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# **Applications**

System Manager Classic

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# **Applications**

You can use predefined application templates in System Manager to create new configurations that are based on existing application templates. You can then provision instances of the application in ONTAP.

You configure applications by clicking **Applications & Tiers** > **Applications**.



If someone adds new applications using the CLI or REST API while you are viewing the list of applications, then you will not be able to view those new applications when you scroll the list.

The following applications can be configured in System Manager:

#### **General Applications**

- · NAS Container (volume is exported to NFS or CIFS clients)
- General SAN Application (set of LUNs exported to the application server)

#### **Databases**

- MongoDB (over SAN)
- Oracle (over NFS or SAN)
- Oracle (Real Application Cluster over NFS or SAN)
- · Microsoft SQL Server (over SAN or SMB )

#### **Virtual Infrastructure**

Virtual Servers (with VMware, Hyper-V, or XEN)

#### **Related information**

**ONTAP** concepts

# Provisioning a basic template

You can use System Manager to quickly provision basic templates for SAP HANA.

#### About this task

As the cluster administrator, you can provision applications by configuring a basic template. The example describes how to configure the **SAP HANA Server**.

#### **Steps**

- 1. Click Applications & Tiers > Applications
- 2. In the Basic tab, select the SAP HANA Server template.
- 3. In the **Database Details**section, specify the following:
  - Database name
  - Database size

- Log size
- · Tempdb size
- Number of server cores
- Span HA Controller Notes

#### 4. Click Provision Storage

#### Results

The SAP HANA Server application is provisioned.

#### **Related information**

Refer to Application Provisioning Settings for field descriptions

# Storage service definitions

ONTAP includes predefined storage services that are mapped to corresponding minimum performance factors.

The actual set of storage services available in a cluster or SVM is determined by the type of storage that makes up an aggregate in the SVM.

The following table shows how the minimum performance factors are mapped to the predefined storage services:

Storage service	Expected IOPS (SLA)	Peak IOPS (SLO)	Minimum volume IOPS	Estimated latency	Are expected IOPS enforced?
value	128 per TB	512 per TB	75	17 ms	On AFF: Yes Otherwise: No
performance	2048 per TB	4096 per TB	500	2 ms	Yes
extreme	6144 per TB	12288 per TB	1000	1 ms	Yes

The following table defines the available storage service level for each type of media or node:

Media or node	Available storage service level
Disk	value
Virtual machine disk	value
FlexArray LUN	value
Hybrid	value

Media or node	Available storage service level
Capacity-optimized Flash	value
Solid-state drive (SSD) - non-AFF	value
Performance-optimized Flash - SSD (AFF)	extreme, performance, value

# Add Microsoft SQL Server over SAN to System Manager

You can use the Enhanced tab to add an instance of Microsoft SQL Server over SAN to System Manager.

#### About this task

The following procedure describes how to add a **Microsoft SQL Server** instance over SAN to System Manager. You can choose SMB as the export protocol only if the cluster is licensed for CIFS, which must be configured on the storage virtual machine (SVM).

#### **Steps**

- 1. Click Applications & Tiers > Applications
- 2. In the Enhanced tab, click Add
- 3. Select Microsoft SQL Server instance from the menu.



The dropdown list includes a list of all available application types and template types.

The Add Microsoft SQL Server Instance window is displayed.

- 4. Specify the following details:
  - Database name
  - Database size and the required ONTAP service level
  - Number of server cores
  - Log size and the required ONTAP service level
  - Provision for Tempdb

Specify if the server should be provisioned for Tempdb.

Export Protocol (SMB or SAN)

Specify SAN

- Host operating system
- LUN format
- Host mapping
- 5. Click Add Application

#### Results

The Microsoft SQL Server instance over SAN is added to System Manager.

# **Application provisioning settings**

When setting up a basic or enhanced template for a database, server, or virtual desktop, you must provide details to System Manager. After an application is provisioned, you can edit the details and specify a resizing (increased size only). This section describes the fields in each template. Only the fields that are required for provisioning or editing the settings of the specific application are displayed.

#### **Details for Microsoft SQL Database Applications over SAN**

You enter the following information to provision Microsoft SQL Database applications over SAN or edit the settings:

#### Database Name

Mandatory: The name of the database you are configuring; this string is used as a prefix when provisioning storage for each database.

#### Database Size

Mandatory: The size of the database, in units of MB, GB, TB, or PB.

#### ONTAP Service Level for Database

Mandatory: The service level for the database.

#### Log Size

Mandatory: The size of the database log in units of MB, GB, TB, or PB.

#### ONTAP Service Level for Log

Mandatory: The service level for the log.

#### Tempdb

Mandatory: The size of the tempdb database in units of MB, GB, TB, or PB.

#### Export Protocol

Mandatory: The export protocol is SAN

#### Number of Server Cores (on the SQL server)

Indicates the number of CPU cores on the databases server in increments of 2.

#### Span HA Controller Nodes

Specifies if storage objects should be created across a high-availability pair of nodes.

#### **Details for provisioning a SAP HANA database**

#### Active SAP HANA Nodes

The number of active SAP HANA nodes. The maximum number of nodes is 16.

#### Memory Size per HANA Node

The memory size of a single SAP HANA node.

#### Data Disk Size per HANA Node

The data disk size for each node.



If set to 0, the memory size field above is used to calculate the size of the data area.

### **Details for Microsoft SQL Database Applications over SMB**

You enter the following information to provision Microsoft SQL Database applications over SMB or edit the settings:

#### Database Name

Mandatory: The name of the database you are configuring; this string is used as a prefix when provisioning storage for each database.

#### Database Size

Mandatory: The size of the database, in units of MB, GB, TB, or PB.

#### Database Service Level

Mandatory: The service level for the database.

#### Number of Server Cores (on the SQL server)

Indicates the number of CPU cores on the databases server in increments of 2.

#### Log Size

Mandatory: The size of the database log in units of MB, GB, TB, or PB.

#### Log Service Level

Mandatory: The service level for the log.

#### Provision for Tempdb

Mandatory: Indicates whether tempdb is provisioned.

#### Export Protocol

Mandatory: The export protocol is SMB or SAN.

SMB can be chosen only when the cluster is licensed for CIFS, which has been configured for the SVM.

#### Grant Access to User

Mandatory: The access level for the application.

#### Permission

Mandatory: The permission level for the application.

#### **Details for a SQL Server Account**

You enter the following information to provide full control access to the SQL server accounts:



The installation account is granted SeSecurityPrivilege.

#### SQL Server Service Account

Mandatory: This is an existing domain account; specify as domain\user.

#### SQL Server Agent Service Account

Optional: This is this domain account if SQL server agent service is configured, specify in the format domain\user.

### **Details for Oracle Database Applications**

You enter the following information to provision Oracle database applications or edit the settings:

#### Database Name

Mandatory: The name of the database you are configuring; this string is used as a prefix when provisioning storage for each database.

#### · Datafile Size

Mandatory: The size of the datafile, in units of MB, GB, TB, or PB.

#### ONTAP Service Level for Datafile

Mandatory: The service level for the datafile.

#### Redo Log Group Size

Mandatory: The size of the redo log group, in units of MB, GB, TB, or PB.

#### ONTAP Service Level for Redo Log Group

Mandatory: The service level for the redo log group.

#### Archive Log Size

Mandatory: The size of the archive log, in units of MB, GB, TB, or PB.

#### ONTAP Service Level for the Archive Log

Mandatory: The service level for the archive group.

#### Export Protocol

The export protocol: SAN or NFS

#### Initiators

A comma-separated list of the initiators (WWPN or IQN) in the initiator group.

#### Grant Access to Host

The host name to give the application access to.

### **Details for MongoDB Applications**

You enter the following information to provision MongoDB applications or edit the settings:

#### Database Name

Mandatory: The name of the database you are configuring; this string is used as a prefix when provisioning storage for each database.

#### Data Set Size

Mandatory: The size of the datafile, in units of MB, GB, TB, or PB.

#### ONTAP Service Level for Data Set

Mandatory: The service level for the datafile.

#### Replication Factor

Mandatory: The number of replications.

#### Mapping for Primary Host

Mandatory: The name of primary host.

#### Mapping for Replica Host 1

Mandatory: The name of first host replica.

#### Mapping for Replica Host 2

Mandatory: Name of second host replica.

# **Details for Virtual Desktop Applications**

You enter the following information to provision virtual desktop infrastructures (VDI) or edit the settings:

#### Average Desktop Size (used for the SAN Virtual Desktop)

This is used to determine the thin-provisioned size of each volume in units of MB, GB, TB, or PB.

#### · Desktop Size

This is used to determine the size of the volumes which should be provisioned in units of MB, GB, TB, or PB

#### ONTAP Service Level for Desktops

Mandatory: The service level for the datafile.

#### Number of Desktops

This number is used to determine the number of volumes created.



This is not used to provision the virtual machines.

#### Select Hypervisor

The hypervisor used for these volumes; the hypervisor determines the correct datastore protocol. The options are VMware, Hyper-V, or XenServer/KVM.

#### Desktop Persistence

Determines if the desktop is persistent or nonpersistent. Selecting the desktop persistence sets the default values for the volume such as Snapshot schedules and post-process deduplication policies. Inline efficiencies are enabled by default for all volumes.



These policies can be modified manually after provisioning.

#### Datastore Prefix

The value entered is used to generate the names of the datastores and, if applicable, the export policy name or share name.

#### Export Protocol

The export protocol: SAN or NFS

#### Initiators

A comma-separated list of the initiators (WWPN or IQN) in the initiator group.

#### · Grant Access to Host

The host name to give the application access to.

#### **Initiator Details**

You enter the following information to set up the initiator:

#### Initiator Group

You can select an existing group or create a new group.

#### Initiator Group Name

The name of the new initiator group.

#### Initiators

A comma-separated list of the initiators (WWPN or IQN) in the initiator group.

The following fields apply only to SAP HANA provisioning:

#### Initiator OS Type

The operating system type of the new initiator group.

#### FCP Portset

The FCP portset that the initiator group is bound to.

### **Host Access Configuration**

You enter the following information to configure the host access to the volumes:

#### Volume Export Configuration

Select the export policy to apply to the volumes during creation. The options are:

Allow All

This option implies that an export rule is created which permits read-write access to any clients.

Create Custom Policy

This option allows you to specify a list of host IP addresses to receive read-write access.



You can modify the volume export policy later using System Manager workflows.

#### Host IP Addresses

This is a comma-separated list of IP addresses.



For NFS-based systems, a new export policy is created using the datastore prefix and a rule is created in it to give access to the list of IP.

# **Application Details**

When the application is added, you can view the configuration settings in the **Overview** tab of the Application Details window. Other details such as NFS or CIFS Access and Permissions are displayed depending on the type of application that was set up.

#### Type

This is the type of general application, database, or virtual infrastructure that was created.

• SVM

The name of the server virtual machine that the application was created on.

#### Size

The total size of the volume.

#### Available

The amount of space currently available in the volume.

#### Protection

The type of data protection configured.

You can expand the **Components** and **Volumes** panes for performance details about space used, IOPs, and latency.



The used size displayed in the Components pane is different than the used size displayed in the CLI.

# **Editing an application**

You can edit a provisioned application to increase to storage size or to manage the Snapshot copies of the application.

#### About this task

As the cluster administrator, after you provision an application, you can edit it to modify the storage size. You can also create, restore, or delete Snapshot copies of the application. The example procedure that follows describes how to edit a **NAS Container** application.

#### **Steps**

- 1. Click Applications & Tiers > Applications
- Click on the name of the NAS container application.



If someone adds new applications using the CLI or REST API while you are viewing the list of applications, then you will not be able to view those new applications when you scroll the list

The **Overview** tab of the Application Details: nas window displays the application settings.

3. Click Edit.

The Edit NAS Container: nas displays the current storage size setting and the **NFS Access - Grant Access to Host** address.

- 4. Modify the Storage Total Size value.
- 5. In the size units field, select from the drop-down menu to specify the correct size units (Bytes, MB, GB, or TB).
- 6. In the ONTAP Service Level field, select from the drop-down menu to specify the value.
- 7. Click Save.

Navigate back to the Application Details: nas window, and select the Snapshot Copiestab.

A list of Snapshot copies for this provisioned application is displayed. You can use the **Search** field to search for Snapshot copies by name.

9. Manage the Snapshot copies by performing the following tasks as necessary:

Task	Actions
Create	Click <b>Create</b> to create a new Snapshot copy.
Restore	Click the check boxes next to the Snapshot copies you want to restore, and then click <b>Restore</b> .
Delete	Click the check boxes next to the Snapshot copies you want to delete, and then click <b>Delete</b> .

# **Deleting an application**

You can delete a provisioned application when it is no longer required.

#### About this task

As the cluster administrator, after you provision an application, you can delete it when you no longer require it. The example procedure that follows describes how to delete a **NAS Container** application.

#### **Steps**

- 1. Click Applications & Tiers > Applications
- 2. Click the name of the NAS container application.



If someone adds new applications using the CLI or REST API while you are viewing the list of applications, then you will not be able to view those new applications when you scroll the list

The **Overview** tab of the Application Details: nas window displays the application settings.

3. Click Delete.

A dialog box displays a warning message that asks you if you are sure you want to delete this application.

Click Delete.



Any volume deleted using the Application delete operation is not placed in the recovery queue. The volume is deleted immediately.

# **Applications window**

You can use System Manager to display a list of the applications in a storage virtual machine (SVM). The list includes detailed information about each application.

#### **Tabs**

Depending on the configuration of the cluster, System Manager displays information about applications using one of the following methods:

#### No tabs

Detailed information about the application, including the name, the type, storage usage, performance, and related information.

#### Two tabs

The display provides two tabs of information about the application.

#### Enhanced

Detailed information about the application, including the name, the type, storage usage, performance, and related information.

#### Basic

Basic information about the application.

### List of applications

Applications for the selected SVM are displayed on the **Enhanced** tab in a list in the following ways:

- For System Manager 9.5 and earlier, up to a maximum of 32 applications are displayed in the list.
- For System Manager 9.6, the first 25 applications are displayed in the list. As you scroll to the bottom of the list, another 25 applications are added to the list. When you continue to scroll, you can continue to add 25 applications at a time to expand the list up to a maximum of 1000 applications.

#### List columns

The information about each application is listed on the **Enhanced** tab in the following columns.

# Expand/collapse arrow

Contains an arrow that you can click to expand the information to a show a detailed view or to collapse the information back to the summary view.

#### Name

The name of the application.

#### Type

The application type.

#### Component

The component of the application.

#### ONTAP Service Level

The level of ONTAP service for the application.

#### Usage

A graphical bar that shows the percentage of usage.

#### Used

The amount of storage space used by the application.

#### Available

The amount of storage space still available for the application.

#### Size

The size of the application.

#### • IOPs

The number of input and output operations per second (IOPs) for the application.

#### Latency

The amount of latency for the application.

### **Entry fields**

The following fields can be used to modify the display of information:

#### · SVM

Enables you to display a drop-down list of SVMs from which you can select the SVM that contains the applications you want to display.

#### · Search field

Enables you to type all or part of an application name to initiate a search based on the criteria you type. Only the applications with names that match the criteria are then displayed in the list.

#### · Sort by field

Enables you to sort the list of applications based on name, size, or type.

#### **Action icons**

The following icons on the **Enhanced** tab can be used to initiate actions:

### Add icon +

Enables you to add an application to the selected SVM.

## • Filter icon \Xi

Enables you to specify the type of application you want to display in your search results.

# Display icon

Enables you to switch between a list view and a card view of the application information.

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