

# **Allegro<sup>®</sup> X Pulse Maintenance Guide**

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# Maintaining Pulse Service Manager Infrastructure

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This guide outlines the key considerations for maintaining the Pulse Service Manager infrastructure and provides configuration guidelines and best practices. Maintenance is a critical component of managing the Pulse infrastructure and administrators should follow a thorough maintenance process.

## Recommended Cluster Configuration Settings

This section outlines recommended Pulse cluster configurations that are set in Pulse Service Manager. Note that these are only recommendations. Administrators can choose to deviate from these if their use case differs or if Cadence support advises otherwise.

## Backup and Restore

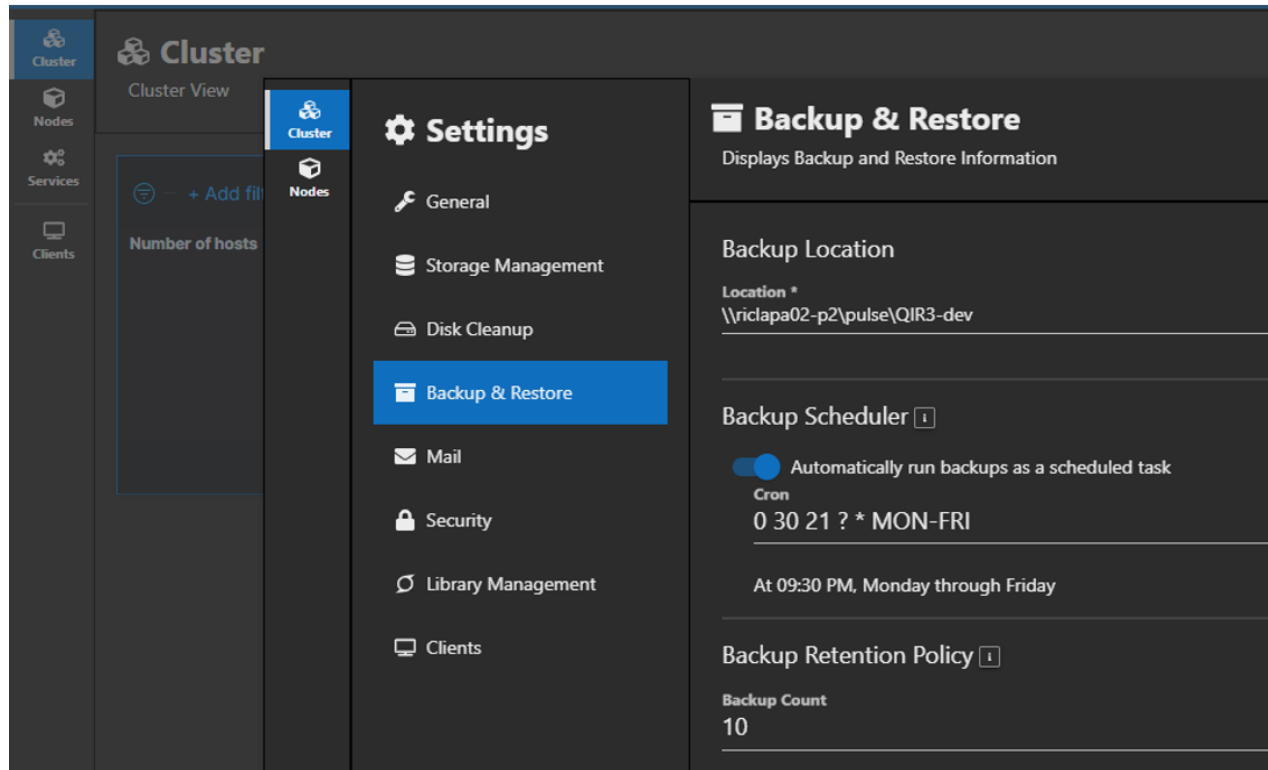
Data backup and restore is a critical activity and is the primary mechanism available in Pulse to implement a disaster recovery policy. It is recommended that the backup process be run at least weekly if not daily.

The backup process takes the Pulse cluster into maintenance mode briefly to ensure data consistency across the entire backup dataset. This will trigger a brief interruption to users working in applications, such as Allegro® X System Capture and Allegro X PCB Editor, which require access to Pulse-managed data. The maintenance mode duration is proportional to the amount of incremental data created since the last run backup, which, when run daily, is small enough to keep the maintenance mode duration to < 5 minutes.

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A daily backup (Monday – Friday) can be configured as seen in the following image.



In addition, a retention policy of 10 backups would preserve two weeks of backup snapshots.

It is also recommended that the backup location be targeted at a different storage media from the primary working dataset volume. This ensures that a failure of the storage infrastructure does not also make the backups inaccessible.

### Pulse Server Backup Disk Space Usage

During a Pulse backup, disk storage is consumed in the backup location during the creation of the Pulse checkpoint. Disk space consumed during the checkpoint creation is typically ~2.1x the size of the resulting checkpoint.

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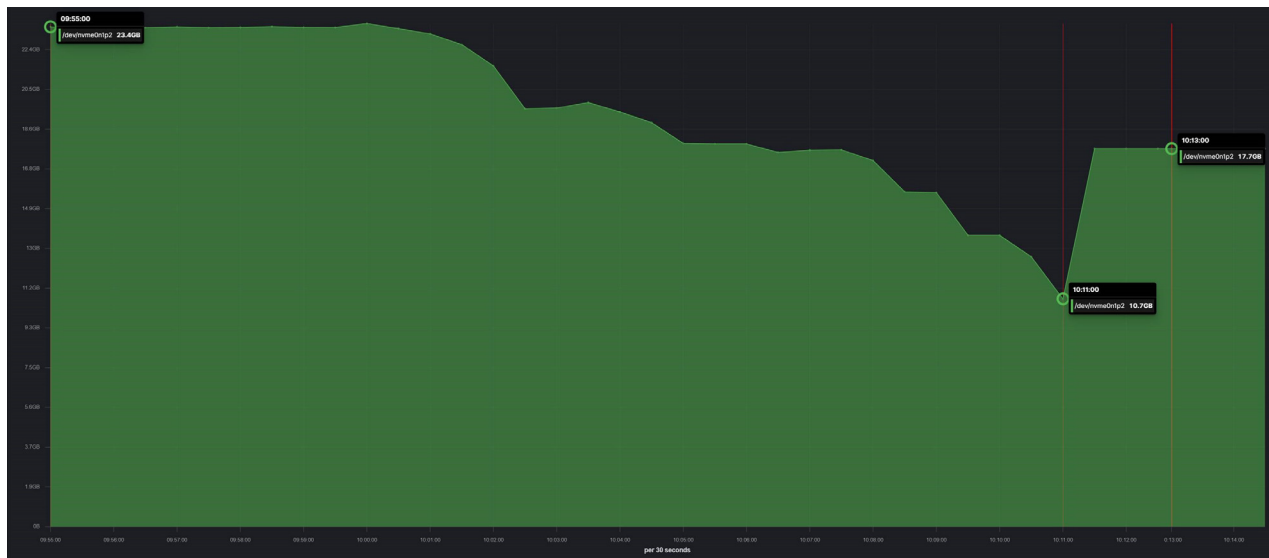
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The sample image below is based on a 6 GB checkpoint and the available storage space starts at 23.4 GB with the minimum at 10.7 GB:

```
drwxr-xr-x. 2 pulse pulse 56 Aug 30 17:11 .
drwxr-xr-x. 5 pulse pulse 49 Aug 30 17:00 ..
-rw-r--r--. 1 pulse pulse 6.0G Aug 30 16:14 1661875209656.zip
-rw-r--r--. 1 pulse pulse 6.0G Aug 30 17:11 1661878800396.zip
```

If the backup location is not changed to another disk media, the administrator must ensure that sufficient space is available for the backup to complete or risk the server entering MAINTENANCE mode due to the lack of available disk space.

Disk space usage characterization during checkpoint creation (backup process started at 10:00):



## Email Notifications and Critical Alerts

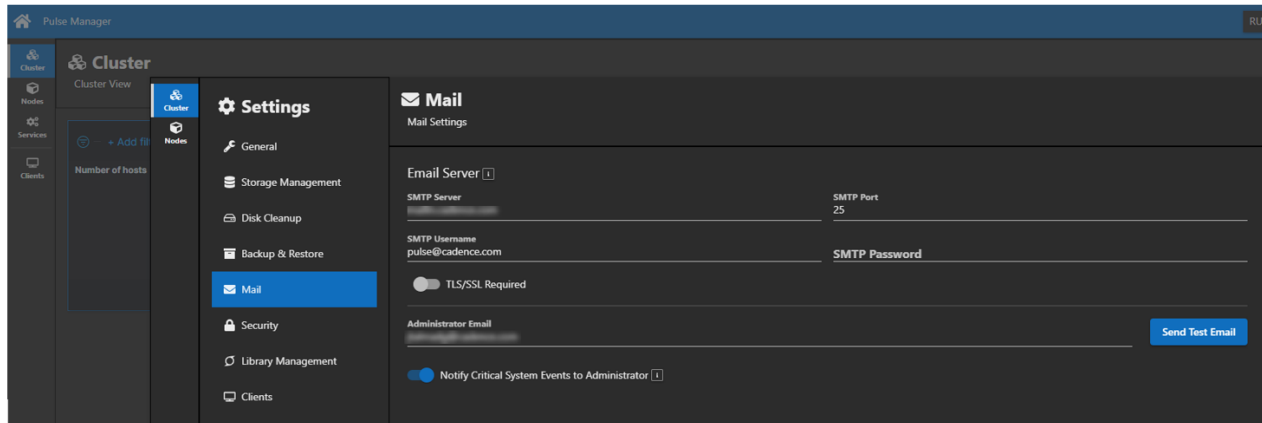
Another important piece of server maintenance is enabling administrator notifications in Pulse Service Manager. These notifications apprise the administrator of the server state changes as well as provide information about critical events triggered by the self-monitoring infrastructure of the server.

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Server notifications are enabled by configuring the Mail settings in Pulse Service Manager. Configure the SMTP server settings and connection details and enable the critical events notification option.



## Other Important Cluster Settings

You need to be aware of a few additional important settings in Pulse Service Manager. These settings help manage the amount of data consumed by the infrastructure outside of the design data storage, such as log indexes and host performance data.

### Purge Scheduler

Pulse Service Manager includes a purge scheduler that can assist in the disk storage maintenance process on each of the nodes in the cluster. The purge scheduler provides administrator control over three different datasets in Pulse:

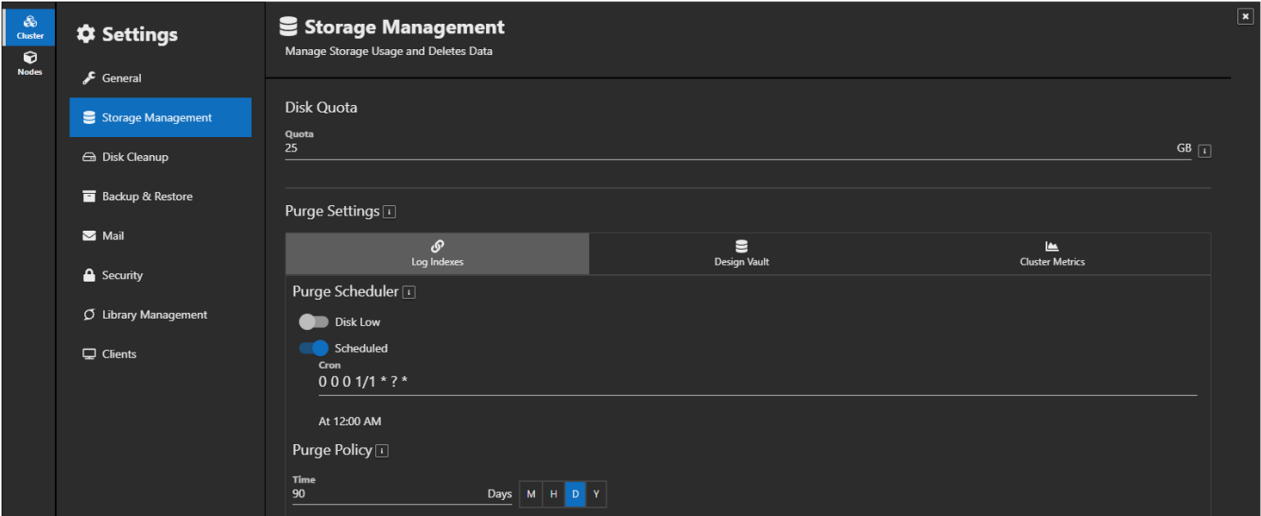
- **Log Indexes** – Manage the retention policy for central logging. This includes INFO, ERROR, WARN messages produced by nodes in the Pulse cluster along with connected clients.
- **Design Vault** – Manage the retention policy for the saved versions of Allegro X System Capture designs. By default, this is disabled as the saves are often very small and have minimal impact on the overall disk consumption. If desired, a policy can be configured to remove or purge older saved versions from the vault while preserving all commit versions of an Allegro X System Capture design.
- **Cluster Metrics** – Manage the retention policy for the host metrics collected from each Pulse node in the cluster. These metrics populate the cluster metrics dashboard and provide visibility into the overall resource pool resource consumption for the cluster and the details to drill down into a particular node for review. These metrics can be a critical



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piece of diagnostic information in the event of a failure. It is not recommended to reduce the retention duration from the default, which is 10 days.

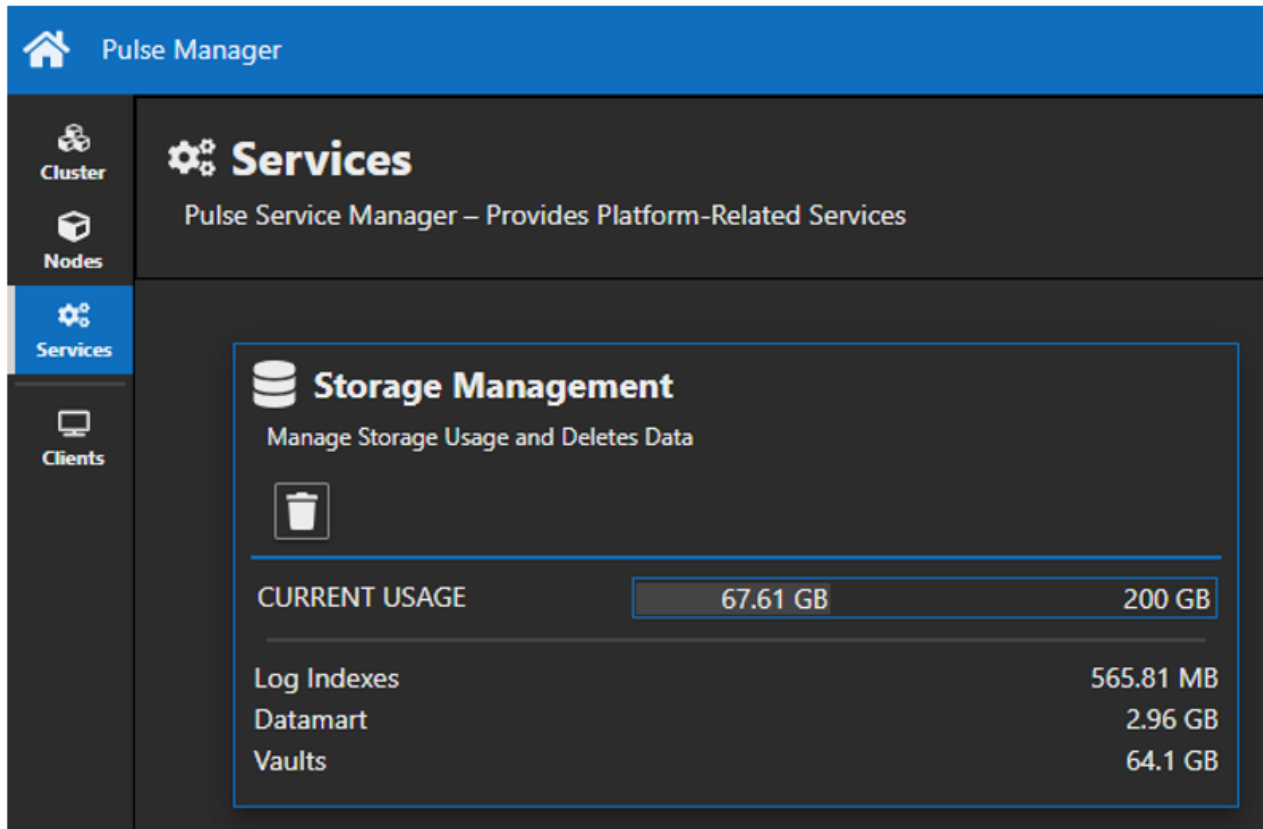


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### Disk Quota

A cluster-wide disk quota can be configured to help an administrator maintain awareness of the aggregate consumption of all Pulse nodes in the cluster.



This setting does not have a functional impact to the data stored in Pulse, that is, it will not prevent additional data from being stored when the quota is exceeded. It is intended to help the administrator keep track of the Pulse dataset size and plan for capacity as it grows.

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## Maintaining Pulse Service Manager Infrastructure

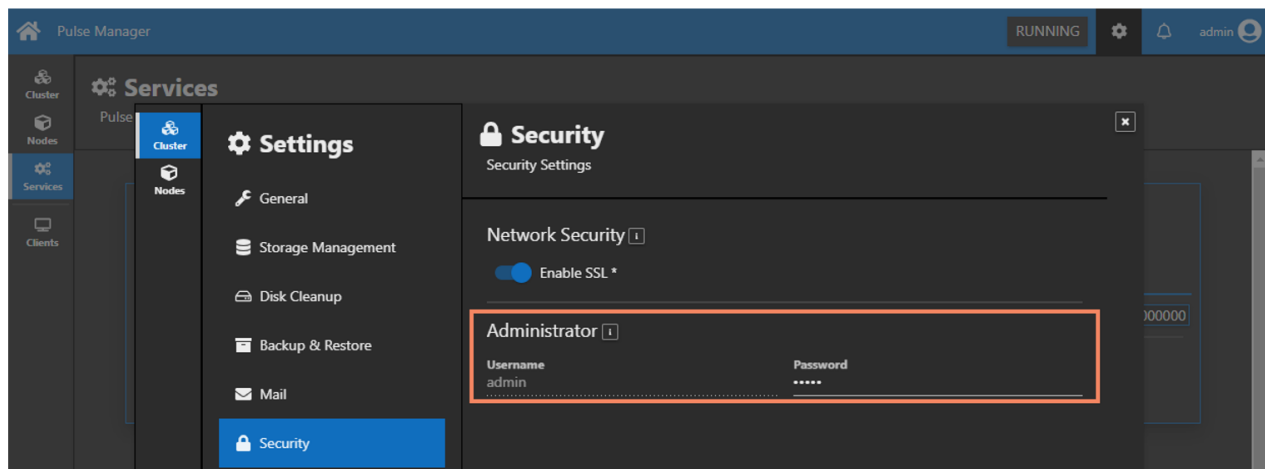
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### Admin Credentials

It is important to change the default Pulse Service Manager configuration access credentials to prevent unauthorized access. The default password can be changed via the Pulse Service Manager configuration settings.

Note that the account login ID cannot be changed. This credential is managed outside Pulse user management and will operate even if there is an issue with the user management service and its configured authentication methods, such as LDAP and SSO.

As with any credentials, the admin credentials in Pulse should be changed periodically to ensure that only authorized users have access to the administration console.



### Proxy Settings

If an HTTP proxy connection is required to access external web content such as the Ultra Librarian and SamacSys content providers, the HTTP proxy settings can be defined individually for each node in the Pulse cluster. The proxy setting in the Pulse Service Manager

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interface requires a URL such as `http://http-proxy.mycompany.com:8080`, which Pulse can connect to for access to external web content.

The screenshot shows the 'General Settings' page of the Allegro X Pulse Service Manager. The interface is dark-themed. On the left, there is a sidebar with three main sections: 'Cluster', 'Nodes', and 'Settings'. Under 'Nodes', there is a button for 'primary - 7100'. Under 'Settings', there is a button for 'General Settings'. The main content area is titled 'General Settings' and contains several configuration fields. The 'Pulse Home \*' field is set to '/opt/Cadence/Pulse/vista\_pulse'. The 'Port \*' field is set to '7100'. The 'Remote URL \*' field is empty. The 'Geographic Location' section has two dropdown menus: 'Country' is set to 'United States' and 'City' is set to 'Boston'. At the bottom, there is a 'Proxy Settings' section, which is highlighted with an orange border. It contains a 'Proxy URL' field set to 'http://http-proxy.cadence.com:7100'.

## Disk Defragmentation of Pulse Service Manager Host

To avoid the Pulse Service Manager server unexpectedly going into maintenance mode, ensure that the auto defragmentation option in Windows is turned off on the machine where the Pulse server is hosted.

Manual defragmentation needs to be a planned activity. Before you manually defrag the machine on which the Pulse server is hosted, shut down the Pulse server, complete the defragmentation of the server, then restart the server. This is to avoid disk access issues with the Pulse server.

## Hotfix Deployment

Deploying a HotFix is an excellent opportunity to address any server maintenance which needs to be completed. In addition, keeping the Pulse infrastructure up to date with the latest HotFix from Cadence will result in increased reliability and stability for users accessing the solution. The following procedure captures the sequence of several important maintenance steps which should be completed while deploying a HotFix:

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1. Ensure that the scheduled backup process has completed.

Interrupting checkpoint creation can cause the checkpoint generation to be marked as failed in the administration console.

2. Disable any external monitoring services to prevent notifications from being sent during the upgrade.
3. Stop the Pulse Service Manager for all nodes in the cluster.
4. Install the HotFix on all nodes in the Pulse cluster.
5. Perform any required OS or hardware maintenance on the Pulse server hosts.
6. Restart the host for each Pulse node if the host was not restarted during OS maintenance.

7. Start Pulse Service Manager on the primary (master) node.

Wait for it to start up by monitoring the Pulse Service Manager web page.

8. Start Pulse Service Manager on each data node.

Wait for the data nodes to start up by monitoring the Pulse Service Manager web page.

9. Run migration, if required, to bring the cluster into the RUNNING state.

10. Enable any external monitoring services.

While additional steps in the overall process can be added, such as notifying users of the maintenance status, this outline is a good baseline for updating and maintaining the Pulse application.

## External Monitoring

While Pulse provides self-monitoring features that can notify administrators of the issues detected, external monitoring is an important aspect of maintaining the infrastructure and addressing issues which arise. Pulse provides a health monitoring HTTP endpoint which can be integrated with many third-party remote monitoring solutions.

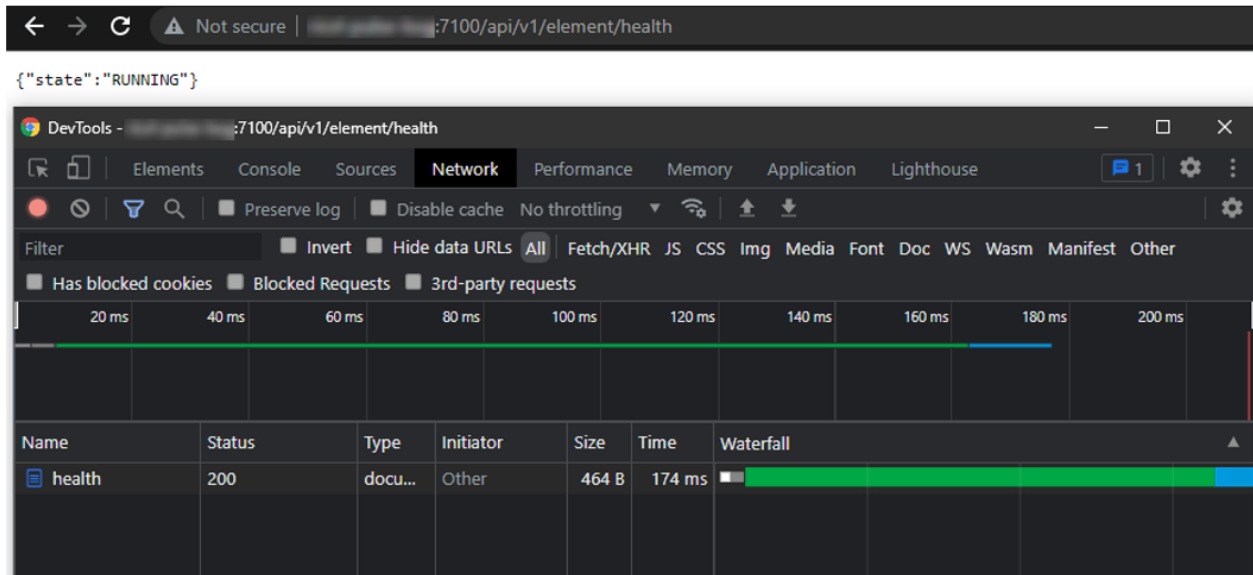
The health endpoint returns an HTTP status for each Pulse node. It can be accessed using the following URL:

`http(s)://<ACCESS URL>/api/v1/element/health`

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This endpoint returns an HTTP 200 status code when the server is running nominally and an error (5XX) when an error condition is present.



In addition to the health endpoint, host and storage infrastructure monitoring can identify resource constraints early and as a preventive measure, notify administrators of resource allocation adjustments required. This includes:

- Primary data storage (disk volume)
- Backup repository storage
- OS installation volume
- CPU usage peaks and average consumption
- Memory capacity during peaks and average consumption
- Network interface bandwidth
- TLS Certificate expiration

## System Resource Availability and Monitoring

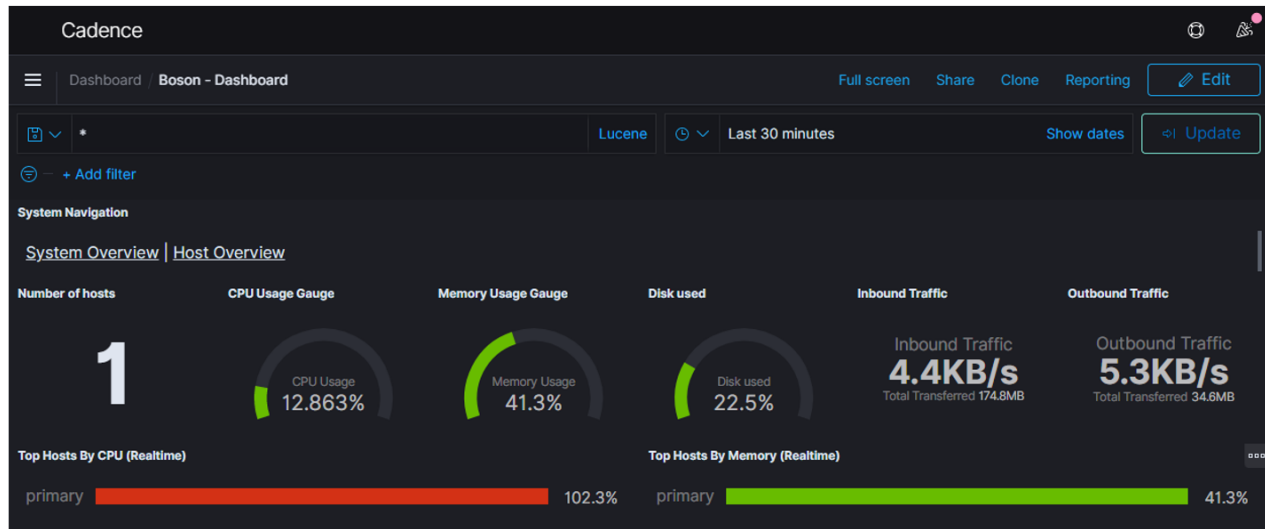
Pulse includes host resource monitoring services for each node in the Pulse cluster. This service aggregates captured metric data into the data mart and can be reviewed in Pulse Service Manager.

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An administrator can review the hardware resource consumption profile and look for usage spikes which require further investigation. This information can be viewed from the Pulse Service Manager page or directly from the dashboard service:

`http(s)://<ACCESS_URL>/athena/app/dashboards#/view/Metricbeat-system-overview-ecs`



Email notifications can be configured, such as triggering a notification when CPU usage is > 80% for a defined period of time, for nodes in the Pulse cluster (requires 17.4-2019 ISR 27 or above).

## SSL Certificate Expiration

If an SSL certificate, or another certificate in the chain of trust, expires, users will not be able to connect to the Pulse cluster. A critical step in server maintenance is certificate renewal and replacement prior to the expiration. When a certificate is replaced in the OS trust store, that is, the certificate manager, the Pulse service on the host must also be restarted to reflect the updated certificate.

## User Management

In addition to the standard user management activities, there are several key maintenance actions which should be performed periodically.

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- Active users and license slot consumption - Each user created in the User Management console consumes a license slot. Review the users in the console and disable or remove any inactive users to make the license slots available for use by other users.
- Review the roles allocated to users which map to the different license slot types. Adjust the assigned roles, that is, Pulse Web Participant, Pulse Managed Workflow, Pulse Team Collaboration, to assign the appropriate license to each user accessing Pulse.
- Enable the User Management events logging to capture Login events or Administration events for further review.

## Error and Exception Review

Pulse central logging provides administrator visibility into the application infrastructure along with clients connected to the Pulse cluster. Central logging should be reviewed periodically to identify issues early before they become a major issue for users.

In addition, the Pulse event log can also be reviewed as it captures significant events which occur in the Pulse application. Note that the Pulse event log is only available in 17.4-2019 ISR 27 or above and is accessible via the Pulse Dashboard service:

`http(s)://<ACCESS_URL>/athena/app/dashboards#/view/Oculus-events-viewer`

## Core Service Monitoring

In addition to the native monitoring features of Pulse, core Pulse services can also be monitored externally by third-party monitoring integrations. Many core services of Pulse leverage open-source technology packages which have integrations available.

Elasticsearch, for example, runs in Pulse and can be monitored externally. Contact the vendor of the monitoring solution you use in your enterprise to understand what monitoring integrations are available for the packages used by Pulse.

Likely candidate services which can be monitored include:

- Elasticsearch (Beehive)
- Apache Hadoop (Hydra)
- Apache Cassandra (Pantheon)
- Keycloak (Salus)



## Test Server Management

Cloning the Pulse dataset to a test server can be helpful in the overall maintenance of the Pulse infrastructure. Replicating the production dataset to the test server can facilitate many use cases, including:

- Testing new versions of software
- Exploring features not currently used in production
- Practicing the recovery procedure in the event of a production hardware failure
- Validating OS patches prior to deployment to production

Backups should be configured to run periodically on the Pulse cluster. Any one of these backups can be restored to a test server using the Pulse Restore procedure.

## System Maintenance Operation

Operating system maintenance is a critical part of maintaining a robust, secure infrastructure for Pulse. OS maintenance should be scheduled during planned maintenance periods when possible and Pulse services should be shut down during the maintenance. It is recommended to validate OS updates in a test environment prior to deploying to production.

## Single Tenancy of Pulse Nodes

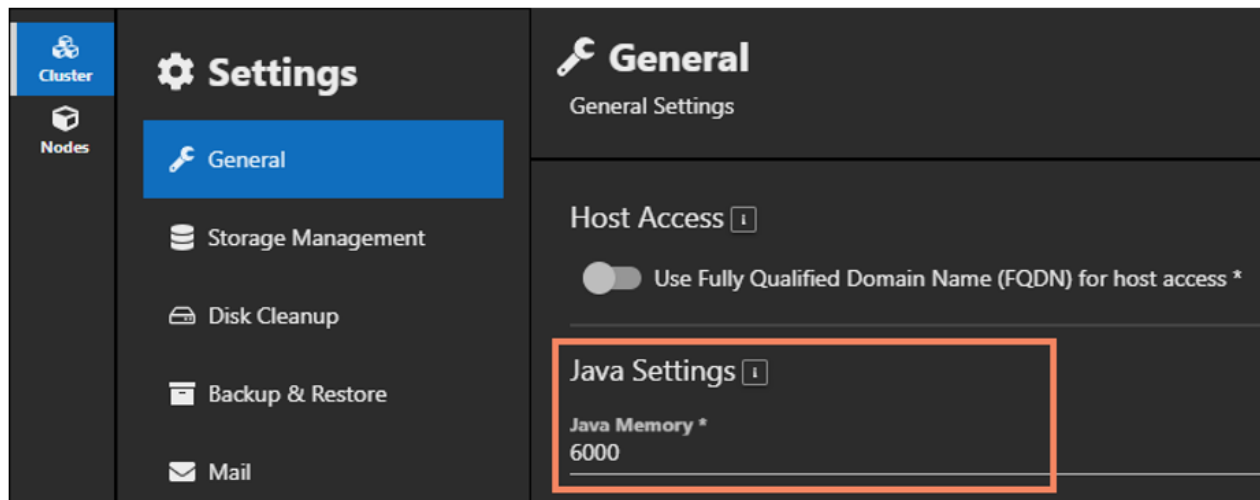
As Pulse is a distributed system which performs data management functions on behalf of the user, the resource usage will rise and fall based on actions performed by users in the connected clients. Because of this, the overall client performance could be impacted by running other heavy processes, such as another database, on the same host. Care should be taken with any maintenance performed on the host that the changes introduced do not introduce a process that can interfere with the Pulse services running.

As with any OS maintenance, IT management tools being introduced into the infrastructure should be validated against a test environment prior to deploying to a production the Pulse host. Some management tools, such as virus scanners, can have a significant impact on Pulse's performance and the end user experience in the design authoring tools.

## Memory Capacity Scaling

As the dataset managed in Pulse grows, an increase in the memory allocation to various services may be required. When a service experiences a memory event, Pulse automatically attempts to recover the service and minimizes the impact on users. An email notification is also sent to the Administrator so they can perform the corrective action required to prevent this condition from occurring again.

In the event the main Java Virtual Machine experiences an Out-Of-Memory error, the memory allocation can be adjusted in the Pulse Service Manager settings. The default allocation is 6 GB and this can be increased to 9 GB or 12 GB. You can also contact Cadence for additional memory allocation guidance based on the usage profile and user capacity.



## License Maintenance

Features available to clients connected to the Pulse server are managed by the licenses available to the server, and the license slot types allocated to users in the User Management console. This raises a few maintenance guidelines around licensing related to the Pulse infrastructure as explained here:

- The Pulse server is designed to enable license server maintenance without impacting end users. The server provides a 72-hour grace period of license availability in the event of an issue with the license server.
- License availability governs the number of users that can be enabled in the User Management console. The number of enabled users is limited to the number of license slots available from the license server plus a 20% overdraft capacity. If a reduction in the

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number of licenses is expected it is important, as a preventive measure, to disable or remove the users who no longer require access to Pulse prior to the license pool change. This will ensure no users are denied access when the license availability count changes.

- Pulse Team Collaboration license slots provide an increased capability for users to collaborate and concurrently work on designs. If these features are in use and the license configuration changes in a manner that these higher capability licenses are no longer available, users may be prevented from working on existing designs.

For example, if a user has several pages or blocks locked in their design when the Team Collaboration license becomes unavailable, the user will not be able to release those locks and commit changes to the design. The user will be required to copy the design and work on the copy to proceed further in the design process. Because of this, it is important to notify users of changes to the availability of the Team Collaboration licenses. This will allow them to ensure that all pending updates are committed to the designs and the design can transition to the Managed Workflow feature set.

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## FAQs About Pulse Service Manager Maintenance

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### What does the disk clean-up action do on the Services tab and on a specific node?

Disk clean-up actions run the purge configuration on demand as opposed to waiting for the scheduled action to run. Purge settings can be found in the *Settings* menu under *Storage Management* in the Pulse Service Manager web page. Running disk cleanup from the *Nodes* tab performs the purge action only on a single node, whereas the *Services* tab runs it across the cluster, that is, on all the nodes.

## How can I view the status of the Datamart (Beehive) indexes?

The Beehive index status can be viewed from the following URL: `http(s)://<ACCESS URL>/beehive/_cat/indices?v=true`. The output lists the indexes and their health (YELLOW is normal for the index status). Red indicates an issue and should be investigated.

health	status	index	uuid	pri	rep	docs.count	docs.deleted	store.size	pri.store.size
yellow	open	<u>log_hydraster</u>	Oj-plc_WSHGmJWHPYxlRMQ	1	1	8966	685	2.7mb	<u>2.7mb</u>
yellow	open	<u>log_salus</u>	kuHnPlpWTCaEomOxfOQmPw	1	1	13831	359	3.9mb	<u>3.9mb</u>
yellow	open	<u>log_proteus</u>	u1Ng2dEIQ6aY_2PbmxdQOA	1	1	171	27	255.8kb	<u>255.8kb</u>
yellow	open	<u>design_master</u>	HD7JLMwrTgGgLhCKkdIRug	1	1	82	8	112.7kb	<u>112.7kb</u>
yellow	open	<u>configurations</u>	P2J7qwOLQN6sSu2hCEOs-g	1	1	1100	11	964.8kb	<u>964.8kb</u>
yellow	open	<u>jarvis</u>	m3LtmyKVQkerrfz9Yah_Eg	1	1	0	0	208b	<u>208b</u>
yellow	open	<u>log_bifrost</u>	Hb0c5nLgQ_-06qNu_THIRA	1	1	15921	276	3.1mb	<u>3.1mb</u>
yellow	open	<u>log_server</u>	z6AEPaI_SbGNaXOQ4d-GFQ	1	1	153324	5768	28.2mb	<u>28.2mb</u>
green	open	<u>.kibana_1</u>	1ixYjPSQT2GNeT6XZaFfHw	1	0	206	7	123.9kb	<u>123.9kb</u>
yellow	open	<u>log_syscap</u>	O-V3UhCHSYKbzSTVyDlpEA	1	1	76505	3	7.3mb	<u>7.3mb</u>
yellow	open	<u>log_iris</u>	pLkRuYITSQ-9AQ4X3z9dnw	1	1	11546	2289	4.2mb	<u>4.2mb</u>
yellow	open	<u>unified_search</u>	tPzcK3aXTKSK4w4dFt0D2A	1	1	2140	360	4.9mb	<u>4.9mb</u>
yellow	open	<u>log_allegro</u>	86n304QNR02LjQ7kFGXt_Q	1	1	885	0	330.5kb	<u>330.5kb</u>
yellow	open	<u>boson_geo</u>	V0jAeKPNReW_AERvs5LOMg	1	1	1	0	5.8kb	<u>5.8kb</u>
yellow	open	<u>fail-log_all</u>	y5dS4yV4Trq1l0dH0OEUog	1	1	444	0	360.2kb	<u>360.2kb</u>
yellow	open	<u>log_workflow</u>	NLE_VbsfRsOUyxTfX8VRow	1	1	798	136	347.3kb	<u>347.3kb</u>
yellow	open	<u>log_hydra</u>	P6Tq4r7MRHuo00_PTrsF7w	1	1	5898	473	1.9mb	<u>1.9mb</u>
yellow	open	<u>kronos_design</u>	QycOm_kiSL2L10ugPL7Ehg	1	1	206	17	310.6kb	<u>310.6kb</u>
yellow	open	<u>design</u>	6h-qMCwNqnChIHGCSM95w	1	1	89	2	2.5mb	<u>2.5mb</u>
yellow	open	<u>log_panthoeon</u>	EqfZdJPqTSK529xX6OnBlg	1	1	76737	21070	21.1mb	<u>21.1mb</u>
yellow	open	<u>metrics</u>	4KQ1LDCvRYm3rDbbHuT4nQ	1	1	0	0	208b	<u>208b</u>
yellow	open	<u>boson</u>	gEraO_wmTA-xcApwVV_21g	1	1	670455	327076	941.2mb	<u>941.2mb</u>
yellow	open	<u>themis</u>	pYz4rMl1QA6fMZHKd0giQA	1	1	1023	25	1mb	<u>1mb</u>
yellow	open	<u>log_beehive</u>	pelCiOPuRWqQJunkiFPmZA	1	1	2326	208	684.9kb	<u>684.9kb</u>

## What does the Storage tile display in Pulse Service Manager?

The *Services* tab provides a summary of information about services across all nodes in the Pulse cluster. The *Storage* tile displays the aggregate disk usage of all nodes, that is, the disk space consumed by all the data in Pulse Home.

The information displayed on the Nodes tab represents the host itself and reports storage metrics for the volume which the Pulse home is using as usage is not only Pulse data but a full representation of disk usage on the volume.

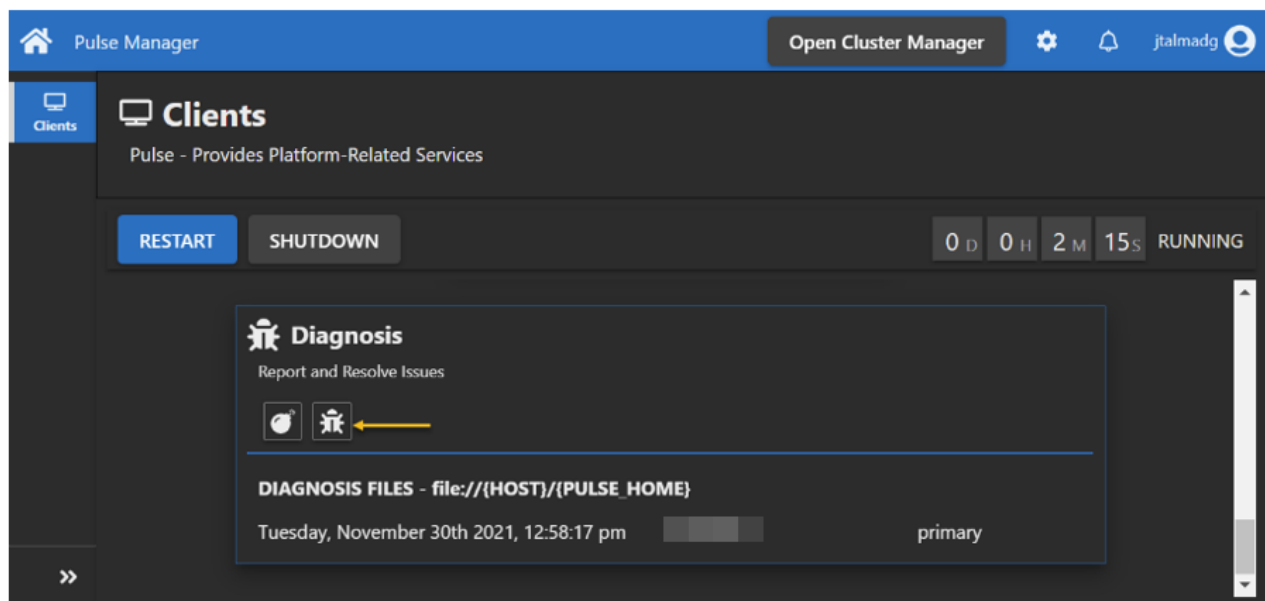
## On a Linux host, why does the memory consumption look much higher than it should?

Linux reports memory which is dynamically used for disk caching as used RAM. The operating system automatically manages consumption and freeing of the available memory resources. More details on this behavior are available here: <https://www.linuxatemyram.com/>

## In the event of an issue, how can I provide the necessary data to Cadence for root cause analysis?

Users can generate a diagnostic test case for Cadence to review from their Pulse Manager (client). This action collects the client and server logs along with some additional diagnostics from Pulse. The test cases are generated on the Pulse primary node in the following directory:

```
<Pulse Home>/server/data/medic/testcases
```



An administrator can retrieve the test cases from here and provide them to Cadence.

Note that these diagnostic packages only include logs and performance related data. No designs are included in the zip file generated by Pulse.

## **Allegro X Pulse Maintenance Guide**

### **FAQs About Pulse Service Manager Maintenance**

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## Restoring Pulse Service Manager

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This section of this document outlines the recommended process for restoring a Pulse backup into a Pulse cluster. The content also covers restoring a backup into the same host and to a different host where it was created.

### Restore Checkpoint Process

Restoring a backup is performed from the Pulse Service Manager web page on the Services tab, in the *Backup & Restore* tile.

### Version Compatibility

When restoring a checkpoint, it is important to ensure that the SPB release/ISR is the same or higher than the checkpoint. Attempting to restore a checkpoint from a later software version may result in a failure.

Checkpoints generated by lower releases/ISRs can be restored to a higher release of the software. Once the restore is complete, the administrator is prompted to migrate to bring the data to the running software version.

### Reinitializing Pulse Home for the Primary Node

While each Pulse service is responsible for restoring its data on an existing Pulse Home, a best practice for an administrator is to re-initialize the Pulse home on the master node. This can be done by either:

- Changing the primary (master) node Pulse Home in Pulse Service Manager and restarting
- Shutting down the Pulse server and moving or deleting the existing Pulse Home folder (`<service home>/Pulse`).

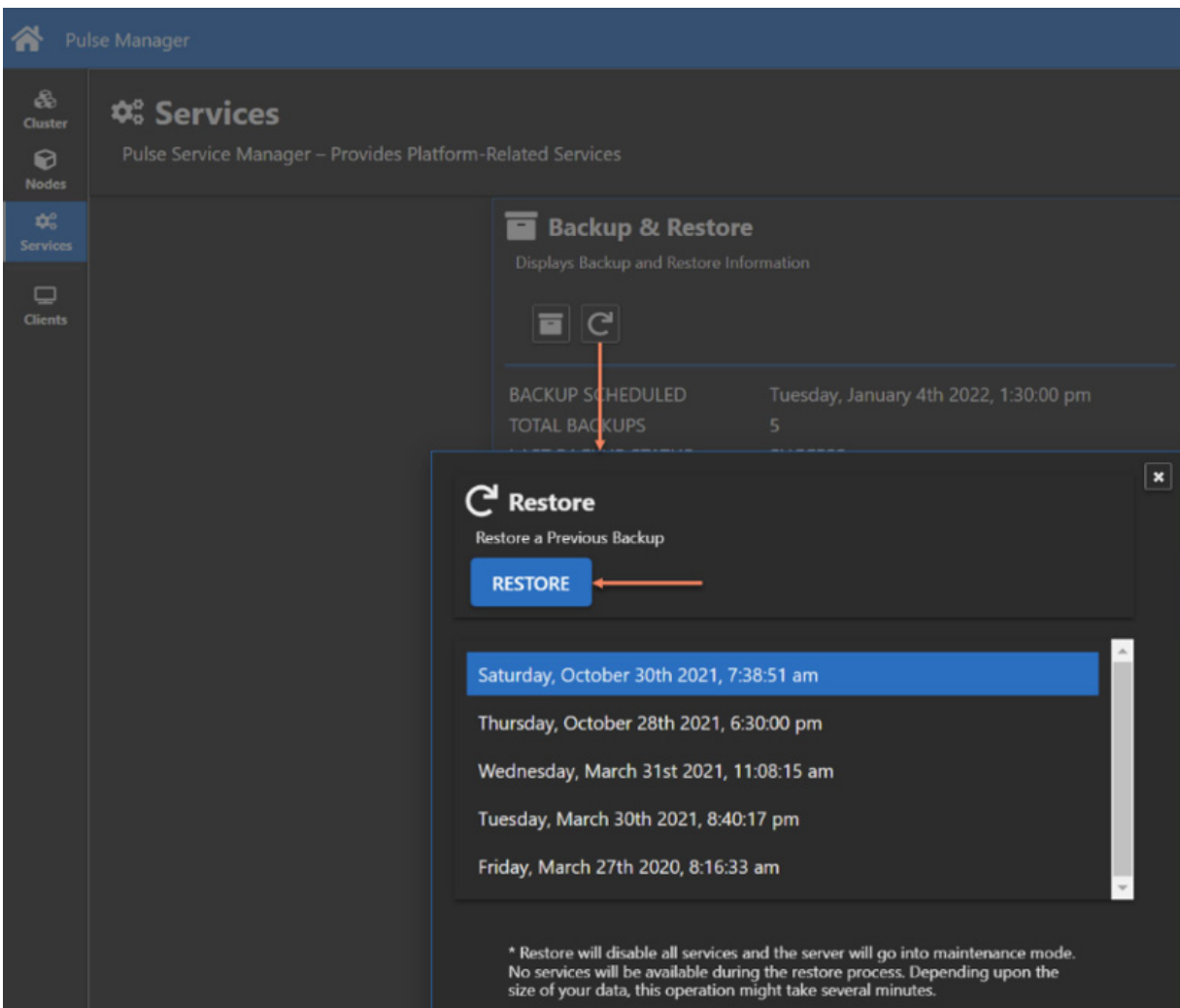
On restart, the Pulse home for the primary node is re-initialized.

# Allegro X Pulse Maintenance Guide

## Restoring Pulse Service Manager

### Restoring Pulse

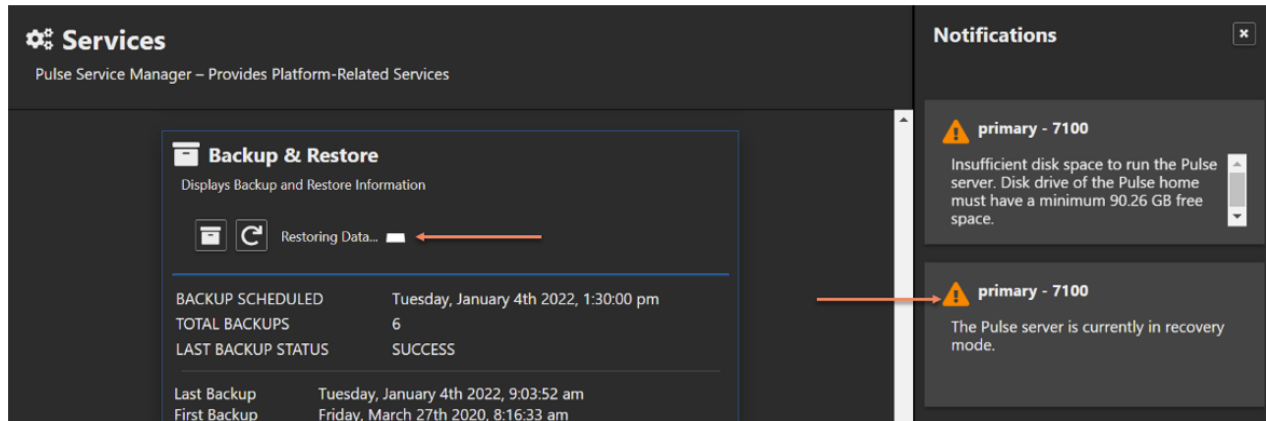
When an administrator is ready to initiate a restore, a Pulse checkpoint time stamp can be selected to be restored from the list.



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### Restoring Pulse Service Manager

On selecting *RESTORE*, the Pulse cluster transitions into the recovery (MAINTENANCE) mode and completes the restore process for each service managed by Pulse. Depending on the size of the checkpoint, the restore process will take some time to complete.



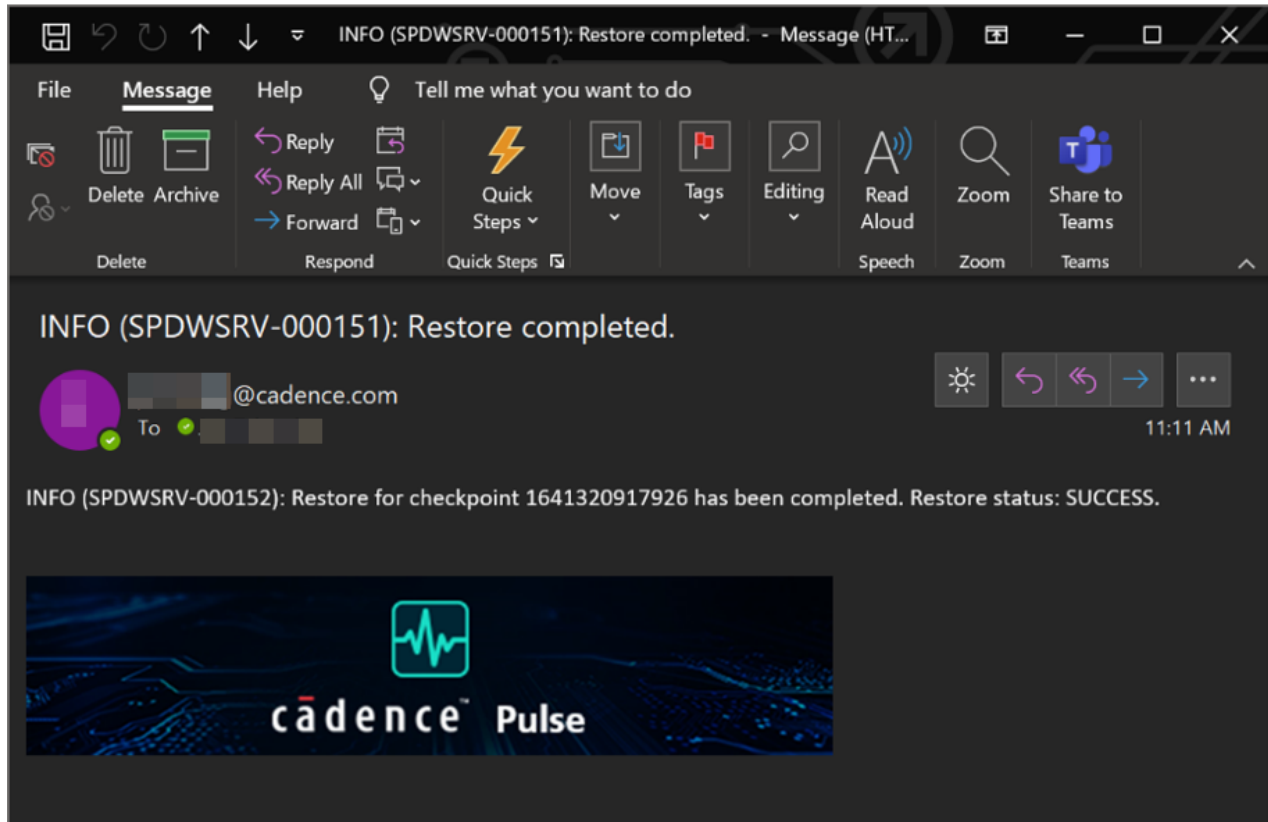
When the restore process completes, an email notification is sent to the administrator and the cluster remains in the recovery mode until the administrator can verify that the restore was successful. Note that the email notification is sent to the address currently in the Pulse server

## Allegro X Pulse Maintenance Guide

### Restoring Pulse Service Manager

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configuration and not to the address configured in the checkpoint being restored, if both the addresses are different.

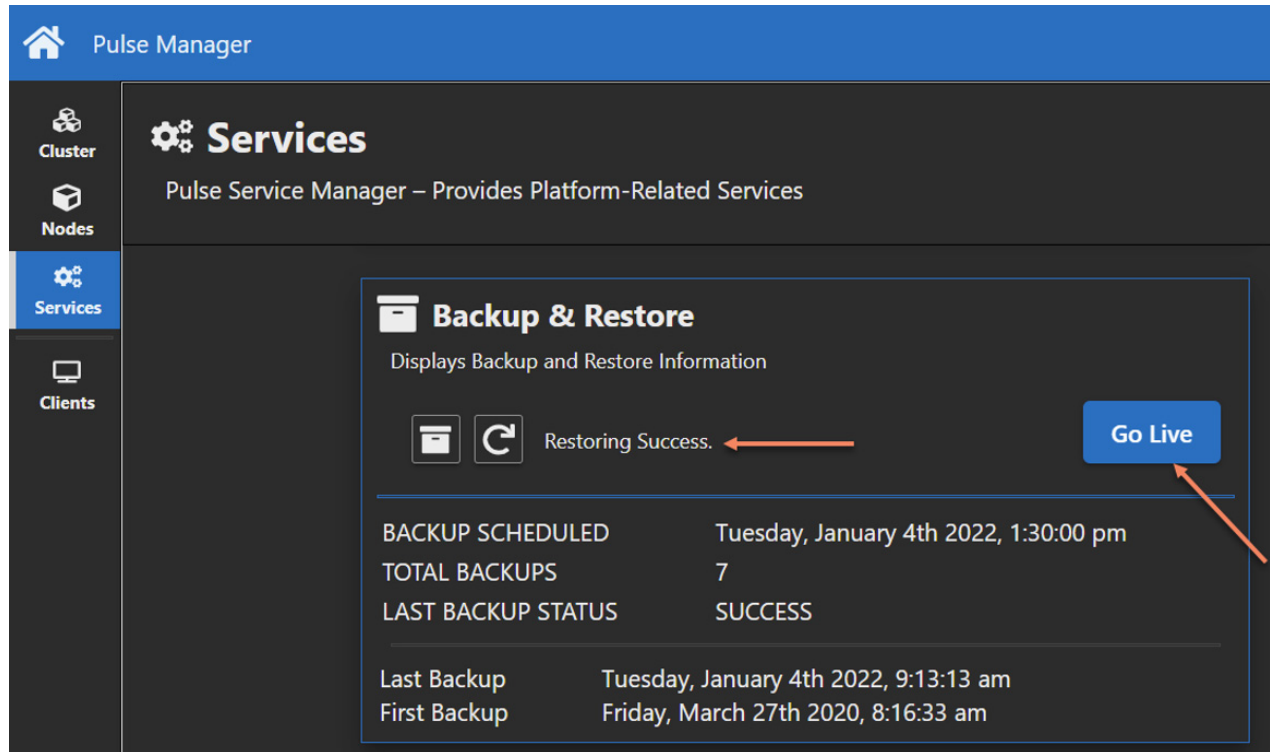


A successful result indicates that all the data in the checkpoint was successfully restored and will be available to users when they access the Pulse cluster.

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### Restoring Pulse Service Manager

You can then take the Pulse cluster live by clicking the *Go Live* button on the Backup & Restore tile. This will trigger the cluster to restart and bring the services up with the restored dataset into the RUNNING state.



## Restore Process Best Practices

When performing a data restore, it is important to ensure that appropriate preparations are managed to minimize the duration of the restore and the impact on users. Some of the best practices for restoring data are as follows:

- Alert all users of pending downtime for the restore. You can use Pulse Service Manager and Pulse User Sessions Dashboard to view the active clients connected.
- Ensure that no long-running processes are being run on the server, such as backup checkpoint compression or a Data Exchange run. Starting a restore will cause these processes to exit.
- Ensure that sufficient disk space is available for the restore to complete. Four times as much disk space as the size of the checkpoint being restored is recommended.

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### Restoring Pulse Service Manager

- Ensure that email notifications are enabled with a valid Administrator email address in the Pulse Service Manager settings. This ensures that the email notification is sent after the restore process is complete.
- A backup location with low latency to the primary node improves restore performance.
- Restore a backup to a test server prior to performing a production restore. This provides an opportunity for a practice run and a platform to evaluate the resulting dataset loaded into Pulse.

## Restoring a Checkpoint to a Different Host

Restoring a backup to a different host from which it was created is required in a few different use cases. Each use case might have differing considerations which are captured in this section.

Checkpoints can be moved between primary nodes by placing them in the configured recovery/checkpoints folder. By default, this is in the Pulse home: `<service home>/Pulse/vista_pulse/server/data/recovery/checkpoints`.

```
/opt/Cadence/Pulse/vista_pulse/server/data/recovery/checkpoints
[ec2-user@primary checkpoints]$ ls -lh
total 11G
-rwxr-xr-x. 1 pulse pulse 177M Jan  4 16:22 1585322193636.zip
-rwxr-xr-x. 1 pulse pulse 355M Jan  4 16:22 1617162017189.zip
-rwxr-xr-x. 1 pulse pulse 367M Jan  4 16:22 1617214095042.zip
-rwxr-xr-x. 1 pulse pulse 2.2G Jan  4 16:22 1635471000019.zip
-rwxr-xr-x. 1 pulse pulse 2.4G Jan  4 16:21 1635604731586.zip
-rw-r--r--. 1 pulse pulse 2.4G Jan  4 17:09 1641315832053.zip
-rw-r--r--. 1 pulse pulse 2.4G Jan  4 17:18 1641316393731.zip
[ec2-user@primary checkpoints]$
```

**Note:** Checkpoints are named with a Unix time stamp and can be converted to a human-readable format with many online converters, such as the Epoch converter.



Caution

***Do not rename the zip checkpoint file; renaming it will cause a restore to fail.***

## Allegro X Pulse Maintenance Guide

### Restoring Pulse Service Manager

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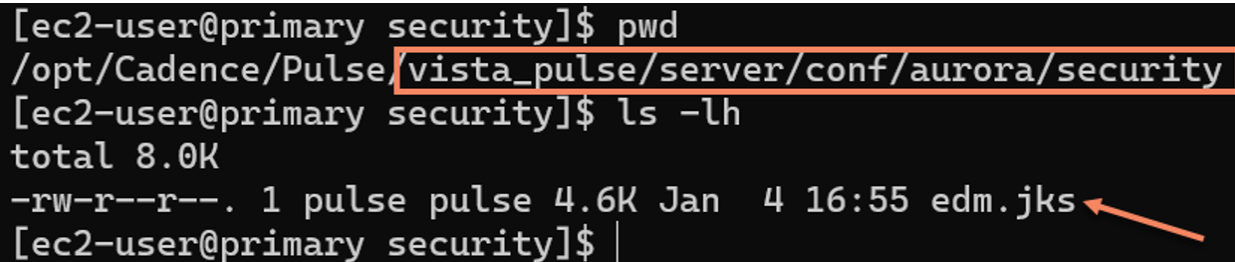
After copying a checkpoint into the checkpoint folder of the target host, reload the Pulse Service Manager web page to update the list of available checkpoints to restore.

## Host-Specific Settings

Pulse Service Manager contains some settings and configurations that might vary between hosts. The items captured in the following list are the most common examples and each can be addressed while performing a checkpoint restore on the host.

- **SSL certificate** – Often, the Java keystore (`edm.jks`) containing the host SSL certificates installed in Pulse, includes the certificate from a specific host. When restoring a checkpoint to a different host, the administrator can replace the keystore (`edm.jks`) on the host prior to clicking *Go Live* to ensure that the proper certificates are present.

```
[ec2-user@primary security]$ pwd
/opt/Cadence/Pulse/vista_pulse/server/conf/aurora/security
[ec2-user@primary security]$ ls -lh
total 8.0K
-rw-r--r--. 1 pulse pulse 4.6K Jan  4 16:55 edm.jks
[ec2-user@primary security]$ |
```



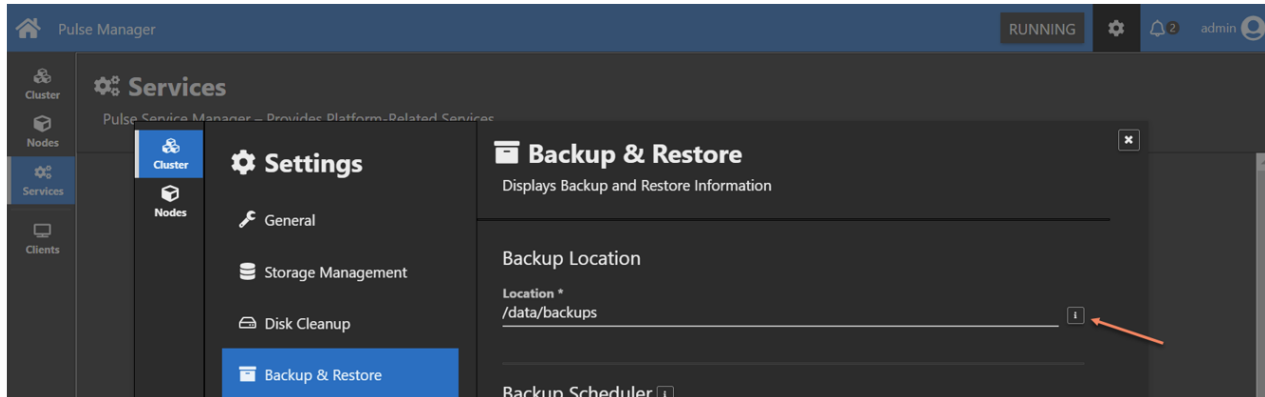
Additionally, ensure that the host certificate is installed in the OS (Windows/Linux) trust store. For details, refer to *Allegro X Pulse Configuration Guide*.

- **Backup Location** – When set to an external location, such as a network shared disk, the backup location will be set to the same location as set in the checkpoint dataset. This can lead to a common backup location being set on two pulse Primary nodes. For example, if a backup is being restored to a test server, the production node and the test node should not share the same backup location.

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### Restoring Pulse Service Manager

The administrator can update the backup location on the target server after taking the node live following a successful restore. Note that changing the backup location will require another primary node restart.



## Other Considerations Post Restore

After the restore is complete, there are other tasks that might need to be addressed for a fully functional Pulse cluster environment. These include:

- Restarting all data nodes connected to the primary node.
- Updating the data node remote URL, if required. For example, if the primary node moves to a different host.
- Running migration in Pulse Service Manager, if required.
- Identifying Provider Configurations in Pulse User Management - the redirect URI registered with the identity provider might need to be updated.
- Updating the indexer path for unmanaged libraries, if required.
- For managed libraries:
  - ❑ Ensuring `mkdump` is set to ON in `lib_dist.ini` if the data nodes connect to this primary node
  - ❑ Updating the `fetch_dump.ini` URL on any data node
  - ❑ Updating the `startworkbench` scripts to reflect the server URL
  - ❑ Updating `workbench.ini` to reflect the server URL
  - ❑ Configuring required library distribution scheduled tasks



- ❑ Configuring required Data Exchange scheduled tasks
- ❑ Re-generating the Library Distribution Access Key (Pulse Manager Settings) and updating the library distribution environment on each data node with the new `PULSE_LIBDIST_TOKEN` value.
- Users need to update their Remote URL in their Pulse tray to reflect the server URL, if moving to another host.

## Restore Failures

In the event of a restore failure, details about the failure can be found in the Pulse logs. Simple failure modes can typically be found in the logs with a search. For example, a restore may fail if the host runs out of available disk space to restore the data. Start by searching the logs for ERROR messages. Search for the word ERROR in capital letters to identify the problem which triggered the restore to fail.

These logs can also be shared with Cadence Support for more detailed analysis and root cause of the restore failures.

# **Allegro X Pulse Maintenance Guide**

## Restoring Pulse Service Manager

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## FAQs about Restoring Pulse Service Manager

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### Can a Windows-based Pulse server backup be restored to a Linux host?

Pulse checkpoints are platform independent and can be restored to either a Windows or Linux-based host. Some settings in Pulse Service Manager might be different based on the platform being run and should be adjusted accordingly after the restore process is complete. For example, on Windows, the backup path could be a UNC path to a network share which will not work in the Linux environment.

### Can I restore a backup to an existing Pulse home?

The recommendation and best practice is to restore a backup on a just-initialized Pulse home. This will ensure there is no stale data which might clutter the Pulse home area post restore.

### How can an administrator verify that the restore was successful and data is available to users?

A successful restore result indicates that all data in the checkpoint was successfully restored to the Pulse cluster and will be available to users when they connect. An administrator can perform basic verification of data by reviewing:

- **Design Data:** Administrators can also run a spot check on the Pulse cluster to verify the Pulse design data using the project web interface. From the project dashboard, they can verify whether library and design project data is available and whether version control is populated with PDF previews.
- **Library Data:** Open Unified Search in the web interface and review search results for completeness. Ensure that configuration settings such as component selection rules are as expected.

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### FAQs about Restoring Pulse Service Manager

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- Workflows: Review in-design workflows in Allegro X System Capture. Submit a new part request and complete the workflow.
- Publish for Manufacturing: Run this utility, ensure that the external connection is working, and that the publish template contains the expected content.
- Users: Open the User Management console and ensure that all user definitions have been restored. Verify Identity Provider configurations.

You can also view the User Management console to ensure that all user definitions have been restored.

## How can I fix Pulse User Management data that failed to be restored?

Prior to 17.4-2019 QIR 4 (HotFix 028), a known bug caused the restore of Pulse User Management (the Salus module) data to fail. In this case, the restore process is displayed as a Success but the data is not loaded into the Pulse User Management service.

The error can be confirmed in `<Pulse Home>/server/log/salus/server.log` by looking for the following: *RESTEASY003325: Failed to construct public org.keycloak.services.resources.KeycloakApplication()*. If this issue arises, the data can be restored only after setting the following environment variable:

```
JAVA_TOOL_OPTIONS = -  
Dkeycloak.profile.feature.upload_scripts=enabled
```

This variable is read by the Pulse server during startup. When the Pulse server is running as a service, this must be set as a SYSTEM variable on Windows, or in `/etc/adw/pulseservicemanager.sh` on Linux.

Set this variable, start Pulse Service Manager, and complete the restore process. It is recommended to remove this variable after the restore has been successfully completed.