



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**
2. 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**.

8. 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 Create to create a new Snapshot copy.
Restore	Click the check boxes next to the Snapshot copies you want to restore, and then click Restore .
Delete	Click the check boxes next to the Snapshot copies you want to delete, and then click Delete .

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.

4. 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 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** 

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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