



Technical Report

Migrating Performance Data to NetApp OnCommand Unified Manager 7.2

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Abstract

NetApp® OnCommand® Unified Manager 7.2 provides a performance data migration utility that enables you to import up to 13 months of cluster performance statistics from existing instances of OnCommand Performance Manager 7.1. This utility also imports any user-defined performance threshold policies that you have created in Performance Manager.

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1 Performance Data Migration Overview

Starting with OnCommand Unified Manager 7.2, the performance collection and analysis functionality of OnCommand Performance Manager is included in Unified Manager. Now you can use a sole product to monitor both the health and the performance status of your ONTAP® clusters from a single URL and a single user interface.

When you add new clusters to Unified Manager 7.2 or when you upgrade Unified Manager from version 7.1 to 7.2, Unified Manager starts to collect historical cluster performance data for the previous 15 days. This functionality gives you more than 2 weeks of performance information for a cluster in a few hours after it is added so that you can begin to see performance trends.

If the clusters were previously managed by Performance Manager and you want more than the default 15 days of historical performance data, you can use a provided tool to import up to 13 months of cluster performance statistics. This capability is referred to as *performance data migration*, and it is accessible from the Unified Manager maintenance console.

Note: Maintenance console functionality is across all the supported platform versions: RHEL, Windows, and vApp. Refer to [Section 6.2](#) for additional information.

1.1 Performance Data Migration Features

The following functionality is included with the performance data migration tool:

- Imports cluster performance statistics from one or more Performance Manager instances to a single Unified Manager instance.
- Imports user-defined performance threshold policies from Performance Manager to the Unified Manager instance. The policies remain applied to all storage objects as they are defined in Performance Manager.
- Imports all events from user-defined, system-defined, and dynamic performance threshold policies.
- Collects up to 13 months of performance data.
- Enables you to migrate data from clusters one at a time or to migrate data for all clusters that are currently being monitored by Unified Manager 7.2.

In case of multiple clusters, the migration process completes migration of data one cluster at a time.

2 Performance Data Migration Requirements

Importing performance data is a time-consuming process. Each node can take up to 3 hours, so it's best to perform the data migration when storage activity is low.

The next section lists the prerequisites for migrating your Performance Manager instances to a Unified Manager instance:

2.1 Unified Manager Requirements

- The Unified Manager instance must be at version 7.2.
- You must have an administrative user name and password to access the maintenance console.
- The clusters from which you want to migrate data must have been added to the Unified Manager instance.
- There must be enough disk space on the Unified Manager server for the historical performance data.

The migration tool estimates the required disk space for each cluster and displays an error message if you need to increase space before importing performance data. The tool uses an estimate of up to 17GB per node, but this full amount of space is required only when the node has many volumes, LUNs, and other storage objects.

- The initial 15 days of cluster historical performance data are collected using the data continuity collection functionality. Because this process is CPU intensive, you should not initiate performance data migration until the data continuity collection cycle is complete.

A banner appears in the Dashboards/Performance page while the data continuity collection cycle is in progress for a cluster.

- Only one data migration process can be running at a time. If you have started the migration of one cluster, any additional clusters that you configure for migration are scheduled to be serviced after the previous process completes. The migrate all function uses this same logic and imports data from one cluster at a time.
- Port 3306 must be enabled for successful JDBC connection with Performance Manager 7.1.

2.2 Performance Manager Requirements

- The Performance Manager instance must be at version 7.1.
- You must have defined the password for the performance data migration user in the Performance Manager 7.1 maintenance console.

If you are importing performance statistics from clusters that are monitored by different Performance Manager instances, you need the migration user password for each Performance Manager instance.

- You must have the IP address or host name for each Performance Manager instance.
- Port 3306 must be enabled for successful JDBC connection with Unified Manager 7.2.

3 Upgrade Path for Earlier Versions of Software

The prerequisite for upgrading to Unified Manager 7.2 is to have both Unified Manager and Performance Manager instances at version 7.1. You need to follow a certain upgrade path to bring lower versions of Unified Manager and Performance Manager to 7.1. The upgrade matrix is shown in Tables 1 and 2.

3.1 OnCommand Unified Manager

Table 1) Unified Manager upgrade path.

Platform	Unified Manager Primary Version	Recommended Upgrade Path for Unified Manager
Windows/vApp	6.1, 6.2, 6.3	6.3 → 7.0 → 7.1 → 7.2 → 7.3
RHEL	6.3/6.3P1/6.3P2	6.3/6.3P1/6.3P2 → 6.3P3 → 7.0 → 7.1 → 7.2 → 7.3

Note: Unified Manager 7.2 supports monitoring of ONTAP 9.2, 9.1, 9.0, 8.3.x, and 8.2.x releases. Data ONTAP 8.1.x and earlier releases are not supported.

3.2 OnCommand Performance Manager

Table 2) Performance Manager upgrade path.

Platform	Performance Manager Primary Version	Recommended Upgrade Path for Performance Manager
vApp/RHEL	2.1	2.1.x → 7.1 → 7.2 → 7.3
vApp/RHEL	2.0	2.0.x → 2.1.x → 7.1 → 7.2 → 7.3 2.0.x → 7.0.x → 7.1 → 7.2 → 7.3 Note: Upgrading directly from OnCommand Performance Manager 2.0RC1 to 7.0.x is not supported. For details, refer to bug 1052479.

Note: You can migrate performance data from either vApp or RHEL deployments of Performance Manager 7.1 to any platform supported by Unified Manager 7.2.

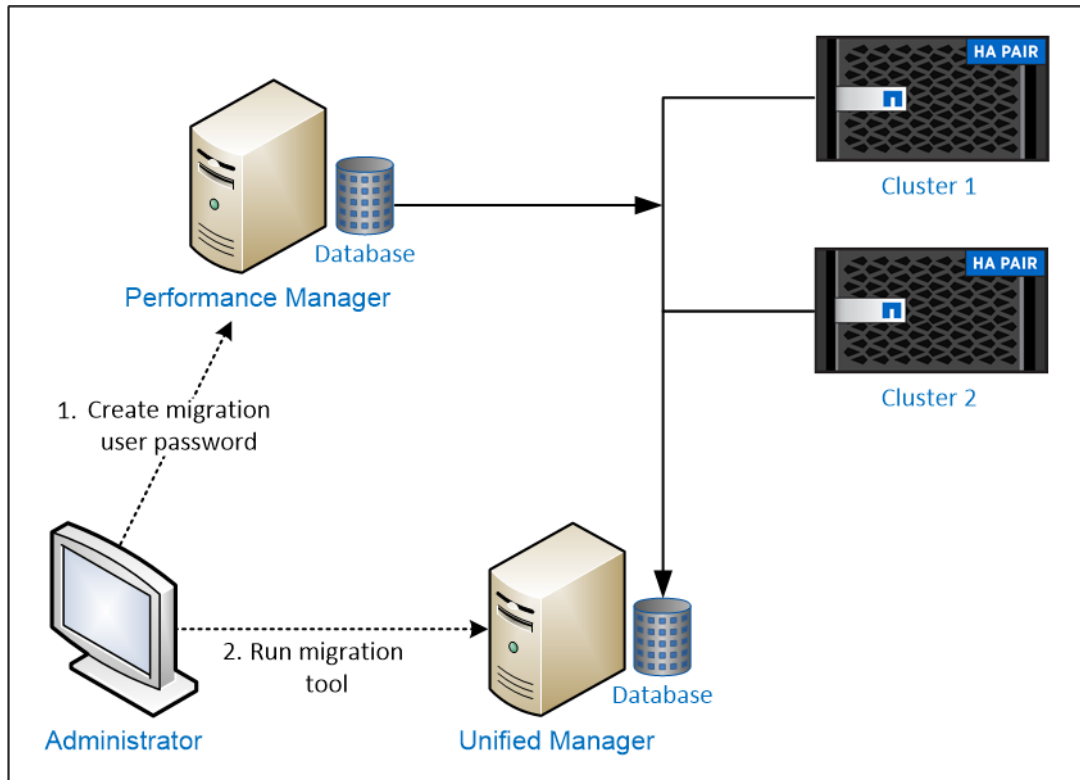
4 Performance Data Migration Process

Figure 1 shows the performance migration process.

When you add new clusters to Unified Manager 7.2 or when you upgrade from version 7.1 to 7.2, Unified Manager starts to collect historical performance data for the previous 15 days directly from the cluster.

If the clusters were previously managed by Performance Manager and you want more than the default 15 days of historical performance data, you can use the performance data migration tool to import all historical data for up to 13 months.

Figure 1) Performance data migration process.



5 Migration Process

5.1 Prerequisites

Before you start the migration process, you must meet the following requirements:

- Unified Manager 7.2 must be installed.
- All Performance Manager instances must be upgraded to 7.1.
- The data migration user should be enabled, and the password should be set in Performance Manager 7.1. Use the Enable Performance Data Migration User option available in the Performance Manager 7.1 maintenance console.

Note:

The migration tool requires up to 1GB of memory (RAM) for initiating the migration process. Be sure you have adequate memory to start the migration.

The migration tool is a JVM, and its xmx value is up to 1GB of memory.

Figure 2) Performance Manager 7.1 maintenance console.

```

OnCommand Performance Manager Maintenance Console

Version      : 7.1RC1
System ID    : 58d75b91-eb09-45a2-bc0c-5dfc23ec5cfb
Status       : Running

Main Menu
-----
 1 ) Upgrade (Disabled. Must be run on virtual machine console.)
 2 ) Network Configuration
 3 ) System Configuration
 4 ) Support/Diagnostics
 5 ) Reset Server Certificate
 6 ) Unified Manager Integration
 7 ) External Data Provider
 8 ) Backup/Restore
 9 ) Polling Interval Configuration
10 ) Enable Performance Data Migration User

 x ) Exit

Enter your choice: 10
Enter the password that will be used to import performance data to Unified Manager from this instance of Performance Manager.
Password:
Confirm Password:
Performance data migration user is successfully enabled.
Performance data migration is applicable only to versions of Unified Manager greater than 7.1.
Press any key to continue.

```

5.2 Logging In to the Maintenance Console

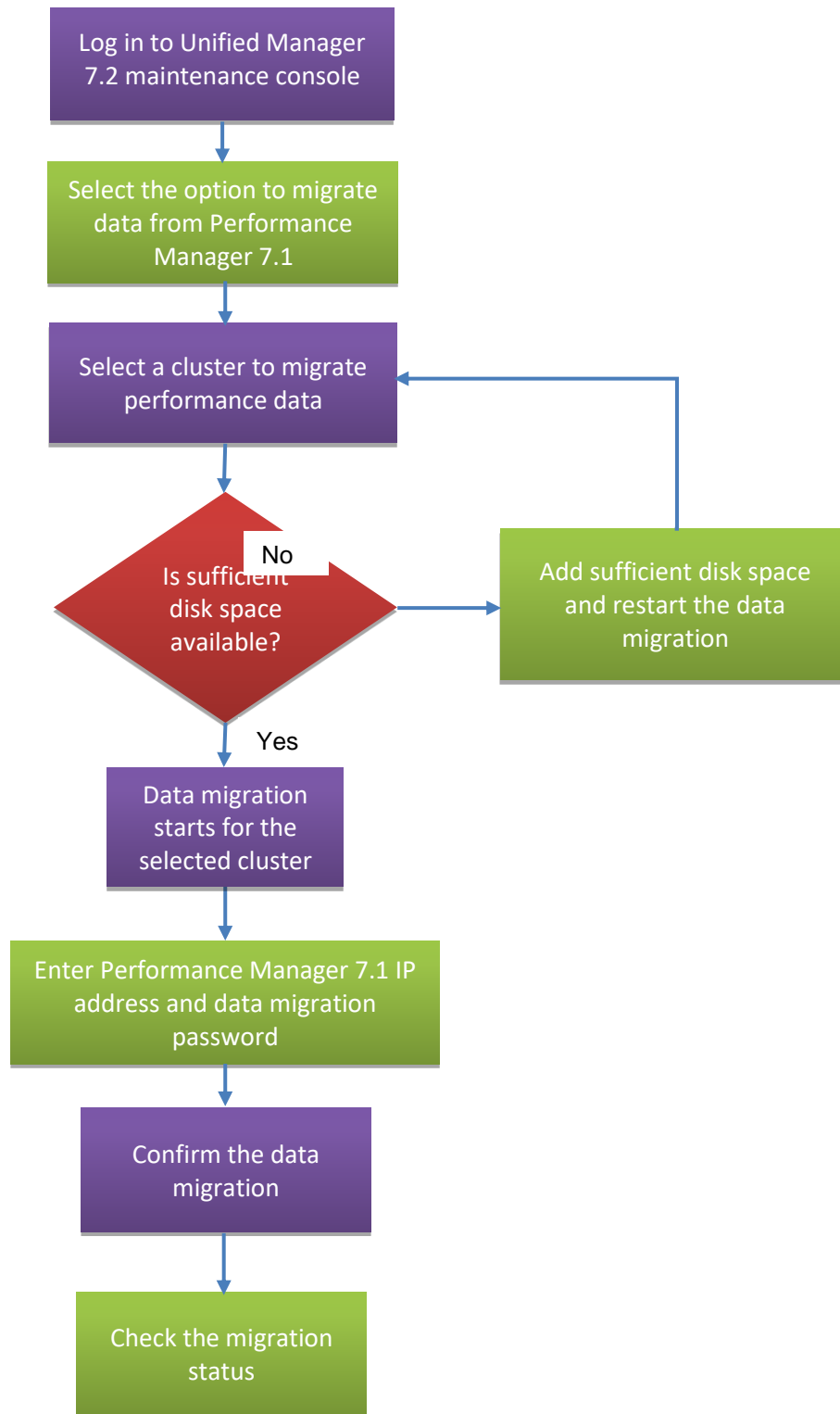
The Unified Manager maintenance console is available across the supported platforms: RHEL, Windows, and vApp. Each platform has its own way of invoking the maintenance console.

Table 3) Accessing the maintenance console.

Platform	Credentials Required	Command to Execute
RHEL	Root/administrator user	maintenance_console
Windows	Administrator user	maintenance_console You can run this command either through PowerShell or through the Windows command prompt.
vApp	Maintenance user credentials	Log in to the VMware console as maintenance user.

5.3 Migration Process Flow

Figure 3) Migration process flow.



5.4 Initiate the Migration Process

To initiate the migration process, log in to the Unified Manager 7.2 maintenance console and follow these steps:

1. From the maintenance console, select Migrate Data from OnCommand Performance Manager 7.1.

The migration tool displays a list of clusters available in Unified Manager 7.2.

2. Select the cluster to be migrated.

If the cluster you want to migrate is not listed, add the cluster to OnCommand Unified Manager and wait until cluster discovery is complete.

Only one cluster can be migrated at a time. The migration tool checks whether any other data migration is running and, if one is running, moves the cluster to Scheduled status. The scheduled clusters are picked up after the current migration is complete.

3. The Migrate Data for All Clusters option is also available. When you choose this option, all the clusters are moved to Scheduled status. The migration process picks one of the clusters and starts the migration. While migration is going on, other clusters are in Scheduled status. Subsequent clusters are picked up for the migration after the current migration is complete.
4. The migration tool estimates the disk space required to migrate the cluster and proceeds if the estimated disk space is available.

If there is not enough space:

- For vApp: Add disk space to the data disk on the system on which Unified Manager is installed and then restart the data migration for this cluster.
 - For RHEL and Windows: Increase disk space in the Data directory in the Unified Manager host system and restart the data migration for the cluster.
5. You are prompted to enter the following Performance Manager 7.1 connection information:
 - IP address or host name of Performance Manager 7.1
 - Data migration user password
 6. The migration tool validates the connection details.

On successful validation, a message is displayed requesting the storage admin's confirmation. This message includes the cluster name, Performance Manager IP address or host name, and an estimated migration time.

7. When you confirm this information, the migration tool starts the data migration for the selected cluster.
8. After migrating data from all clusters, you can restart Unified Manager.

Figure 4) Unified Manager 7.2 maintenance console.

```
PS C:\Users\Administrator> maintenance_console

OnCommand Unified Manager Maintenance Console

Version      : 7.2-2017.04.N170412.0747
System ID    : 66b0e73c-13bb-439c-8606-df835cc5d93d
Status       : Running

Main Menu
-----
1 ) Support/Diagnostics
2 ) Reset Server Certificate
3 ) External Data Provider
4 ) Performance Polling Interval Configuration
5 ) Migrate Data from OnCommand Performance Manager 7.1

x ) Exit

Enter your choice : 5

Maintenance console requires username & password to perform this
operation, enter maintenance username & password when prompted.

Enter username : admin
Enter password : *****
```

Figure 5) Select a cluster to migrate performance data.

```
Select a Cluster to Migrate Performance Data
-----
1 ) opm-mobility (opm-mobility.nane.netapp.com) (WAITING_FOR_SERVICE_RESTART)
2 ) opm-vitality (opm-vitality.nane.netapp.com) (IN_PROGRESS)
3 ) opm-longevity (opm-longevity.nane.netapp.com)
a ) Migrate data for all clusters

b ) Back
x ) Exit

If the cluster you want to migrate is not listed, add the cluster to OnCommand Unified Manager and wait until cluster discovery completes.

Enter your choice: 3

Enter OnCommand Performance Manager IP Address or Host Name: 172.20.213.1

The Data Migration User password requested below must be set in OnCommand Performance Manager 7.1. If you have not set this password, log into the OnCommand Performance Manager maintenance console and complete 'Enable Performance Data Migration User' operation now.

Enter OnCommand Performance Manager Data Migration User Password:

Do you want to migrate performance data for cluster opm-longevity from OnCommand Performance Manager 7.1 at 172.20.213.1 ? This migration could take up to 6 hours. Do you want to continue (Y/N) ? y

Data migration is scheduled. Data from only one cluster can be migrated at a time. Other clusters will be in scheduled state. They will be picked up once the current migration is finished.

Press enter to continue.
```

5.5 Status of Migration Process

After the migration process is initiated, you can check the migration status at any time by using the View Data Migration Status option, available in the maintenance console.

After the migration completes for a selected cluster, you can start the data migration for the next cluster.

Note: The percentage of how much performance data has been transferred is not displayed.

5.5.1 Stages of Migration

While the migration is in progress, you can get status messages based on various scenarios:

Figure 6) Performance data migration status.

```
Select a Cluster to Migrate Performance Data
-----
1 ) opm-mobility (opm-mobility.nane.netapp.com) (WAITING_FOR_SERVICE_RESTART)
2 ) opm-vitality (opm-vitality.nane.netapp.com) (IN_PROGRESS)
3 ) opm-longevity (opm-longevity.nane.netapp.com) (SCHEDULED)
a ) Migrate data for all clusters

b ) Back
x ) Exit
```

- **Scenario 1:** If migration is currently scheduled for the selected cluster, an In-Progress migration status message is displayed.
- **Scenario 2:** If migration is currently running for a selected cluster, an In-Progress migration status message is displayed.
- **Scenario 3:** On completion of a successful migration, a Waiting for Service Restart migration status message is displayed.

5.6 Postmigration Procedure

After performance data migration is complete for a cluster, Unified Manager 7.2 checks for Waiting for Service Restart migration status for this cluster and whether migration is in progress for any other cluster. If not, then Unified Manager services are restarted.

While Unified Manager services are restarted after performance data migration:

- You should not initiate Unified Manager database backup until the performance data migration process is complete.
- You should make sure that no SnapProtect® backup jobs are running that use Unified Manager.
- You can restart Unified Manager after you have completed migrating data from all clusters.

Note:

- After migration is complete, the status is shown as `WAITING_FOR_SERVICE_RESTART`. A scheduler runs inside the `ocie` service and checks for the need to restart services. The scheduler runs once every hour. When the condition is met, `ocie` restarts itself and the `ocieau` service.
- When services come up, the cluster's migration status is updated from `WAITING_FOR_SERVICE_RESTART` to `COMPLETED`. However, if the user can't wait for the one-hour boundary (10:00, 11:00, 12:00, and so on), the user can manually restart both `ocie` and `ocieau` services.
- Post migration, the customer should wait for the archiver performance data retrieval progress banner to disappear.
- Do not reboot the system hosting Unified Manager when the data retrieval is in progress or when the banner in the Dashboards/Performance page disappears.

Caution:

When you receive disk full warnings, please:

- Do not add any new clusters/nodes
- Do not run any Unified Manager backups.

First, increase the disk space and then perform any operation listed above.

5.7 Retry Failed Data Migration

An ongoing data migration can fail if either of the following is true:

- Unified Manager is out of required disk space.
- OnCommand Performance Manager 7.1 is not reachable.

You can always check the status of migration, correct the failure causes, and then retry the migration process. If the performance data migration tool had imported some performance data before failing, after correcting the issue, the data migration continues importing data from where it failed. It does not restart the data migration from the beginning.

5.8 Logging

RHEL

In RHEL, the logs are available under this location: `/var/log/ocie/migration.log`. These logs will be rolled off and archived after the size grows beyond 5MB.

Windows

You will find migration logs under this location:

```
<installation_directory>...\ocie\log\migration.log
```

Note: Archived logs are stored up to 30 days. Files older than 30 days are purged. This is common across all supported platforms.

6 Performance Data Migration Tool FAQ

This section answers frequent questions about performance migration and Unified Manager 7.2.

If I am using only Performance Manager today, can I move to Unified Manager 7.2?

Answer: Yes. After you install Unified Manager 7.2 and add the clusters, you can migrate performance data from Performance Manager 7.1 instances. If you are running an earlier version of Performance Manager, upgrade to Performance Manager 7.1.

Note that after you install Unified Manager 7.2 and add the clusters, it starts to collect performance data. If you need all the historic performance data from OnCommand Performance Manager 7.1, then proceed with the migration.

If I am currently using separate instances of Performance Manager 7.1 and Unified Manager 7.1, can I still import performance data to Unified Manager 7.2?

Answer: Yes, you can import performance statistics and analytics to Unified Manager 7.2. It doesn't matter if your Unified Manager 7.1 and Performance Manager 7.1 instances are fully integrated, partially integrated, or not currently operating in standalone mode.

Because it takes a few hours to import statistics based on the number of nodes, how do I know how many nodes are being managed and start a new one?

Answer: You can view this information from the Health/Nodes page or Performance/Nodes page in the Unified Manager 7.2 interface.

When can I uninstall my old instances of Performance Manager?

Answer: After you have verified that all performance data for your clusters has been migrated successfully to Unified Manager, you can remove the clusters from the instance of Performance Manager. After you have removed all clusters from Performance Manager, you can shut down or uninstall the instance of Performance Manager.

However, if this is an upgrade from a fully Integrated Unified Manager (Unified Manager 7.1 and Performance Manager 7.1), the UI of the OPM 7.1 is not accessible, so it would not be possible to remove clusters from Performance Manager 7.1. To perform a clean removal, follow these steps:

1. Delete the Performance Manager server.
2. Go to each cluster that was being monitored by the Performance Manager and remove the Performance Manager registered in the cluster.

To remove Performance Manager registration from each cluster, refer to this KB article: https://kb.netapp.com/app/answers/answer_view/a_id/1030046.

Does Unified Manager report on dynamic thresholds right after performance data migration is complete?

Answer: No. Although the 15 days of historical data are added to the instance when a cluster is added, the statistics collection times are before the objects are created, so the 15 days of initial historical data can't be used by dynamic analysis. You need to wait for 3 full days of newly collected data before Unified Manager can generate a forecast based on dynamic analysis.

On my old instance of Performance Manager, I sent cluster performance data to an external data provider: a Graphite server. Does the migration tool retain the configuration settings to the external server from Unified Manager?

Answer: No. You need to set up this connection on your Unified Manager server from the maintenance console. See the Unified Manager Workflow Guide for Managing Cluster Performance for details.

Does the data continuity collection cycle collect performance data while the performance data migration is in progress?

Answer: Yes. Data migration can happen while normal performance data collection is in progress. However, NetApp recommends that you allow Unified Manager to collect the initial 15 days of historical data before initiating the data migration.

Can I migrate performance data from a vApp version of Performance Manager 7.1 to Unified Manager 7.2 deployed in a Windows or Red Hat host?

Answer: Yes. Performance data migration is independent of the platform. Therefore, you can migrate from any supported platform of Performance Manager 7.1 (vApp/RHEL) to any supported platform of Unified Manager 7.2 (Windows/vApp/RHEL).

Can I upgrade Unified Manager 7.1 to 7.3 directly?

Answer: Yes, you can. However, if you want the historic performance data from Performance Manager 7.1, you need to upgrade from 7.1 → 7.2, migrate the performance data, and then upgrade to Unified Manager 7.3.

If you plan to upgrade directly from Unified Manager version 7.1 → 7.3 without going through 7.2, it will collect performance data for the last 15 days only.

7 Known Limitations

The performance data migration tool has the following known limitations:

- Performance events are migrated and stored in the Unified Manager database, but these historical events are not displayed in the Events/All page. However, these events are listed in many of the performance pages, including in the charts in the Performance Explorer pages when you view the historical data.
- If Performance Manager was configured to send events to Unified Manager prior to upgrading to Unified Manager 7.2, all old Performance Manager events are removed from the Unified Manager database during the upgrade. The performance migration tool imports up to 13 months of historical performance events.
- The list of users who received performance email alerts from Performance Manager is not migrated to the Unified Manager server. You must configure this information in Unified Manager for each event or event category.

8 Known Issues

- If the 15-day performance data retrieval process spans beyond 24 hours, the process will time out. You may retry collecting this data later. However, be advised when you start the process again, the 0th day and time will be appended to the current time when you retry the process.
- If there is data loss in the 0 to 15 days of collected performance data, it is lost and is unrecoverable.

When you investigate performance charts for a node or a volume, you might notice that there is a minor discontinuity in the graphs. If the time stamps match your 0 to 15 days' date, you are sure that some data is lost while retrieving performance data from archiver.

- If you receive java errors the during migration process in the format "java.io.EOFException: unexpected end of stream," contact Customer Support.

9 Glossary of Terms

Term	Description
Performance Manager	OnCommand Performance Manager 7.1
Unified Manager	OnCommand Unified Manager 7.2
Data continuity collection cycle	Component in Unified Manager that is used to retrieve and process historical archive files from NetApp ONTAP®; also referred to as the async archiver

Version History

Version	Date	Author	Description
1.0	May 2017	Dhiman Chakraborty, Tom Onacki	Prerequisites for migration, migration flow process, and approach.
1.1	November 2017	Dhiman Chakraborty	Added updates about: <ul style="list-style-type: none">• Memory requirements for the migration tool• How to cleanly remove Performance Manager 7.1 after migration to Unified Manager 7.2
1.2	March 2018	Dhiman Chakraborty	Added: <ul style="list-style-type: none">• Known issues section• Pointers for avoiding MySQL DB unavailable due to disk space

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