

NetApp SnapCenter Software: Easing the Path to Data Protection



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Data protection is a top priority at NetApp, offered through a number of separate packages. NetApp® SnapCenter® Software, a brand new offering, consolidates NetApp's data protection offerings and simplifies administration. **SnapCenter** is a centralized and extensible data protection platform, providing common and consistent data protection. SnapCenter provides a new role as an application data protection platform, easy to deploy and customize.

The Data Protection Challenge

Some areas of data protection are particularly difficult to manage. All of us have struggled, for example, with slow and inefficient backup. Traditional backup and restore operations are slow and time-consuming. Getting data to and from test and development environments sometimes takes so long that data can be out of date by the time the operation is finished. Large enterprises with separate teams for applications, databases, storage, and virtualization require complex coordination across multiple teams. In addition, many times the application administrators do not have access to self-service (they may have to submit a ticket to IT, wait for a backup administrator to pull tapes, and perform a restore). A relatively new challenge is how to deal with the data fabric as it moves from the premises to the cloud and back. Seamless protection of data is vital, no matter where it resides at any particular instant.

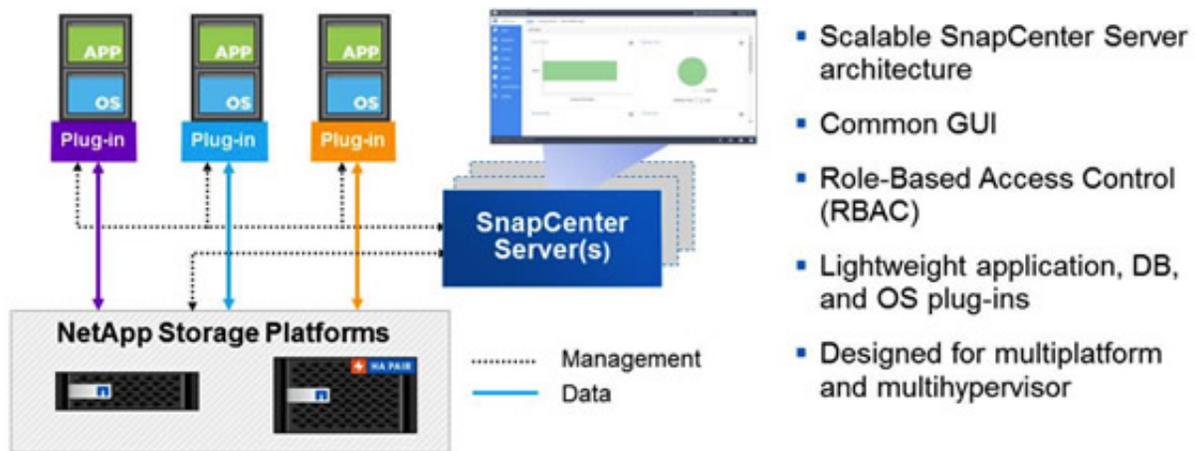
If You Thought NetApp SnapManager Software was Great...

NetApp SnapManager® Software has provided NetApp customers with outstanding data protection for many years; however, a cloud-integrated data fabric requires additional capabilities. NetApp's SnapManager products address part of the data protection challenge. They are fast, application-consistent, snapshot-based data protection products that help to address the slow and inefficient backup challenge. However, scaling the environment becomes a little complicated. For example, if you have just 20 different SQL servers, there are 20 different hosts and 20 different places where you must schedule backups, monitor jobs, and perform cloning and restore operations.

SnapManager successfully addresses application-consistent backups and snapshot-based data protection. However, SnapCenter is a product that moves beyond SnapManager in controlling data as it moves throughout the data fabric. In comparison to SnapManager, SnapCenter offers a unified interface where those 20 SQL servers are all managed through a single pane of glass. From SnapCenter you can create policies and apply them across the different SQL environments—one interface for all of your hosts.

The Big Picture

Figure 1) SnapCenter is a unified, scalable software platform for data protection and clone management.



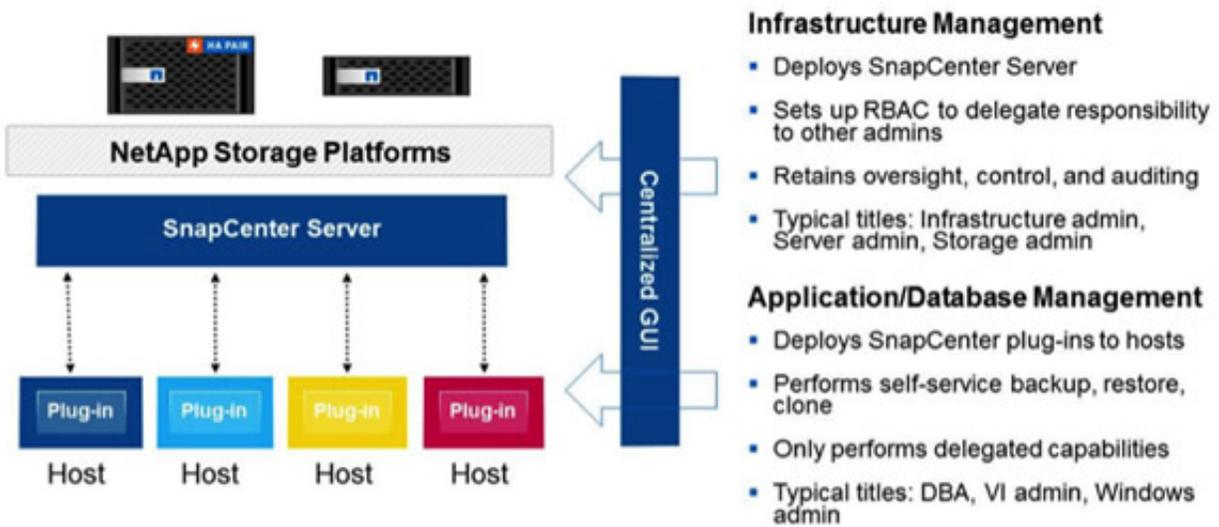
Source: NetApp, 2015

In the middle of Figure 1 is the new NetApp product, SnapCenter Server, which is architected for centralized management, high-availability, and load-balancing. It provides a common GUI for ease of management across the entire IT infrastructure as well as role-based access control for delegating management while preserving central oversight. On the left-hand side are the SnapCenter plug-ins, which are installed on each device using the SnapCenter Server. These lightweight application plug-ins offer role-specific functions and workflows. The SnapCenter Server and the plug-ins talk to the NetApp Storage Platforms. SnapCenter is also designed for multiplatform storage compatibility. Along with multiplatform storage support, SnapCenter additionally supports multiple hypervisors.

Life for Administrators Just Got Easier

Two types of users are depicted at the right side of the following figure: one is the Infrastructure Management User and the other is the Application/Database Management user.

Figure 2) SnapCenter benefits IT admins by addressing the needs of application and database/storage management.



Source: NetApp, 2015

The Infrastructure Management User installs SnapCenter, configures it, sets up role-based access control (RBAC), and delegates responsibility to other SnapCenter users. This user maintains oversight, control, and auditing through SnapCenter, and typically may have one of the titles assigned as shown in the Figure 2. The responsibilities cover the SnapCenter Server as well as the storage platforms.

At the upper part of the image are the hosts with their SnapCenter plug-ins. The plug-ins are deployed to the hosts by the Application/Database Management user. This user also performs self-service backup, restore, and cloning jobs. Only tasks allowed by the SnapCenter admin can be executed. Typical titles for this user are as shown in the figure. SnapCenter also allows a high level of granularity and roles for administrators.

The SnapCenter Value

SnapCenter adds value by providing:

Simplicity:

- A centralized GUI provides monitoring, notification, logging, reporting, and scheduling for all of the SnapCenter plug-ins from a central interface. One user interface covers everything.
- Uses specific workflows tailored to meet the needs of application, virtualization, and database administrators.
- Checks interoperability, and non-disruptively installs and upgrades SnapCenter plug-ins from the central user interface.

Scalability:

- Increases backup and restore performance.

- Centrally manages data protection for thousands of applications either on premises or across the data fabric.
- Transparently adds SnapCenter Servers for high availability and load balancing to help support thousands of applications.

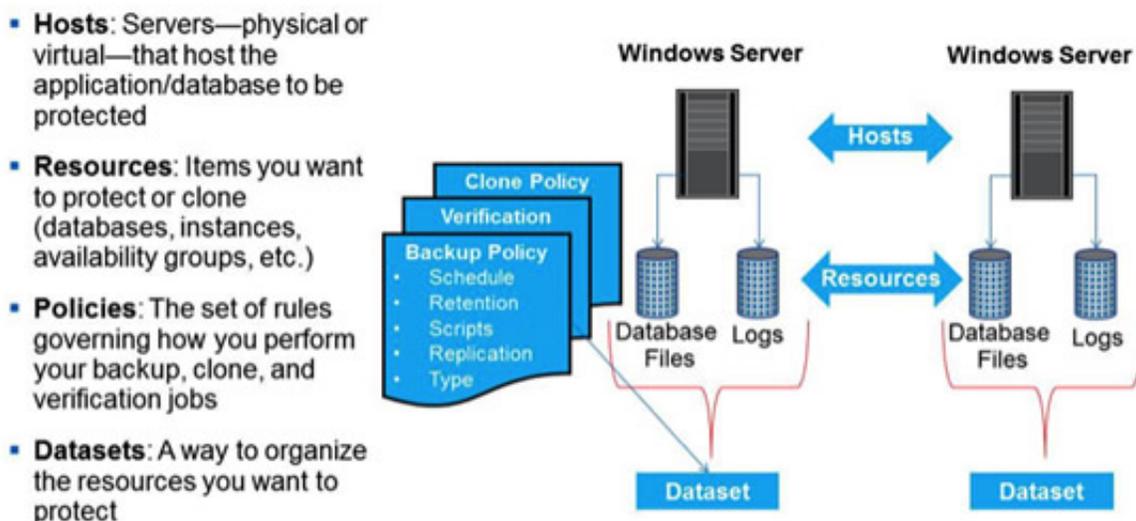
Empowerment:

- Role-based access control enables self-service for application admins while retaining oversight.
- Reduces test and development time with high-performance application-consistent cloning and clone lifecycle management.
- A full set of REST APIs are available for integration as well as a full set of PowerShell cmdlets for third-party orchestration and cloud management.

Organization

The following figure illustrates the fundamentals of all your data protection and clone jobs. You interact with resources, policies, and datasets in every backup and clone operation that you perform.

Figure 3) The following diagram illustrates how SnapCenter is organized into hosts, resources, policies and databases (in blue).



Source: NetApp, 2015

Hosts: Servers (physical or virtual) that host the application/database to be protected.

Resources: Items you want to protect or clone. For example, if you are using the plug-in for SQL Server, your resources might be databases, instances, or availability groups.

Policies: The set of rules governing how you perform your backup, clone, and verification jobs. Policy components include schedule, retention, and replication settings, as well as pre-script and post-script arguments and other settings.

Datasets: A way to organize the resources you want to protect. They are also what you protect. A dataset is required for every backup or clone job; you never perform a backup or clone job on a resource not contained in a dataset.

Deployment Models

The following figures show some examples of how SnapCenter can be deployed.

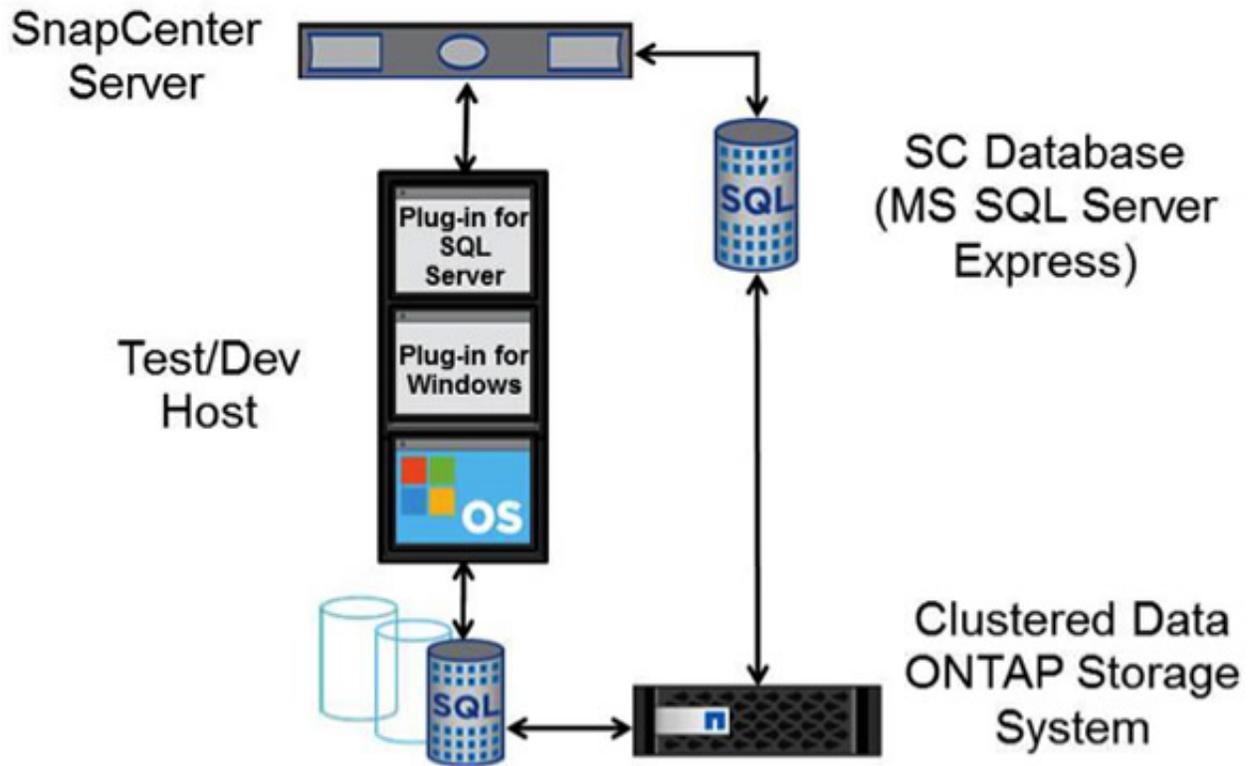
Nonproduction Test and Development Deployment

In the simplest configuration, such as a nonproduction test and development environment, Microsoft SQL Express can be used for the SnapCenter repository.

In the case shown in the Figure 4, the database system can be installed on the SnapCenter host itself.

FlexClone copies of applications databases can be created to meet individual user needs.

Figure 4) SnapCenter test and development deployment models

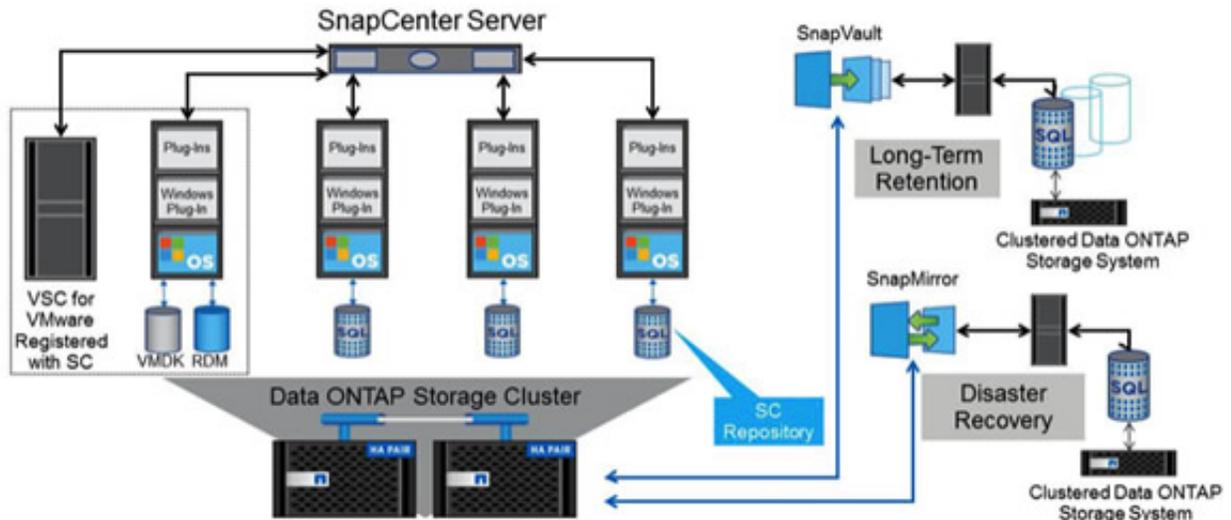


Source: NetApp, 2015

Production Deployment

In the production deployment diagram, take note that the SnapCenter repository database is not on the SnapCenter Server itself but on another server. In addition, SQL Express is not being used because this is a production environment.

Figure 5) SnapCenter production deployment models.



Source: NetApp, 2015

On the left of the above diagram, the Virtual Storage Console (VSC) for VMware 6.1 is being used for integration into the VMware environment.

On the upper right, SnapCenter is updating long-term retention with multiple points of recovery with SnapVault®.

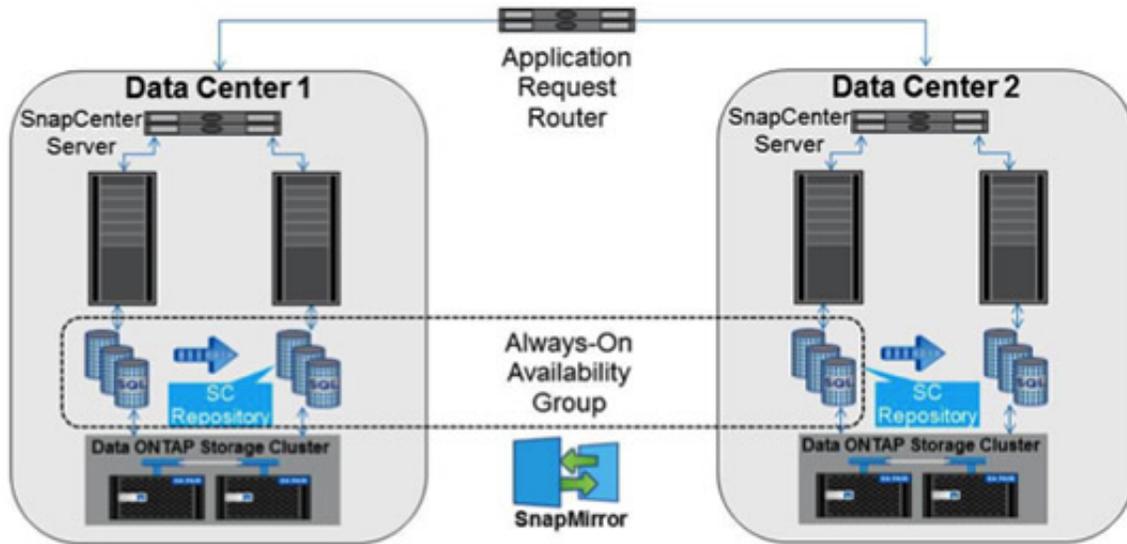
For disaster-recovery purposes, SnapCenter is providing updates to the DR site using SnapMirror®.

NOTE: SnapCenter does not create or initialize SnapVault or SnapMirror relationships. It only updates them and facilitates clones and restores if desired.

High Availability Deployment

The following figure shows SnapCenter operating in an environment using some of Microsoft's high-availability features such as SQL Server availability groups, Network Load Balancing (NLB), and Application Request Routing (ARR).

Figure 6) SnapCenter high-availability deployment models



Source: NetApp, 2015

SnapCenter Release 1.0 Summary

SnapCenter is architected to meet many of your data protection needs, but does not meet all of them in a single release.

SnapCenter Version 1.0 focuses on the SnapCenter Server, SnapCenter Plug-In for Microsoft SQL Server, and SnapCenter Plug-In for Microsoft Windows.

VSC 6.1 for VMware Backup and Recovery is also available, which integrates with SnapCenter to allow backup of SQL in virtual environments (VMDKs).

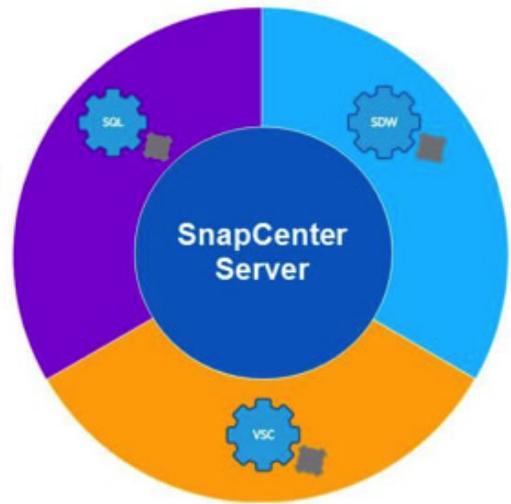
It should also be noted that SnapCenter Server is available free of charge, and the SnapCenter plug-ins use the same licenses as existing SnapManager and SnapDrive products and bundles.

SnapCenter only supports clustered Data ONTAP® 8.2.2 and above.

The following figure and tables summarize SnapCenter 1.0 contents, support, features, and limitations.

Figure 7) SnapCenter Version 1.0 supports SQL database running in nonvirtualized and VMware environment, and infrastructure VMs.

- **SnapCenter 1.0 release includes**
 - SnapCenter Server
 - SnapCenter Plug-In for Microsoft® SQL Server
 - SnapCenter Plug-In for Microsoft Windows
 - Support for VSC 6.1 for VMware Backup/Recovery
- **Considerations**
 - SnapCenter Plug-ins share same license with existing SnapManagers and bundles
 - SnapCenter does not support 7-Mode ONTAP



Source: NetApp, 2015

Table 1) Platforms supported by SnapCenter Release 1.0.

Supported Platforms	
NetApp Storage	FAS systems with clustered Data ONTAP (cDOT) 8.2.2 and later
SnapCenter Server	Microsoft Windows Server 2012, 2012R2 VMware vCenter 5.5, 6.0; VMware ESX/ESXi 5.1, 5.5, 6.0
SnapCenter Hosts	Microsoft Windows Server 2008R2, 2012, 2012R2
SnapCenter Database (metadata)	Microsoft SQL Server and SQL Express
Microsoft SQL Server	Microsoft SQL Server 2008, 2008R2, 2012, 2014
Protocols	FC, FCoE, iSCSI

Source: NetApp, 2015

Table 2) SnapCenter Release 1.0 new features and limitations.

SnapCenter 1.0 New Key Features	Product	Use Case	SnapCenter 1.0 Limitations
<ul style="list-style-type: none"> Central GUI, monitoring, notification, logging, dashboard, reporting. Centralized RBAC with AD integration High availability, horizontal scaling, and load balancing Snapshot catalog management Unified installer VSC B/R restore from SnapVault SMSQL—migration of Snapshot metadata, schedules, and policies into SnapCenter 	SnapCenter plug-in for SQL Server	SQL consistent data protection and management	<ul style="list-style-type: none"> No "easy button" movement of SQL data from non-NetApp to NetApp controllers No SMB support
	SnapCenter plug-in for Windows	File system data protection and management	<ul style="list-style-type: none"> No direct backup, restore, and cloning of LUNs No SMB support
	VSC 6.1 B/R	Virtualization data protection and management	

Source: NetApp, 2015

Conclusion

NetApp has streamlined deployment of SnapCenter by making sure that the SnapCenter plug-ins are licensed just like our available SnapManager and SnapDrive® products, on a per-host basis or as part of a bundle. If you have an existing SnapManager or SnapDrive license you can use it with SnapCenter—no conversion is necessary. The best part is that the new SnapCenter Server is a no-cost download, so you can take advantage of its capabilities right away.

So what are you waiting for? [Download SnapCenter Server](#) today.

To learn more about how to achieve the cost and flexibility benefits of public cloud resources for disaster recovery (DR) operations while maintaining control of business data in a hybrid cloud infrastructure, read our solution overview, [NetApp Snap-to-Cloud Disaster Recovery Solution Kit: Snap to the cloud, recover from anywhere](#).

John Spinks, a seasoned technical marketing engineer (TME) at NetApp, is focused on enterprise application backup, recovery, and cloning. He is also responsible for the SnapCreator Framework and associated plug-ins, which he helped develop from a professional services tool to a fully supported product. In addition, John is the SnapCenter TME and helps drive SnapCenter features and adoption.

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