# SnapCenter Plug-in for Microsoft Windows concepts

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# SnapCenter Plug-in for Microsoft Windows concepts

## SnapCenter Plug-in for Microsoft Windows overview

The SnapCenter Plug-in for Microsoft Windows is a host-side component of the NetApp SnapCenter Software that enables application-aware data protection management of Microsoft file system resources. In addition, it provides storage provisioning, Snapshot copy consistency, and space reclamation for Windows file systems. The Plug-in for Windows automates file system backup, restore, and cloning operations in your SnapCenter environment.

When the Plug-in for Windows is installed, you can use SnapCenter with NetApp SnapMirror technology to create mirror copies of backup sets on another volume and with NetApp SnapVault technology to perform disk-to-disk backup replication for archival or standards compliance.

## What you can do with the SnapCenter Plug-in for Microsoft Windows

When the Plug-in for Windows is installed in your environment, you can use SnapCenter to back up, restore, and clone Windows file systems. You can also perform tasks supporting those operations.

- Discover resources
- Back up Windows file systems
- Schedule backup operations
- Restore file system backups
- Clone file system backups
- Monitor backup, restore, and clone operations

The Plug-in for Windows does not support backup and restore of file systems on SMB shares.

## SnapCenter Plug-in for Windows features

The Plug-in for Windows integrates with NetApp Snapshot copy technology on the storage system. To work with the Plug-in for Windows, you use the SnapCenter interface.

The Plug-in for Windows includes these major features:

- **Unified graphical user interface powered by SnapCenter**

  The SnapCenter interface provides you with standardization and consistency across plug-ins and environments. The SnapCenter interface enables you to complete consistent backup and restore processes across plug-ins, use centralized reporting, use at-a-glance dashboard views, set up role-based access control (RBAC), and monitor jobs across all plug-ins. SnapCenter also offers centralized scheduling

and policy management to support backup and clone operations.

- **Automated central administration**

  You can schedule routine file system backups, configure policy-based backup retention, and set up restore operations. You can also proactively monitor your file system environment by configuring SnapCenter to send email alerts.

- **Nondisruptive NetApp Snapshot copy technology**

  The Plug-in for Windows uses NetApp Snapshot copy technology. This enables you to back up file systems in seconds and restore them quickly without taking host offline. Snapshot copies consume minimal storage space.

In addition to these major features, the Plug-in for Windows offers the following benefits:

- Backup, restore, and clone workflow support
- RBAC-supported security and centralized role delegation
- Creation of space-efficient copies of production file systems for testing or data extraction by using NetApp FlexClone technology

  For FlexClone licensing information, see SnapCenter licenses.

- Ability to run multiple backups at the same time across multiple servers
- PowerShell cmdlets for scripting of backup, restore, and clone operations
- Support for backup of file systems and virtual machine disks (VMDKs)
- Support for physical and virtualized infrastructures
- Support for iSCSI, Fibre Channel, FCoE, raw device mapping (RDM), Asymmetric LUN Mapping (ALM), VMDK over NFS and VMFS, and virtual FC

# How SnapCenter backs up Windows file systems

SnapCenter uses Snapshot copy technology to back up Windows file system resources that reside on LUNs, CSVs (cluster shared volumes), RDM (raw device mapping) volumes, ALM (asymmetric LUN mapping) in Windows clusters, and VMDKs based on VMFS/NFS (VMware Virtual Machine File System using NFS).

SnapCenter creates backups by creating Snapshot copies of the file systems. Federated backups, in which a volume contains LUNs from multiple hosts, are faster and more efficient than backups of each individual LUN because only one Snapshot copy of the volume is created compared to individual Snapshots of each file system.

When SnapCenter creates a Snapshot copy, the entire storage system volume is captured in the Snapshot copy. However, the backup is valid only for the host server for which the backup was created.

If data from other host servers resides on the same volume, this data cannot be restored from the Snapshot copy.

If a Windows file system contains a database, then backing up the file system is not the same as backing up the database. To back up a database, you must use one of the database plug-ins.

# Storage types supported by SnapCenter Plug-ins for Microsoft Windows

SnapCenter supports a wide range of storage types on both physical machines and virtual machines. You must verify whether support is available for your storage type before installing the package for your host.

SnapCenter provisioning and data protection support is available on Windows Server. For the latest information about supported versions, see the NetApp Interoperability Matrix Tool.

| Machine | Storage type | Provision using | Support notes |
|---|---|---|---|
| Physical server | FC-connected LUNs | SnapCenter graphical user interface (GUI) or PowerShell cmdlets | |
| Physical server | iSCSI-connected LUNs | SnapCenter GUI or PowerShell cmdlets | |
| Physical server | SMB3 (CIFS) shares residing on a storage virtual machine (SVM) | SnapCenter GUI or PowerShell cmdlets | Support for provisioning only.<br><br>You cannot use SnapCenter to back up any data or shares using the SMB protocol. |
| VMware VM | RDM LUNs connected by an FC or iSCSI HBA | PowerShell cmdlets | |
| VMware VM | iSCSI LUNs connected directly to the guest system by the iSCSI initiator | SnapCenter GUI or PowerShell cmdlets | |
| VMware VM | Virtual Machine File Systems (VMFS) or NFS datastores | VMware vSphere | |
| VMware VM | A guest system connected to SMB3 shares residing on an SVM | SnapCenter GUI or PowerShell cmdlets | Support for provisioning only.<br><br>You cannot use SnapCenter to back up any data or shares using the SMB protocol. |

| Machine | Storage type | Provision using | Support notes |
| --- | --- | --- | --- |
| Hyper-V VM | Virtual FC (vFC) LUNs connected by a virtual Fibre Channel Switch | SnapCenter GUI or PowerShell cmdlets | You must use Hyper-V Manager to provision Virtual FC (vFC) LUNs connected by a virtual Fibre Channel Switch.<br>Hyper-V pass through disks and backing up databases on VHD(x) that are provisioned on NetApp storage are not supported. |
| Hyper-V VM | iSCSI LUNs connected directly to the guest system by the iSCSI initiator | SnapCenter GUI or PowerShell cmdlets | Hyper-V pass through disks and backing up databases on VHD(x) that are provisioned on NetApp storage are not supported. |

| Machine | Storage type | Provision using | Support notes |
| --- | --- | --- | --- |
| Hyper-V VM | A guest system connected to SMB3 shares residing on an SVM | SnapCenter GUI or PowerShell cmdlets | Support for provisioning only.<br><br>You cannot use SnapCenter to back up any data or shares using the SMB protocol.<br><br>Hyper-V pass through disks and backing up databases on VHD(x) that are provisioned on NetApp storage are not supported. |

# Minimum ONTAP privileges required for Windows plug-in

The minimum ONTAP privileges that are required vary according to the SnapCenter plug-ins you are using for data protection.

| **All-access commands: Minimum privileges required for ONTAP 8.2.*x* and later** |
| --- |
| event generate-autosupport-log |
| job history show<br><br>job stop |

| All-access commands: Minimum privileges required for ONTAP 8.2.*x* and later |
| --- |
| lun |
| lun create |
| lun delete |
| lun igroup add |
| lun igroup create |
| lun igroup delete |
| lun igroup rename |
| lun igroup show |
| lun mapping add-reporting-nodes |
| lun mapping create |
| lun mapping delete |
| lun mapping remove-reporting-nodes |
| lun mapping show |
| lun modify |
| lun move-in-volume |
| lun offline |
| lun online |
| lun resize |
| lun serial |
| lun show |

| **All-access commands: Minimum privileges required for ONTAP 8.2.*x* and later** |
| --- |
| snapmirror policy add-rule<br>snapmirror policy modify-rule<br>snapmirror policy remove-rule<br>snapmirror policy show<br>snapmirror restore<br>snapmirror show<br>snapmirror show-history<br>snapmirror update<br>snapmirror update-ls-set<br>snapmirror list-destinations |
| version |

| All-access commands: Minimum privileges required for ONTAP 8.2.*x* and later |
| --- |
| volume clone create |
| volume clone show |
| volume clone split start |
| volume clone split stop |
| volume create |
| volume destroy |
| volume file clone create |
| volume file show-disk-usage |
| volume offline |
| volume online |
| volume modify |
| volume qtree create |
| volume qtree delete |
| volume qtree modify |
| volume qtree show |
| volume restrict |
| volume show |
| volume snapshot create |
| volume snapshot delete |
| volume snapshot modify |
| volume snapshot rename |
| volume snapshot restore |
| volume snapshot restore-file |
| volume snapshot show |
| volume unmount |

| All-access commands: Minimum privileges required for ONTAP 8.2.*x* and later |
| --- |
| vserver cifs |
| vserver cifs share create |
| vserver cifs share delete |
| vserver cifs shadowcopy show |
| vserver cifs share show |
| vserver cifs show |
| vserver export-policy |
| vserver export-policy create |
| vserver export-policy delete |
| vserver export-policy rule create |
| vserver export-policy rule show |
| vserver export-policy show |
| vserver iscsi |
| vserver iscsi connection show |
| vserver show |

| Read-only commands: Minimum privileges required for ONTAP 8.2.*x* and later |
| --- |
| network interface |
| network interface show |
| vserver |

# Prepare storage systems for SnapMirror and SnapVault replication

You can use a SnapCenter plug-in with ONTAP SnapMirror technology to create mirror copies of backup sets on another volume, and with ONTAP SnapVault technology to perform disk-to-disk backup replication for standards compliance and other governance-related purposes. Before you perform these tasks, you must configure a data-protection relationship between the source and destination volumes and initialize the relationship.

If you are coming to SnapCenter from a NetApp SnapManager product and are satisfied with the data protection relationships you have configured, you can skip this section.

A data protection relationship replicates data on primary storage (the source volume) to secondary storage (the destination volume). When you initialize the relationship, ONTAP transfers the data blocks referenced on the source volume to the destination volume.

SnapCenter does not support cascade relationships between SnapMirror and SnapVault volumes (**Primary** > **Mirror** > **Vault**). You should use fanout relationships.

SnapCenter supports the management of version-flexible SnapMirror relationships. For details about version-flexible SnapMirror relationships and how to set them up, see the ONTAP documentation.

# Define a backup strategy for Windows file systems

Defining a backup strategy before you create your backups provides you with the backups that you require to successfully restore or clone your file systems. Your service-level agreement (SLA), recovery time objective (RTO), and recovery point objective (RPO) largely determine your backup strategy.

An SLA defines the level of service that is expected and addresses many service-related issues, including the availability and performance of the service. RTO is the time by which a business process must be restored after a disruption in service. RPO defines the strategy for the age of the files that must be recovered from backup storage for regular operations to resume after a failure. SLA, RTO, and RPO contribute to the data protection strategy.

## Backup schedules for Windows file systems

Backup frequency is specified in policies; a backup schedule is specified in the resource group configuration. The most critical factor in determining a backup frequency or schedule is the rate of change for the resource and the importance of the data. You might back up a heavily used resource every hour, while you might back up a rarely used resource once a day. Other factors include the importance of the resource to your organization, your Service Level Agreement (SLA), and your Recover Point Objective (RPO).

An SLA defines the level of service expected and addresses many service-related issues, including the availability and performance of service. An RPO defines the strategy for the age of the files that must be recovered from backup storage for regular operations to resume after a failure. The SLA and RPO contribute to the data protection strategy.

Even for a heavily used resource, there is no requirement to run a full backup more than once or twice a day.

Backup schedules have two parts, as follows:

- Backup frequency

  Backup frequency (how often backups are to be performed), called *schedule type* for some plug-ins, is part of a policy configuration. For example, you might configure the backup frequency as hourly, daily, weekly, or monthly, or you can specify **None** which makes the policy an on-demand-only policy. You can access policies by clicking **Settings** > **Policies**.

- Backup schedules

  Backup schedules (exactly when backups are to be performed) are part of a resource group configuration. For example, if you have a resource group that has a policy configured for weekly backups, you might configure the schedule to back up every Thursday at 10:00 PM. You can access resource group schedules by clicking **Resources** > **Resource Groups**.

### Number of backups needed for Windows file systems

Factors that determine the number of backups that you need include the size of the Windows file system, the number of volumes used, the rate of change of the file system, and your Service Level Agreement (SLA).

### Backup naming convention for Windows file systems

Windows file system backups use the default Snapshot copy naming convention. The default backup naming convention adds a timestamp to Snapshot copy names that helps you identify when the copies were created.

The Snapshot copy uses the following default naming convention: resourcegroupname_hostname_timestamp

You should name your backup resource groups logically, as in the following example:

```
dts1_mach1x88_03-12-2015_23.17.26
```

In this example, the syntax elements have the following meanings:

- `dts1` is the resource group name.
- `mach1x88` is the host name.
- `03-12-2016_23.17.26` is the date and timestamp.

When creating a backup, you can also add a descriptive tag to help identify the backup. In contrast, if you want to use a customized backup naming convention, you need to rename the backup after the backup operation is complete.

### Backup retention options

You can choose either the number of days for which to retain backup copies or specify the number of backup copies you want to retain, up to a ONTAP maximum of 255 copies. For example, your organization might require that you retain 10 days of backup copies or 130 backup copies.

While creating a policy, you can specify the retention options for the backup type and the schedule type.

If you set up SnapMirror replication, the retention policy is mirrored on the destination volume.

SnapCenter deletes the retained backups that have retention labels that match the schedule type. If the schedule type was changed for the resource or resource group, backups with the old schedule type label might still remain on the system.

For long-term retention of backup copies, you should use SnapVault backup.

# Sources and destinations of clones for Windows file systems

You can clone a file system backup from primary storage or secondary storage. You also can choose the destination that supports your requirements; either the original backup location or a different destination on the same host or on a different host. The destination must be on the same volume as the clone source backup.

| Clone destination | Description |
| --- | --- |
| Original, source, location | By default, SnapCenter stores the clone on the same location and the same host as the backup being cloned. |
| Different location | You can store the clone on a different location on the same host or on a different host. The host must have a configured connection to the storage virtual machine (SVM). |

You can rename the clone after the clone operation is complete.

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