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Enterprise

HPE ClusterStor™ and Sonexion® System Snapshot Analyzer (SSA) User Guide (1.9.8) (S-2561)

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Contents

1 About the ClusterStor™ and Sonexion® SSA User Guide

ClusterStor™ and Sonexion® System Snapshot Analyzer (SSA) User Guide (1.9.8) S-2561 describes how to download, install, and use this release of the HPE Cray System Snapshot Analyzer (SSA) software.

Table 1. Revisions to this Publication

Publication Title	Date	Updates
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.9.8) S-2561	September 2021	Supports SSA release 1.9.8
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.9.7) S-2561	May 2021	Supports SSA release1.9.7.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.9.5) S-2561	February 2021	Supports SSA release1.9.5.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.9.4) S-2561	September 2020	Supports SSA release1.9.4.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.9.2) S-2561	March 2020	Supports SSA release1.9.2.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.9.1) S-2561	January 2020	Supports SSA release1.9.1.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.8.0) S-2561	July 2019	Supports SSA release1.8.0.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.7.1) S-2561	December 2018	Supports SSA release1.7.1.
ClusterStor™ and Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.7.0) S-2561	July 2018	Supported SSA release 1.7.0. Updated documenttitle and updated terminology to ClusterStor.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.6.5) S-2561	March 2018	Supports SSA release1.6.5.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.6.4) S-2561	January 2018	Supported SSA release1.6.4.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.6.3) S-2561	December 2017	Supported SSA release1.6.3.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.6.2) S-2561	November 2017	Supported SSA release1.6.2.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.6.0) S-2561	September 2017	Supported SSA release1.6.0.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.5.0) S-2561	June 2017	Supported SSA release1.5.0.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.4.0) S-2561	March 2017	Supported SSA release1.4.0.

Publication Title	Date	Updates
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.3.0) S-2561	December 2016	Supported SSA release 1.3.0.
Sonexion™ System Snapshot Analyzer (SSA) User Guide (1.2.2) S-2561	September 2016	Supported SSA release 1.2.2.

Scope and Audience

Procedures should be performed by trained Cray system administrators or service providers familiar with ClusterStor or Sonexion software administration.

Product Terminology

The *ClusterStor™ and Sonexion® System Snapshot Analyzer (SSA) User Guide (1.9.8) S-2561* is applicable to both ClusterStor and Sonexion products. For consistency, this version of the user guide will use the ClusterStor name only.

Typographic Conventions

`Monospace` — Indicates program code, reserved words, library functions, command-line prompts, screen output, file/path names, key strokes (e.g., `Enter` and `Alt-Ctrl-F`), and other software constructs.

`Monospaced Bold` — Indicates commands that must be entered on a command line or in response to an interactive prompt.

`Oblique` or *`Italics`* — Indicates user-supplied values in commands or syntax definitions.

Proportional Bold — Indicates a graphical user interface window or element.

\ (backslash) — At the end of a command line, indicates the Linux® shell line continuation character (lines joined by a backslash are parsed as a single line). Do not type anything after the backslash or the continuation feature will not work correctly.

Trademarks

Related Resources

- Refer to Cray *SFDC Article 6454*, *SSA Sonexion: SSA Sonexion 1.6.0 InfiniBand fabric enable reset plugin* for information about collecting and resetting InfiniBand counters.
- Refer to Cray Field Notice FN 6122 for more information about SSA client release history
- Release notes for SSA 1.9.8 are available on *crayport.cray.com (CrayPort)*
- A `README` file for SSA 1.9.8 is included in `/opt/cray/ssa/default/share/doc/README.plugin-doc` that describes what each plugin in the release was designed to do (this file is also available on *CrayPort*)
- The `ssacli man` page
- *Cray SSA White Paper*
- *support.hpe.com/hpesc/public/home*

2 SSA Introduction

Cray system snapshot analyzer (SSA) software is support analytics technology that securely collects, analyzes, and uploads (if upload is enabled) product health, configuration, or triage information about a ClusterStor system to Cray service. After being captured and uploaded by SSA, the data is analyzed using a sophisticated analytics platform to detect and enumerate changes over time, detect changes in the health state of various aspects of a system, or process triage information to assist with case resolution. Through automation, SSA improves the overall customer experience by significantly reducing the manual effort and time required to report and resolve issues. This becomes especially apparent on larger systems.

The SSA *shepherd* is the client software that manages the collection, first-level analysis, and secure transport of support telemetry information back to Cray.

For additional information and references on SSA, please visit *support.hpe.com/hpesc/public/home*. For details on how to activate an SSA account and download SSA software, refer to Cray *SFDC Article 6765*, *Getting Started with theCray System Snapshot Analyzer (SSA)*.

Request Support for SSA

To request support, contact a Cray support representative or file a service case against the SSA component. The option to submit a request for enhancement (RFE) or defect report (bug) against SSA is also available. Feedback and suggestions are valued and welcomed.

3 Configure SSA for ClusterStor

Download the SSA shepherd software by following guidance in Cray *SFDC Article 6765*, *Getting Started with the Cray System Snapshot Analyzer (SSA)*. Customers can access Article 6765 at *CrayPort*.

A CrayPort account is required to download software and activate a SSA account. SSA account activation is required in order to obtain authentication credentials for use during the configuration of SSA for snapshot upload to Cray.

Visit *https://crayport.cray.com* if you have active support entitlements and would like to register for CrayPort accounts.

Shepherd Overview

SSA shepherd software is delivered in two packages. One contains the shepherd command line interface (`ssacli`) and libraries. The other contains plugins for the specific Cray platform (Cray XE, Cray XC, ClusterStor/ Sonexion, or Cray CS Series). These packages are revision matched, with the plugin package dependent on the base shepherd software.

The shepherd operates in three progressive stages—collect, snapshot and upload.

Collect Stage The collect stage is responsible for utilizing plugins to perform collection and analysis of system information, and to prepare for subsequent stages.

Snapshot Stage The snapshot stage searches for collections which have not been previously processed. It encodes them into a network friendly format in preparation for upload to Cray.

Upload Stage The upload stage then takes any snapshots which have not been uploaded and attempts to upload them to Cray for further analysis and processing.

The upload takes place over a secure network connection, using transport layer security (TLS), and is further authenticated using credentials from customer SSA accounts.

The shepherd uses a configurable purge policy to remove older collections or snapshots and is either invoked on-demand or automatically via `cron`.

The supported run configurations for the shepherd for ClusterStor systems are covered in *Collect and Upload a Snapshot* on page 11.

3.1 SSA Prerequisites

SSA Upload Account Activation

The activation of a SSA account in CrayPort is required in order to obtain the organization name and passphrase to use in the configuration of SSA for the upload of snapshot information to Cray.

Network Connectivity

The shepherd application only initiates outbound network connection—over TCP/IP (version 4) TCP port 443—to the network host `ssa.cray.com`. Cray does not initiate an inbound connection to the customer network/system. The outbound network session is established only long enough to submit a snapshot of information to Cray. Then it terminates.

To communicate with the Cray upload system, outbound connectivity must be provided from the user site as described. Optionally, a local network proxy (HTTP, SOCKS) can be utilized through features in the shepherd application. For additional details about how to configure a proxy, refer to the comments in the `shepherd.conf` file distributed with the shepherd.

Configuration of the `sudo` Utility

The shepherd leverages the functionality provided by the `sudo` utility to drop privileges and provide an audit trail of application activity. The `root` user must be able to execute any command, as any user, on installation nodes via `sudo`. The `root` user must not be prompted for a password to execute `sudo` commands. In addition, the `requiretty` setting must not be enabled because `sudo` will not allow the execution of any scheduled jobs via SSA (e.g. those not run directly on a real TTY by an interactive user).

SSH Authentication

The `root` user must be allowed passwordless SSH access from the management node to the boot node. The `root` user must also be allowed passwordless SSH access from the boot node to the SDB node.

SSH Authentication

The `root` user must be allowed passwordless SSH access from the management node to the cluster nodes.

3.2 Install the ClusterStor SSA RPM Packages

Prerequisites

This procedure must be performed as the `root` user on the cluster management node.

About this task

This procedure installs the base SSA shepherd application and system-specific plugins for systems.

Time Required: Approximately 30 minutes. SSA RPMs can be installed during customer operations and while the Lustre file systems are running.

Packages for ClusterStor are used in the examples for illustration only. Always download the latest shepherd software specific to the system.

Perform the RPM installation steps on the primary management node, then on the secondary management node. The SSA software is not synchronized between the two management nodes. The configuration and SSA client (shepherd) versions must be the same on each management node.

The SSA installation process creates cron entries in `/etc/cron.d/cray-ssa/` for scheduled operation.

Procedure

1. Log in to the primary management node as `root`.

2. If upgrading SSA, disable SSA using *Enable or Disable SSA* on page 15.

3. Install the RPM packages:

   ```
   # rpm -ivh \
   cray-ssa-shepherd-1.9.8-0.x86_64.rpm cray-ssa-shepherd-sonexion-plugins-1.9.8-0.x86_64.rpm
   Preparing...                           ################################# [100%]
      1:cray-ssa-shepherd         ################################# [ 50%]
   Active mgmt node, attempting to create /mnt/mgmt/var/opt/cray/ssa directory structure ...
   Setting Alternatives (update-alternatives) ...
      2:cray-ssa-shepherd-sonex################################# [100%]
   ```

   Installation of the RPMs yields messages associated with the `alternatives` software. For information about how to manage the version of shepherd used, refer to the `man` page for `update-alternatives` and *Specify a Different Version of SSA* on page 17 (if the RPM for the platform uses `alternatives`).

4. Repeat the steps above on the secondary management node.

5. Exit and `sudo` to `root` on each management node to invoke the new `root` user environment.

3.3 Edit the ClusterStor Shepherd Configuration File

Prerequisites

This procedure must be performed as the `root` user.

About this task

The ClusterStor shepherd uses a single configuration file, `/opt/cray/ssa/default/etc/shepherd.conf`. The configuration file is structured into sections and contained within square brackets, for example `[control]`. Each section and each of its related parameters contain a header of descriptive configuration information. Sections may contain individual or groups of related parameters. Prior to running the shepherd, edit this file on the primary management node.

The steps below describe commonly configured parameters for desired shepherd features. It is imperative that both the primary and secondary management nodes have the same shepherd configuration entries. After the completion of the procedure below on the primary management node, copy the configuration file over to the secondary management node.

Always make a backup copy of the shepherd configuration file (`shepherd.conf`) for reference.

> **IMPORTANT:** Review the SSA release notes for versions that have compatible configuration files. If the version being installed is compatible with the previous version, simply make a backup copy of the new version's configuration file and overwrite it with the existing shepherd configuration file.
>
> **IMPORTANT:** Especially on larger systems, review the `collection` and `snapshot` settings in the shepherd configuration file and the associated available free file system space.

Procedure

1. Login to the primary management node as `root`.

   - If using an existing compatible configuration file, copy the file to the appropriate location as shown and skip to step 8.

     ```
     MGMT0#  cd /opt/cray/ssa/default/etc
     MGMT0#  cp -a shepherd.conf shepherd.conf-dist
     MGMT0#  cp -a /opt/cray/ssa/ssa_version/etc/shepherd.conf .
     ```

   - If this is an initial installation, proceed to step 2.

2. From the primary management node, edit `/opt/cray/ssa/default/etc/shepherd.conf` file.

3. Especially on larger systems, review the `collection` and `snapshot` settings in the shepherd configuration file and the associated free file system space. A review of the `collection_dir` setting and the associated amount of space should be done and if necessary, updated to a directory location with sufficient space available.

   a. If the `collection_dir` setting was updated, all other shepherd directory settings must be updated to match as well. These are:

      - The sysconf section's `log_dir`, `lock_dir`, `state_dir`, `scenario_dir` settings.
      - The snapshot section's `snapshot_dir` setting.

4. Enable the shepherd master operation mode. This configuration setting allows all stages (collection, snapshot, upload) to be active.

   Set `master_enabled: true` in the `[control]` section.

   ```
   [control]
   master_enabled: true
   ```

5. Set system identification information in the `[sysinfo]` section.

   a. Set the serial number of the system.

      ```
      [sysinfo]
      serial_num: 99999
      ```

   b. Set the system type.

      ```
      [sysinfo]
      system_type: SNX3000
      ```

   c. Set the system name.

```
[sysinfo]
system_name: prod
```

d. Set a short system description.

```
[sysinfo]
system_description: SNX3000 PROD
```

6. Set upload information in the `[upload]` section.

> **IMPORTANT:** If SSA must be run in local mode, (no information is uploaded to Cray), see *Configure SSA for Local Only Mode* on page 18 and skip steps 5 through 7.

The `upload_server`, `upload_org`, and `upload_pw` parameters in the `[upload]` section must be set before using the snapshot or upload stages.

a. Set the organization received when the SSA account was activated that snapshots will be uploaded for.

```
[upload]
upload_org: cto01
```

b. Set the password received when the SSA account was activated.

```
[upload]
upload_pw: SuperSecretPassword
```

These parameters must be set for a successful authentication and upload of SSA information to Cray.

7. Optional: Set, in the `[upload]` section, the upload server (`upload_server`) address to an IP address. Or, if using IP name resolution, set an additional X.509 (SSL/TLS) certificate validation option.

a. Optional: If using DNS or a local resolution method (e.g., `/etc/hosts`), set `verify_x509_host` to `true`.

This enables additional protection within the shepherd to validate that the subject name in the X.509 SSL/TLS certificate matches that of the server (ssa.cray.com), allows resolution of the DNS name ssa.cray.com, adds a small amount of security to the upload process, and should be enabled if using a suitable resolution method. The certificate chain for the SSA upload system is maintained locally within the shepherd application (isolated from other certificate stores on the system). The CA bundle file is located in `/opt/cray/ssa/default/etc/ssl/ssa.pem`.

```
[upload]
verify_x509_host: true
```

b. Optional: If not using DNS and if a manually configured local resolution method is not desired, set the `upload_server` to an IP address.

The upload system uses, at the time of this writing, a single IP address, `136.162.62.191`. This IP address should resolve via a DNS `PTR` reference to an `A` record ending in `.cray.com`. Any changes in SSA upload addressing will be communicated directly to customers by Cray.

1. Set `upload_server` to IP address (using the documented IP above).

```
[upload]
upload_server: 136.162.62.191
```

2. Ensure that `verify_x509_host` is set to false.

```
[upload]
verify_x509_host: false
```

8. Save the file and exit.

   After the configuration file is saved (with `master_enabled: true`) the `cron` schedule for the shepherd will be activated. The `cron` schedule can be located in `/opt/cray/ssa/default/etc/cray-ssa`. It is symbolically linked from `/etc/cron.d/cray-ssa`.

9. Validate the configuration.

   ```
   MGMT0# ssacli --check_conf
   [stdout] Configuration File and CLI Options Valid.
   ```

   The `ssacli` command should only be executed on the primary management node. If output differs from the above, review the messages presented and make corrections to the configuration file.

10. Use `scp` to copy the configuration from the primary management node to the secondary management node.

    ```
    MGMT0# scp -p /opt/cray/ssa/default/etc/shepherd.conf \
    snx99999n001:/opt/cray/ssa/default/etc/shepherd.conf
    ```

    IMPORTANT:

    Shepherd configuration files should only ever be copied between MGMT nodes on the same ClusterStor system. Copying the shepherd configuration file between distinct ClusterStor systems is not advised as it can result in multiple systems uploading under the same identity. This will make it difficult for Cray Support Teams to locate uploaded information and lead to fragmented historical information.

3.4 Collect and Upload a Snapshot

Prerequisites

IMPORTANT: This procedure is not necessary if upgrading to a newer version of SSA software.

This procedure must be performed on the ClusterStor primary management node as `root`. The output examples in this section have been reduced for the sake of brevity. They will vary depending on the task being performed.

About this task

SSA terminology:

Run Set Each (shepherd) plugin is associated with zero or more plugin run sets. A run set is an alpha-numeric, textual label for a configuration that the shepherd uses to select plugins for execution. If `ssacli` is not invoked with `--runset` options, the default run set is `default`. Plugins can, and often are, associated with multiple plugin run sets.

Output Channel Every shepherd collection and related snapshot is associated with exactly one output channel (channel). A channel is an alpha-numeric label. If `ssacli` is not invoked with the `--channel` option, the default channel is `default`. Channels allow information collected and reported by SSA to be categorized by use.

Scenarios Beginning with release 1.7.0, SSA for ClusterStor supports the **Scenarios** feature introduced in the Shepherd 1.6.3 release. The only scenario currently implemented for ClusterStor is `triage` which deprecates the need to supply both a `--runset` and `--channel` when collecting a triage snapshot. This simplifies the command to collect a triage snapshot to only `ssacli --scenario=triage`.

Release 1.9.8 contains four run sets, each targeting a different SSA use case. These run sets are provided in the table.

Table 2. Supported Shepherd Run Configurations on ClusterStor Systems

Purpose	Scenario	Run Set	Output Channel	Scheduled/ On-Demand	Frequency
Baselining and detecting change in product configurations	Not implemented	`default`	`default`	Either	Once daily
Product health monitoring	Not implemented	`health`	`health`	Scheduled	Every 15 minutes
Seagate telemetry information gathering	Not implemented	`seagate_telemetry`	`seagate_telemetry`	Scheduled	Every 15 minutes (offset by 7 minutes from `health`)
Product support bundle capture	`triage`	`triage`	`triage`	On-demand	As requested

To observe behavior for the `default` run set and channel, perform each stage of the shepherd process separately and review the shepherd output on the system console.

IMPORTANT: This procedure is not necessary if upgrading to a newer version of SSA software.

Procedure

1. Execute a collection for the `default` run set and channel.

   The execution time can vary between several minutes to up to 20 minutes on the largest ClusterStor systems (more than 100 SSUs).

```
[root@snx99999n000]# ssacli --collect
[stdout] UI master_control status is (enabled)
[stdout] MASTER CONTROLS -> (M:True, C:True, S:True, U:True)
[stdout] UI CONTROLS -> (C:True, S:False, U:False)
[stdout] Shepherd Session: 1515075962
[stdout] Exclusive run: Lock file created @ /mnt/mgmt/var/opt/cray/ssa/lock/ssa.lock_channel-
default_device-snx99999n000_SNX2000_99999
[stdout] COLLECT stage start
[stdout] PLOAD: 28 plugin source modules loaded
[stdout] Collection Session:   '1515075962'
[stdout] Collection Directory: '/mnt/mgmt/var/opt/cray/ssa/collection/snx99999n000_SNX2000_99999/
default/1515075962'
[stdout] Collection Channel:   'default'
[stdout] Run Sets:             '['default']'
```

```
[stdout] Explicit Plugins:     'None'
...
[stdout] ** Entering run-level 20 **
[stdout] Plugin 'shepherd.encode.diagnostic' started
[stdout] Plugin 'shepherd.encode.diagnostic' stopped, return 0, time 9.67
[stdout] 25333557.0 raw bytes collected via directives.
[stdout] no collection directories meet purge requirements
[stdout] COLLECT stage stop (normally)
[stdout] Collection output directory @ /mnt/mgmt/var/opt/cray/ssa/collection/
snx99999n000_SNX2000_99999/default/1515075962
[stdout] shepherd session stop successfully
[stdout] run took 100.70 seconds
```

If the `COLLECT` stage stops either normally or as stated with survivable exception, the collection process was successful. The shepherd creates a text report named `collection_report.txt` in the collection output directory located in: `/mnt/mgmt/var/opt/cray/ssa/collection/<collection_device>/default/<timestamp>`

This report provides a high-level summary of the collection, including:

- Information on the shepherd
- Amount of storage consumed by the collection
- The status of health checks the shepherd performed during the collection
- Platform summary information
- A plugin execution summary trace

This report can be useful to local operators in reviewing system status and high-level configuration. Survivable exceptions are part of the shepherd design. Individual plugins can fail in controlled ways, report these failures, and continue operation.

2. Execute a snapshot for the `default` run set and channel.

```
[root@snx99999n000]# ssacli --snapshot
[stdout] UI master_control status is (enabled)
[stdout] MASTER CONTROLS -> (M:True, C:True, S:True, U:True)
[stdout] UI CONTROLS -> (C:False, S:True, U:False)
[stdout] Shepherd Session: 1515076208
[stdout] Exclusive run: Lock file created @ /mnt/mgmt/var/opt/cray/ssa/lock/ssa.lock_channel-
default_device-snx99999n000_SNX2000_99999
[stdout] Starting SNAPSHOT stage
[stdout] Added '/mnt/mgmt/var/opt/cray/ssa/collection/snx99999n000_SNX2000_99999/default/1515075962'
to snapshot source list
[stdout] Est 18130548 bytes needed to snapshot, based on raw storage of 1 collection(s)
[stdout] Snapshot encoding dir created at '/mnt/mgmt/var/opt/cray/ssa/snapshot/default/isodx/staq01/
Linux/out/snx99999n000_SNX2000_99999/1515075962'
[stdout] no snapshot directories meet purge requirements
[stdout] Stopping SNAPSHOT stage normally
[stdout] shepherd session stop successfully
[stdout] run took 6.75 seconds
```

The `SNAPSHOT` stage should complete normally. Report other status messages to Cray support.

3. Invoke an upload of the `default` run set and channel.

```
[root@snx99999n000]# ssacli --upload
[stdout] UI master_control status is (enabled)
[stdout] MASTER CONTROLS -> (M:True, C:True, S:True, U:True)
[stdout] UI CONTROLS -> (C:False, S:False, U:True)
[stdout] Shepherd Session: 1515076262
[stdout] Exclusive run: Lock file created @ /mnt/mgmt/var/opt/cray/ssa/lock/ssa.lock_channel-
default_device-snx99999n000_SNX2000_99999
[stdout] Starting UPLOAD stage
[stdout] Upload Organization: staq01
[stdout] Upload Server: 136.162.62.191
[stdout] Upload Device: snx99999n000_SNX2000_99999
[stdout] Stopping UPLOAD stage normally
```

```
[stdout] shepherd session stop successfully
[stdout] run took 14.16 seconds
```

The `UPLOAD` stage should complete successfully. If the stage does not complete successfully, ensure the connectivity requirement has been met. Then report the issue to Cray support.

If the process above completes successfully, the first snapshot of the system support information is uploaded to Cray.

> **NOTE:** Cray recommends that the `triage` step be completed on an initial install of SSA to make sure there are no issues when collecting a triage snapshot.

4. Optional: If this is an initial installation, repeat steps 1 through 3 for the `triage` run set and channel. Add command line `--scenario=triage` to each of the `ssacli` command lines for `--collect`, `--snapshot`, and `--upload`.

4 Common Administrative Tasks

4.1 Enable or Disable SSA

Prerequisites

System Snapshot Analyzer (SSA) is installed on the ClusterStor system management node.

About this task

> **IMPORTANT:** Disable SSA prior to performing system maintenance to prevent erroneous health reports from being sent to Cray. Disabling SSA does not halt existing `ssacli` sessions but will prevent new sessions from starting. After maintenance is complete, enable SSA for system monitoring and reporting.

To automate control changes based on booted system state, administrators should integrate status information and enable/disable functionality into system boot control scripts. After maintenance operations are complete, enable SSA on the primary management node for proper operation.

Cray recommends that SSA be enabled and disabled using the `ssacli`, as opposed to making modifications to the `master_enabled` control setting in the `shepherd.conf` file. Make sure the `master_enabled` setting in the `shepherd.conf` file is set to `true`, then use the `ssacli` to enable or disable SSA from the command line.

Procedure

1. Log in to the primary management node as `root`.

2. Disable SSA.

   ```
   MGMT0# ssacli --master_control disable
   [stdout] UI master_control initial state set to (disabled)
   ```

3. Enable SSA.

   ```
   MGMT0# ssacli --master_control enable
   [stdout] UI master_control initial state set to (enabled)
   ```

4. Check status.

   ```
   MGMT0# ssacli --master_control status
   [stdout] UI master_control status is (enabled)
   ```

4.2 Upload On-demand Snapshots to Cray

Prerequisites

System Snapshot Analyzer (SSA) is installed on the ClusterStor system management nodes.

About this task

Cray service may request a site to upload a configuration baseline snapshot or triage snapshot specifying an SFDC case number. SFDC case *100000* is used in this example.

Procedure

1. Log in to the primary management node as root.

2. Upload an on-demand snapshot to Cray.

```
MGMT0# ssacli
```

3. Upload a triage snapshot to Cray and substitute the case number(s) associated with the service request(s) on the command line.

```
MGMT0# ssacli --ref 'sfdc:100000' --scenario=triage
```

4.3 ClusterStor InfiniBand Fabric Plugins

The 1.9.8 ClusterStor SSA release includes two plugins to collect and reset InfiniBand error counters. Error counters that are collected and reset are from all nodes that are connected to the ClusterStor InfiniBand fabric and logged into the subnet manager (SM). The plugin to collect the error counters is executed as part of the SSA triage, default, and health run sets. The health run set will be executed every 15 minutes. As of the 1.6.0 release,the plugin to reset the InfiniBand error counters (cluster.network.infiniband.faberrcnt.reset plugin) is disabled by default.

Sites that have no other mechanism of clearing the InfiniBand error counters should enable the cluster.network.infiniband.faberrcnt.reset plugin. Not clearing the InfiniBand error counters on a regular basis will result in erroneous data being collected.

For the procedure to disable the cluster.network.infiniband.faberrcnt.reset plugin, please refer to Cray *SFDC Article 6454*, *SSA Sonexion: SSA Sonexion 1.6.0 InfiniBand fabric enable reset plugin*.

4.4 Control Shepherd Verbosity and Debug Behavior

The `STDOUT` verbosity of the console messages from ssacli can be controlled using two CLI flags: `--quiet` and `--debug`. The `--quiet` option displays errors only to `STDERR` if they occur (including survivable errors). The `--debug` setting is highly verbose.

The location of the shepherd log files is defined in the `[sysconf]` section of the `shepherd.conf` file with the `log_dir` setting.

4.5 Specify a Different Version of SSA

Prerequisites

System Snapshot Analyzer (SSA) is installed on the ClusterStor system management nodes.

About this task

SSA uses the `alternatives` software to manage the active version when multiple versions are installed on ClusterStor systems.

Procedure

1. Log in to the management node as `root`.

2. To list the available versions for SSA.

```
MGMT0# update-alternatives --display cray-ssa
cray-ssa - status is auto.
 link currently points to /opt/cray/ssa/1.9.8-0
/opt/cray/ssa/1.6.3-0 - priority 135792128
/opt/cray/ssa/1.6.4-0 - priority 135792640
/opt/cray/ssa/1.6.5-0 - priority 135793152
/opt/cray/ssa/1.7.0-0 - priority 136052736
/opt/cray/ssa/1.7.1-0 - priority 136053248
/opt/cray/ssa/1.8.0-0 - priority 1008000000
/opt/cray/ssa/1.9.6-0 - priority 1009001000
/opt/cray/ssa/1.9.7-0 – priority 1009007000
/opt/cray/ssa/1.9.8-0 – priority 1009008000
Current `best' version is /opt/cray/ssa/1.9.8-0.
```

3. Specify a target version path.

```
MGMT0# update-alternatives --set cray-ssa /opt/cray/ssa/version
Using '/opt/cray/ssa/version' to provide 'cray-ssa'.
```

4. Exit and **`sudo root`** into the appropriate management node to invoke the new version.

4.6 Specify the Latest Version of SSA Automatically

Prerequisites

System Snapshot Analyzer (SSA) is installed on the ClusterStor system management nodes.

About this task

SSA uses the `alternatives` software to manage the active version when multiple versions are installed on ClusterStor systems.

Procedure

1. Log in to the management node as `root`.

2. To list the available versions for SSA.

```
MGMT0# update-alternatives --display cray-ssa
cray-ssa - status is auto.
 link currently points to /opt/cray/ssa/1.9.8-0
/opt/cray/ssa/1.6.4-0 - priority 135792640
/opt/cray/ssa/1.6.5-0 - priority 135793152
/opt/cray/ssa/1.7.0-0 - priority 136052736
/opt/cray/ssa/1.7.1-0 - priority 136053248
/opt/cray/ssa/1.8.0-0 - priority 1008000000
/opt/cray/ssa/1.9.6-0 - priority 1009001000
/opt/cray/ssa/1.9.7-0 – priority 1009007000
/opt/cray/ssa/1.9.8-0 – priority 1009008000
Current `best' version is /opt/cray/ssa/1.9.8-0.
```

3. To select the most recent SSA version automatically:

```
MGMT0# update-alternatives --auto cray-ssa
```

4. Exit and **`sudo root`** into the appropriate management node to invoke the changes.

4.7 Configure SSA for Local Only Mode

Prerequisites

System Snapshot Analyzer (SSA) is installed on the ClusterStor system management node.

About this task

There may be a requirement to run SSA in local only mode (information is not uploaded to Cray). Use this procedure to enable SSA to run in local only mode.

IMPORTANT: When SSA is run in local mode, no information is uploaded to Cray.

Procedure

1. Log in to the primary management node as `root`.

2. Edit the `shepherd.conf` file.

3. In the `[control]` section, change the `snapshot_enabled` setting to `false`.

4. Change the `upload_enabled` setting to `false`.

5. Comment out the `upload_server` setting In the `[upload]` section.

   Type a pound sign (`#`) as the first character of the line to comment out that setting.

   ```
   #upload_server: ssa.cray.com
   ```

6. Comment out the `upload_org` setting.

7. Comment out the `upload_pw` setting.

8. Save the `shepherd.conf` file.

9. Validate the configuration.

   ```
   MGMT0#  ssacli --check_conf
   [stdout] Configuration File and CLI Options Valid.
   ```

4.8 Locate Collection and Snapshot Repositories

ClusterStor SSA 1.9.8 shepherd collection and snapshot repository locations are defined in the `/opt/cray/ssa/default/etc/shepherd.conf` file on the management node.

The `[collection]` section `collection_dir` parameter defines the path name for the collection repository.

The `[snapshot]` section `snapshot_dir` parameter defines the path name for the snapshot repository.

⚠ **CAUTION:** Manual modifications to the contents of either of these directories is not supported and can lead to unpredictable shepherd operation. Do not modify the contents of these directories unless instructed to do so by Cray support.

⚠ **CAUTION:** When working on a larger system, review the amount of available free space that is associated with the paths configured for the `collection` and `snapshot` parameters. The `collection_dir` and `max_collection_size` settings direct the shepherd where to place collection information and provide an upper limit to the size of an individual collection. For version 1.9.1 and newer releases, the default value for `max_collection_size` was significantly increased from 2 GiB to 64 GiB to allow for Large Snapshot Support. Empirical data suggests that as much as 200 GiB of space needs to be available in order to ensure a successful collection. A review of the `collection_dir` setting and the associated amount of space should be done and if necessary, updated to a directory location with sufficient space available. If the `collection_dir` needs to be updated, all other shepherd directory settings must be updated to match as well. These are:

- The sysconf section's `log_dir`, `lock_dir`, `state_dir`, `scenario_dir` settings.
- The snapshot section's `snapshot_dir` setting.