity expressions. Refer to the Apache Velocity Project web page at <http://velocity.apache.org/engine/devel/user-guide.html> for information.

Notification Velocity Templates - Example

The <ARCSIGHT_HOME>/Manager/config/notifications directory contains the following two Velocity templates for customizing e-mail notifications:

- `Email.vm`: The primary template file that calls secondary template files.
- `Informative.vm`: The default secondary template file.

Velocity Template `#if` statement

The general format of the `#if` statement for string comparison is:

```
#if ($introspector.getDisplayValue($event, ArcSight_Meta_Tag) Comparative_
Operator Compared_Value)
```

The `#if` statement for integer comparison is:

```
#if ($introspector.getValue($event, ArcSight_Meta_Tag).intValue()Comparative_
Operator Compared_Value)
```

You can specify `ArcSight_Meta_Tag`, `Comparative_Operator`, and `Compared_Value` to suit your needs.

`ArcSight_Meta_Tag` is a string when using the `#if` statement for string comparison (for example, `displayProduct`) and is an integer for the `#if` statement for integer comparison (for example, `severity`).

For a complete listing of ArcSight meta tags, see the Token Mappings topic in ArcSight FlexConnector Guide.

`Comparative_Operator` is `==` for string comparison; `=`, `>`, and `<` for integer comparison.

`Compared_Value` is a string or an integer. For string comparison, enclose the value in double quotes ("").

Using Email.vm and Informative.vm

It is important to understand the commonly used Velocity programming elements in the `Email.vm` and `Informative.vm` files before editing these files. `Email.vm` calls the secondary template file `Informative.vm` (`#parse ("Informative.vm")`). The `Informative.vm` file lists all the non-empty fields of an event in the format `fieldName : fieldValue`.

The default `Email.vm` template file contents are:

```
## This is a velocity macro file...  
## The following fields are defined in the velocity macro.  
## event == the event which needs to be sent.  
## EVENT_URL == root of the event alert.  
#parse ("Informative.vm")
```

This message can be acknowledged in any of the following ways:

- 1) Reply to this email. Make sure that the notification ID listed in this message is present in your reply)
- 2) Login to the ArcSight Console and click on the notification button on the status bar

To view the full alert please go to at `${EVENT_URL}`

The default `Informative.vm` template file contents are:

```
=== Event Details ===  
#foreach( $field in $introspector.fields )  
#if( $introspector.getDisplayValue($event, $field).length() > 0 )  
${field.fieldDisplayName}: $introspector.getDisplayValue($event, $field)
```

#end

#end

Understanding the Customization Process

If you want to customize the template files to suit your needs, create new secondary templates containing fields that provide information you want to see in an e-mail for a specific condition.

For example, if you want to see complete details for an event (Threat Details, Source Details, Target Details, and any other information) generated by all Snort devices in your network, create a secondary template file called `Snort.vm` in `<ARCSIGHT_HOME>/config/notification`, on your Manager, with the following lines:

```
=== Complete Event Details ===
```

```
Threat Details
```

```
Event: $introspector.getDisplayValue($event,"name")
```

```
Description: $introspector.getDisplayValue($event,"message")
```

```
Severity: $introspector.getDisplayValue($event,"severity")
```

```
-----
```

```
Source Details
```

```
Source Address: $introspector.getDisplayValue($event,"attackerAddress")
```

```
Source Host Name: $introspector.getDisplayValue($event,"attackerHostName")
```

```
Source Port: $introspector.getDisplayValue($event,"sourcePort")
```

```
Source User Name: $introspector.getDisplayValue($event,"sourceUserName")
```

```
-----
```

```
Target Details
```

```
Target Address: $introspector.getDisplayValue($event,"targetAddress")
```

```
Target Host Name: $introspector.getDisplayValue($event,"targetHostName")
```

```
Target Port: $introspector.getDisplayValue($event,"targetPort")
```

```
Target User Name: $introspector.getDisplayValue($event,"targetUserName")
```

```
-----
```

```
Extra Information (where applicable)
```

```
Transport Protocol: $introspector.getDisplayValue($event,"transportProtocol")
```

```
Base Event Count: $introspector.getDisplayValue($event,"baseEventCount")
```

```
Template: /home/arcsight/arcsight/Manager/config/notifications/Snort.vm
```

After you have created the secondary templates, you can edit the `Email.vm` template to insert conditions that call those templates.

As shown in the example below, insert a condition to call `Snort.vm` if the `deviceProduct` in the generated event matches "Snort".

```
#if( $introspector.getDisplayValue($event, "deviceProduct") == "Snort" )  
#parse("Snort.vm")  
#else  
#parse("Informative.vm")  
#end
```

Customizing the Template Files

Follow these steps to customize the `Email.vm` and create any other secondary template files to receive customized e-mail notifications:

1. In `<ARCSIGHT_HOME>/config/notifications`, create a new secondary template file, as shown in the `Snort.vm` example in the previous section.
2. Save the file.
3. Edit `Email.vm` to insert the conditions, as shown in the example in the previous section.
4. Save `Email.vm`.

Velocity Template Sample Output

If you use the `Snort.vm` template and modify `Email.vm` as explained in the previous section, here is the output these templates generate:

```
Notification ID: fInjoQwBABCgMJkA-a8Z-Q== Escalation Level: 1
```

```
=== Complete Event Details ===
```

```
Threat Details
```

```
Event: Internal to External Port Scanning
```

```
Description: Internal to External Port Scanning Activity Detected;  
Investigate Business Need for Activity
```

```
Severity: 2
```

Source Details

Source Address: 10.129.26.37

Source Host Name:

Source Port: 0

Source User Name: jdoe

Target Details

Target Address: 161.58.201.13

Target Host Name:

Target Port: 20090

Target User Name:

Extra Information (where applicable)

Transport Protocol: TCP

Base Event Count: 1

Template: /home/arcsight/arcsight/Manager/config/notifications/Snort.vm

How to Respond

This message can be acknowledged in any of the following ways:

- 1) Reply to this email. Make sure that the notification ID listed in this message is present in your reply)
- 2) Login to the ArcSight Console and click on the notification button on the status bar
- 3) Login to myArcSight and go to the My Notifications Acknowledgment page at <https://mymanager.mycompany.com:9443/arcsight/app?service=page/NotifyHome>

View the full alert at:

<https://mymanager.mycompany.com:9443/arcsight/app?service=page/NotifyHome>

Appendix E: Configuration Changes Related to FIPS

This appendix provides information about and instructions for configuring ESM to support Federal Information Processing Standard (FIPS) 140-2, Suite B, and some other configuration changes you can make while in FIPS mode.

FIPS is a standard published by the National Institute of Standards and Technology (NIST) and is used to accredit cryptographic modules in software components. A cryptographic module is either hardware or software or a combination that is used to implement cryptographic logic. The US federal government requires that all IT products dealing with Sensitive, but Unclassified (SBU) information meet the FIPS standard.

- To be compliant with FIPS 140-2, all components, including Connectors and Logger, if present, must be configured in FIPS mode. Connectors and Logger setup are covered in their documentation.
- For information about supported platforms and specifics about FIPS mode architecture for all ESM products, contact Customer Support.

FIPS Encryption Cipher Suites

A cipher suite is a set of authentication, encryption, and data integrity algorithms used for securely exchanging data between an SSL server and a client. Depending on FIPS mode settings, some of the following specific cipher suites are automatically enabled for ESM and its clients.

FIPS 140-2

- TLS_RSA_WITH_AES_128_GCM_SHA256
- TLS_RSA_WITH_AES_128_CBC_SHA

Note: These are the same cipher suites as are used for non-FIPS mode.

FIPS Suite B

In 192 bit mode, the following 192-bit cipher suites are supported.

- TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA
- TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384

In 128 bit mode, the following 128-bit cipher suites are supported.

- TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA
- TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256

Key Pair Types Used in FIPS Mode

For FIPS 140-2, RSA keys with 2,048 bits are used (the same as non-FIPS mode). For FIPS Suite B, Elliptic Curve keys must be used. For 128 bit security, keys with at least 256 bits are required. For 192 bit security, keys with at least 384 bits are required. Note that some browsers will not communicate using keys longer than 384 bits, so 384 bits is a good choice for any Suite B key pair.

The type of key pair for FIPS with Suite B is different. The key depends on the level of classification you need to accommodate. FIPS Suite B requires the use of elliptic curve cryptography. The minimum length of keys is:

- 256: for up to secret classifications corresponding to 128-bit encryption
- 384: for up to top secret classifications corresponding to 192-bit encryption

See ["Generating a Key Pair" on page 87](#) for details on key pair generation.

Import the CA-Signed Certificate in FIPS Mode

Perform these steps when you need to convert a Manager certificate to CA-signed. If you have a CA-signed certificate, and then change the Manager IP address or hostname, you must repeat this process to get a CA-Signed certificate.

1. Create a CSR and send it to the CA. The CA will send both the root and reply that needs to be copied in order for the reply to get installed. This will contain the certificate reply and the root certificate. Verify name of the issuer that signed your certificate exists as a Trusted CA in cacerts.
2. Copy <ARCSIGHT_HOME>/config/jetty/keystore.bcfks to <ARCSIGHT_HOME>/config/jetty/keystore.bcfks.old. This creates a backup copy of keystore.bcfks that you can revert to if there are any problems with the certificate import.
3. Import the root certificate (the root certificate must be imported before you import the reply) into the Manager's keystore, with the alias rootCA in this example:

```
./arcsight keytool -store managerkeys -importcert -alias rootCA -file /home/arcsight/rootCA.cer
```

4. Import the certificate reply, using the alias mykey (you must use this alias):

```
./arcsight keytool -store managerkeys -importcert -alias mykey -file /home/arcsight/careply.cer
```


Generating a New Key Pair When Changing a Manager Hostname for FIPS Mode

You perform this set of tasks only if you have changed the Manager hostname.

1. Delete the existing Manager key pair:

If you are generating a key pair on the Manager, first delete the one that is there by default:

```
bin/arcsight keytool -store managerkeys -delete -alias mykey
```

2. Generate a new key pair for the Manager:

For FIPS 140-2:

```
bin/arcsight keytool -store managerkeys -genkeypair -dname  
"CN=<hostname>" -alias mykey -keyalg rsa -keysize 2048 -validity <in_days>
```

For FIPS Suite B 192:

```
bin/arcsight keytool -store managerkeys -genkeypair -dname "CN=<hostname>"  
-alias mykey -keyalg ec -keysize 384 -validity <in_days>
```

3. Stop the Manager and start all services so the Manager can start using the self-signed certificate.
Run the following commands to do so:

```
/etc/init.d/arcsight_services stop manager
```

```
/etc/init.d/arcsight_services start all
```

Always perform these steps after generating a key pair.

4. Stop each connector.
5. Use `agentsetup` to import the new certificates into the Console.
6. Restart each connector
7. Restart the Console.
8. Import the new certificate into the client truststore on the manager. This is necessary so that manager utilities will continue to work. Delete the existing manager certificate from the manager's client truststore with the following command:

```
bin/arcsight keytool -store clientcerts -delete -alias <hostname>
```

then add the new certificate with these commands:

On the Manager:

```
bin/arcsight keytool -store managerkeys -exportcert -alias mykey -file  
mykey.cer
```

On the client (connector or console):

```
bin/arcsight keytool -store clientcerts -importcert -alias <hostname> -  
file mykey.cer
```

Changing a Default Mode Installation to FIPS 140-2

Note that before migrating from default mode to FIPS mode, keep in mind that pre-v4.0 Loggers cannot communicate with a FIPS-enabled Manager. Also note:

- Default to Suite B conversion is not supported in compact mode or in distributed correlation mode.
- FIPS mode conversion (of a non-FIPS system to FIPS 140-2) is supported in compact mode **only**. You cannot convert your system's FIPS mode if your system is in distributed correlation mode.
- Non-FIPS systems in distributed correlation mode cannot be converted to FIPS 140-2.

To convert an existing default mode installation to FIPS mode, on each component, migrate the existing certificates and key pairs from the component's cacerts and keystore to the component's FIPS keystore. The following sub-sections provide you step-by-step instructions on how to do so for each component.

Manager

The tasks below require that you use `keytool`; `keytoolgui` is not supported in FIPS mode.

To convert an existing Manager from default mode to FIPS mode you will export the certificate and import the key pair. Then you will run commands from the Manager's home directory to verify the key pair import and import the certificate.

To convert the Manager from default mode to FIPS 140-2:

1. Log in as user `arcsight`.
2. Stop the Manager if it is running.

```
/etc/init.d/arcsight_services stop manager
```
3. Run `bin/arcsight managersetup`.
 - a. Select **Run Manager in FIPS Mode**.
 - b. Select **FIPS 140-2**.
 - c. Complete `managersetup`.
4. If you have installed SSL client certificates on the manager, this command automatically copies them to the FIPS keystore:

```
bin/arcsight keytool -importkeystore -store managerkeys -srckeystore  
config/jetty/truststore -srcstoretype JKS -srcstorepass <old managercerts  
password> -deststorepass <managerkeys password>
```

Note: The `-srcstorepass` and `-deststorepass` options are not necessary if the `<old managercerts password>` matches the `managerkeys password`. If you have not changed these passwords, both will be *changeit*.

5. Copy the current manager key to the FIPS keystore:

```
bin/arcsight keytool -importkeystore -store managerkeys -srckeystore
config/jetty/keystore -srcstoretype JKS -alias mykey -srckeypass <old
managerkeys password> -destkeypass <managerkeys password>
```

If you have not changed the old password the `<old managerkeys password>` will be *password*. When asked if should overwrite existing keystore, select **Yes**.

6. Restart services:

```
/etc/init.d/arcsight_services start
```

ArcSight Console

The tasks below require that you use `keytool`; `keytoolgui` is not supported in FIPS mode.

Follow these steps to convert an existing ArcSight Console from default mode to FIPS mode. Follow these steps after you have converted the Manager to FIPS, as detailed in section ["Manager" on the previous page](#).

To convert the Console from default mode to FIPS 140-2:

1. Stop the ArcSight Console if it is running.
2. Export the certificate and copy it to the Console current directory:

```
bin/arcsight keytool -exportcert -store managerkeys -alias mykey -file
manager.cert
```
3. Run the Console setup program by running `bin/arcsight consolesetup`.
 - a. Select **No, I do not want to transfer the settings**.
 - b. Select **Run Console in FIPS Mode**.
 - c. Select **FIPS 140-2**.
 - d. Follow the prompts in the next few screens until the wizard informs you that you have successfully configured the Console.

Note: In the unlikely event you see the message:

Warning: Custom SSL keystore properties for client are detected, manual configuration may be necessary. when running Console setup, check the values in `console/client.properties`. Make sure the value of `ssl.keystore.password` matches that of `ssl.truststore.password`, and that the value of `ssl.keystore.path` matches that of `ssl.truststore.path`. If the paths do not match, change them so they do. If the passwords do not match follow the steps in ["Changing Keystore/Truststore Passwords" on page 91](#) to change passwords. It is much simpler to change the password of the truststore, since the truststore contains no keys.

4. If `config/keystore.client` exists, this indicates that SSL client certificates are in use. Run the

following command to migrate them to the FIPS keystore:

```
bin/arcsight keytool -importkeystore -store clientkeys -srckeystore  
config/keystore.client -srcstoretype JKS
```

5. Remove the old manager certificate if it exists:

```
bin/arcsight keytool -delete -store clientcerts -alias <hostname of  
manager>
```

6. Import the manager certificate into the Console truststore:

```
bin/arcsight keytool -importcert -store clientcerts -alias <hostname of  
manager> -file manager.cert
```

Select **Yes** when asked if this certificate should be trusted.

7. Start the console with `bin/arcsight console`. When you start the Console, you should see a message in the `logs/console.log` file telling you that the Console has started in FIPS mode.

Connectors

For information on configuring Connectors for FIPS, refer to *SmartConnector Configuration Guide* for each SmartConnector.

Changing Keystore/Truststore Passwords in FIPS Mode

It is a good security practice to change the keystore and truststore passwords after installing ESM or ESM console. In addition to changing the keystore password, you need to separately change the value that ESM uses for this password, so that ESM can continue to access the keystore. FIPS has a single shared keystore/truststore, so the keystore and truststore passwords must be the same. Changing passwords using `bin/arcsight changepassword` is recommended since this program will encrypt the passwords in the configuration file.

Note: Key pairs also have passwords. ESM expects that these passwords will be the same as the keystore passwords, so both must be changed.

Below is an example of how to change the passwords on the Manager keystore.

Note: These steps must be performed in the order given.

1. `/etc/init.d/arcsight_services stop manager`
2. `bin/arcsight keytool -store managerkeys -keypasswd -alias mykey`
The command `keytool` will prompt for the new password.
3. `bin/arcsight keytool -store managerkeys -storepasswd`

The command `keytool` will prompt for the new password. Enter the same password as for step 2.

4. `bin/arcsight changepassword -f config/esm.properties -p server.privatekey.password`

The command `changepassword` will prompt for the new password. Enter the same password as for step 2.

5. `/etc/init.d/arcsight_services start all`

Here is an example of how to change the password on a Console truststore to match that of the console keystore. This can be needed to convert a default mode installation (with separate keystore/truststore) to FIPS mode with a single keystore/truststore. The console should not be running. Note that no `keytool -keypasswd` command is needed, as there are no keys in the truststore.

1. `bin/arcsight keytool -store clientcerts -storepasswd`

The command `keytool` will prompt for the new password. Enter the password for the `clientcerts` keystore.

2. `bin/arcsight changepassword -f config/client.properties -p ssl.truststore.password`

The command `changepassword` will prompt for the new password. Enter the password for the `clientcerts` keystore.

Configure Your Browser for FIPS

To connect a browser to a FIPS web server, the browser must be configured to support FIPS. Review the documentation for your browser and follow the instructions to make it FIPS compliant before using it for ArcSight Console online help or to connect to the ArcSight Command Center.

Make sure that all SSL protocols are turned off. For example, on Microsoft Internet Explorer (IE):

1. Select **Tools > Internet Options**.
2. Select the **Advanced** tab.
3. Scroll down to the **Security** section.
4. Uncheck **Use SSL 2.0** and **Use SSL 3.0**.
5. Check the TLS options. For details on TLS support, see the topic *TLS Support in the ESM Installation Guide*.

Other browsers (and other versions of IE) may have different menu items or options for doing this, so refer to your browser documentation.

When using a browser with Suite B, it matters how you generate your key pair. For information about the encryption to use with browsers, see ["Key Pair Types Used in FIPS Mode" on page 200](#).

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