

## Backup Exec™ 2014 Technical White Paper

# Private Cloud Services

### Who should read this paper

Technical White Papers are designed to introduce Symantec partners and end users to key technologies and technical concepts that are associated with the Symantec Backup and Recovery product family. The information within a Technical White Paper will assist partners and end users as they design and implement data protection solutions based on Symantec Backup and Recovery products.

Technical White Papers are authored and maintained by the Symantec Backup and Recovery Technical Services group.





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## Introduction

This white paper is intended to assist technical personnel as they design and implement the Private Cloud Services features of Backup Exec™ 2014 and make related decisions. The business value of Backup Exec™ 2014's Private Cloud Services technology will also be considered in this white paper.

This white paper will explore the following topics related to the Private Cloud Services technology found within Backup Exec™ 2014:

- Business Value
- Key Terms
- Private Cloud Services
- Performance Considerations
- ExSP Licensing Program
- Notes and Best Practices

**Note:** For step-by-step instructions for installing and managing Backup Exec™ 2014's Private Cloud Services features, please refer to the *Backup Exec™ Private Cloud Services Planning and Deployment Guide* available here: [TECH172464](#).



## Business Value

For MSPs (MSPs), backup and recovery continues to be the most critical service they offer their customers. Even a single instance of a managed service provider failing to recover a client's data assets successfully, or failing to ensure a client's ability to maintain business continuity in the event of a disaster, could result in the following:

- Loss of that customer and associated revenues
- Damage to the managed service provider's reputation

In addition to the critical nature of backup and recovery services, compounding factors such as the explosive rate of data growth, the increase in complexity of business-critical applications, and the move towards cloud computing are compelling MSPs to modernize the backup and recovery solutions they offer to their clients to ensure they remain competitive in the IT services industry.

## MSPs and Cloud Solutions

Market changes in recent years have made cloud-based backup and recovery technologies attractive to both small businesses as well as MSPs. Both are looking for better solutions to the problem of maintaining backups of critical business data at offsite locations to protect against disaster. For years, removable media solutions, such as tape, have been used to solve this problem and both small businesses and MSPs are looking to replace these legacy processes with automated, less complex solutions.

Responding to this market trend, MSPs are looking to leverage advances in internet bandwidth and cloud storage technologies to offer cloud-based backup as a service. Many MSPs are looking to leverage their own data center as a cloud resource to which secondary copies of customer backup data can be stored.

## Backup Exec Private Cloud Services

Backup Exec™ 2014 allows partners to offer multitenant, offsite backup storage services to their clients leveraging their own data center resources as a cloud storage location. Known as Backup Exec™ 2014 Private Cloud Services, this capability is designed for MSPs looking to offer cloud-based, offsite backup storage to their clients. Backup Exec Private Cloud Services combines powerful data deduplication with multitenant cloud storage capabilities to ensure backup data is stored securely and enables the MSPs to leverage their own data centers as the offsite repository.

Backup Exec™ 2014's Private Cloud Services capability allows MSPs to:

- Offer cloud-based offsite backup storage to their customers
- Leverage their own infrastructure as a cloud data center
- Combine the speed of local site recovery with remote, cloud-based disaster recovery protection
- Use Backup Exec deduplication technology to reduce storage costs
- Leverage transfer drives to "seed" the cloud data center or to transport recovery data to a customer
- Reduce the time spent managing removable media-based backup processes at customer sites
- Protect both virtual and physical customer resources
- Ensure customer backup data is encrypted and secure while in transit and while at rest
- Secure the connection between client sites and the cloud data center with a choice of VPN solutions

This technical white paper offers an in-depth, technical look at how Backup Exec™ 2014 Private Cloud Services can be leveraged by MSPs to offer efficient, multitenant cloud-based backup storage services to their clients.



This includes diagrams, best practices, prerequisites, and other key technical elements of the Backup Exec™ 2014 Private Cloud Services solution.

**Note:** For detailed, step-by-step instructions on implementing and configuring the different elements of a Private Cloud Services solution, please refer to the *Backup Exec Private Cloud Services Planning and Deployment Guide* available here: [TECH172464](#).

## Symantec Backup Exec

Symantec Backup Exec™ delivers powerful, flexible, and easy-to-use backup and recovery to protect your entire infrastructure, whether built upon virtual, physical, or a combination of both. Using modern technology, Backup Exec backs up local or remote data to virtually any storage device including tape, disk and cloud. Recovery is fast and efficient. With a few simple clicks, you can quickly search and restore granular file or application objects, applications, VMs, and servers directly from backup storage. Additionally, easily protect more data while reducing storage costs through integrated deduplication and archiving technology.

- **Powerful:** Super charge the performance of your backup with Backup Exec. Get fast and reliable backups that are up to 100% faster than prior releases, comprehensive and innovative virtualization capabilities, and powerful built-in data deduplication and archiving. Avoid lengthy downtime and missing a critical backup window with Backup Exec.
- **Flexible:** Not all backup solutions have the flexibility to protect your environment while also supporting agile recovery. You should be able to recover what you need, when you need it - quickly and easily. Whether you want to recover a single, critical file or an entire server, Backup Exec can quickly search and restore without mounting or staging multiple backup jobs. Backup Exec protects hybrid architectures with a single solution that backs up to virtually any storage device and achieves fast, efficient, versatile recovery.
- **Easy to use:** Traditional, complex and point backup and recovery solutions can be inefficient, time consuming, and expensive to manage. Through intuitive wizards and insightful dashboards, Backup Exec is easy to implement, use and manage, whether you're upgrading from a previous version or switching from an alternative solution.



**Backup Exec 2014 Software Editions**



**Backup Exec 3600 Appliance**

Unified Virtual and Physical Protection in a Single Solution



## Key Terms

Term	Definition
Backup Exec Private Cloud Services	The feature name.
Enterprise Server Option	The parent option of the Central Admin Server Option (CASO).
Central administration server	The Backup Exec server on which CASO is installed.
Managed Backup Exec server	The new name for a managed media server.
Cloud Backup Exec server	The Backup Exec server that is located in the managed service provider's data center that hosts the deduplication disk storage. The Backup Exec server can be a central administration server or a managed Backup Exec server, depending on configuration.
Deduplication disk storage	The disk storage device that is enabled for data deduplication and is located on the Backup Exec server.
Backup definition	A group of options that you select that define the backup selections, the backup job methods and options, and any stages.
Offsite copy	The backup data that is stored on a managed Backup Exec server, then "copied" to a cloud Backup Exec server.



## Private Cloud Services

### Overview

The diagram below describes a simplified, overall view of an implementation of Backup Exec™ 2014 Private Cloud Services and the different components and relationships involved. Individual sections of this diagram will be described in greater detail to highlight key or important elements that require additional explanation.

Backup Exec™ 2014 Private Cloud Services allows MSPs to offer multitenant, cloud-based offsite storage of customer backup data for disaster recovery protection. In addition, Private Cloud Services utilizes remote managed Backup Exec servers at each customer site to host local copies of backup data, allowing for fast and easy local recovery capabilities. MSPs can centrally monitor and manage all backup operations across their Private Cloud Services infrastructure using the Backup Exec™ 2014 central administration server console.

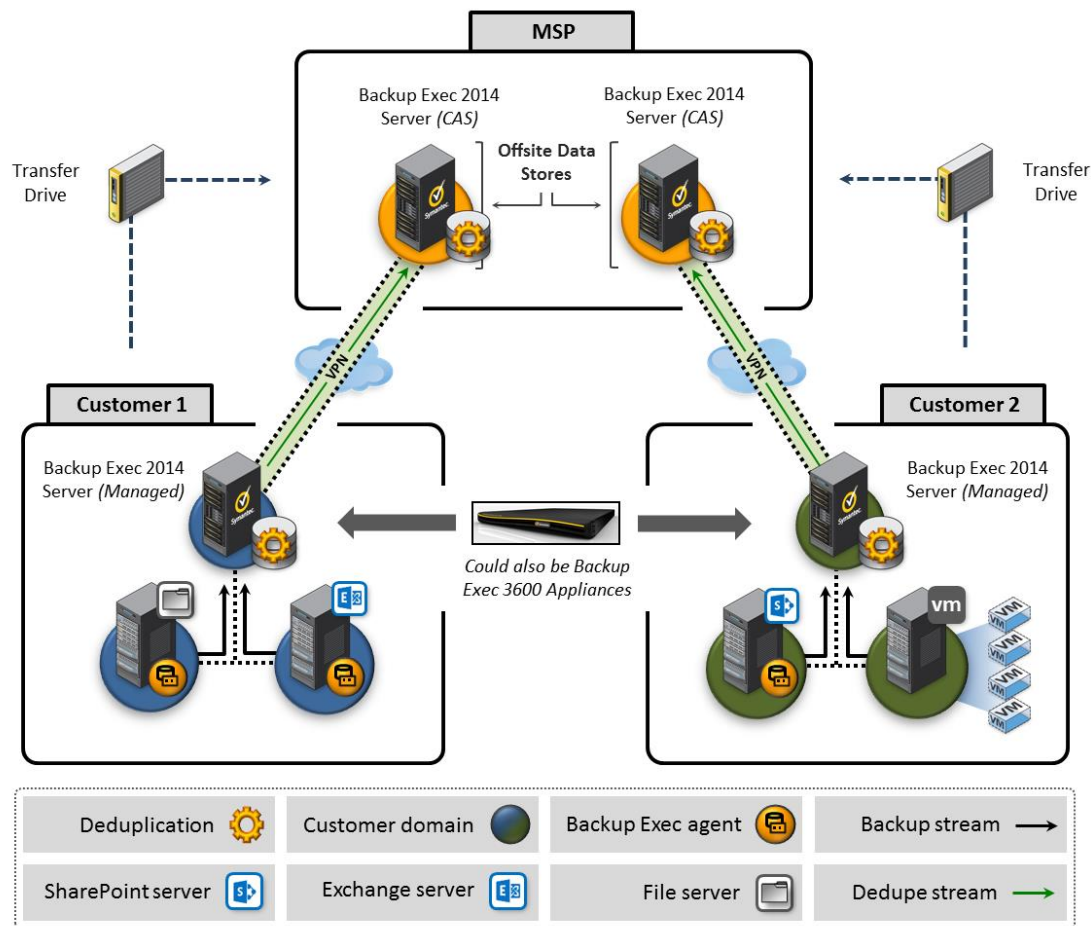


Figure 1: Private Cloud Services Diagram

### Managed Service Provider Site

#### Cloud Backup Exec server

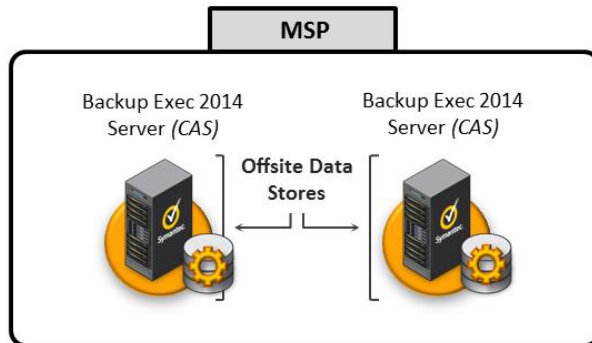
The cloud Backup Exec server located at the managed service provider's site will be a Backup Exec central administration server with a local deduplication disk storage device. One cloud Backup Exec server is required for each customer site that is participating in the Private Cloud Services configuration. The local deduplication disk storage device on the cloud Backup Exec server will be shared with the managed Backup Exec server located at the corresponding client site. Backup sets from the client production servers will be initially stored





to the managed Backup Exec server at the client's site, and will then be replicated to the cloud Backup Exec server's deduplication disk storage device.

Data deduplication technology optimizes the replication process, transferring only unique blocks from the managed Backup Exec server at the client site to the cloud Backup Exec server at the MSP site.



**Figure 2: Cloud Backup Exec servers**

When installing and configuring a cloud Backup Exec server, the “Private cloud server” option should be selected in the Storage tab on the Backup Exec central administration server user interface. This setting helps ensure that jobs are dispatched to the correct managed Backup Exec server and sent to the correct storage device in a Private Cloud Services configuration.

It's important to note that a cloud Backup Exec server's deduplication disk storage device can contain a maximum of 64 terabytes of deduplicated data. Scalability of the 64 terabyte capacity of a deduplication disk storage device will vary depending upon a number of factors, such as deduplication ratios, the amount of front-end backup data being protected, and data retention policies. Adjusting data retention policies or migrating backup sets from the cloud Backup Exec server to tape media can help solve problems where the deduplication disk storage device on a cloud Backup Exec server is filling up too rapidly.



**Figure 3: Deduplication Disk Storage Device**

**Note:** Many 3<sup>rd</sup>-party Remote Monitoring and Management (RMM) solutions include support for Backup Exec and can be used for centralized monitoring of large implementations that include two or more Cloud Backup Exec servers.

### Data Deduplication

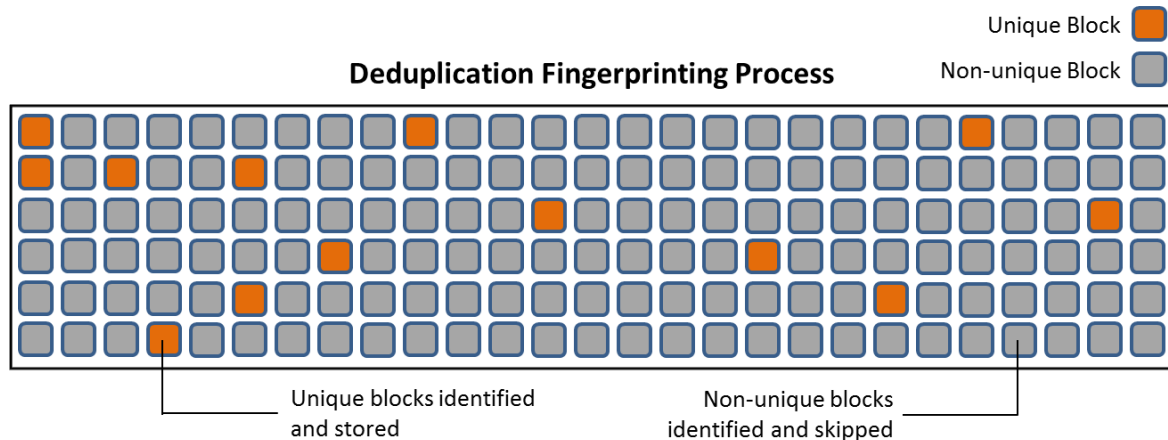
The data deduplication technology within Backup Exec™ 2014 is an integral part of a Private Cloud Services implementation. Data deduplication processes break down streams of backup data into “blocks.” Each data block is identified as either unique or non-unique, and a tracking database is used to ensure that only a single copy of a data block is saved to the deduplication storage folder of the destination Backup Exec server.

For subsequent backups, the tracking database identifies which data blocks have already been captured and stored to the deduplication disk storage device, and only unique blocks in subsequent backup streams are



stored. For example, if five different client systems are sending backup data to a Backup Exec server and a data block is found in backup streams from all five of those client systems, only a single copy of the data block is transported over the network and stored to the deduplication disk storage device.

This process of reducing redundant data blocks saved to backup storage leads to a significant reduction in storage space needed for backups.



**Figure 4: Data Deduplication Process**

The deduplication technology within Backup Exec™ 2014 is applied globally across all backup streams that are stored to the deduplication disk storage device on a Backup Exec server. Backup Exec™ 2014 includes stream handler technology designed specifically for VMware and Hyper-V backups, ensuring a high level of data deduplication efficiency when storing backups containing VMDK or VHD/VHDX files.

In a Private Cloud Services configuration, the cloud Backup Exec servers at the managed service provider's data center as well as the managed Backup Exec servers at remote client sites are deduplication-enabled Backup Exec servers. In this configuration, data blocks associated with client backups are stored in two places: the local managed Backup Exec server at the client site, and the Cloud Backup Exec server at the managed service provider data center. This allows the client to benefit from rapid restore processes leveraging the local managed Backup Exec server's backup repository, as well as benefit from offsite disaster recovery protection if a site-level disaster occurs or if the local managed Backup Exec server experiences a disaster event.

Data deduplication technology is also leveraged to optimize the process of replicating backups from the managed Backup Exec server at remote client sites to the Cloud Backup Exec server at the managed service provider's location.

**Note:** White papers, assessment tools, and other resources for the data deduplication technology within Backup Exec™ 2014 are available here: [Symantec PartnerNet](#).

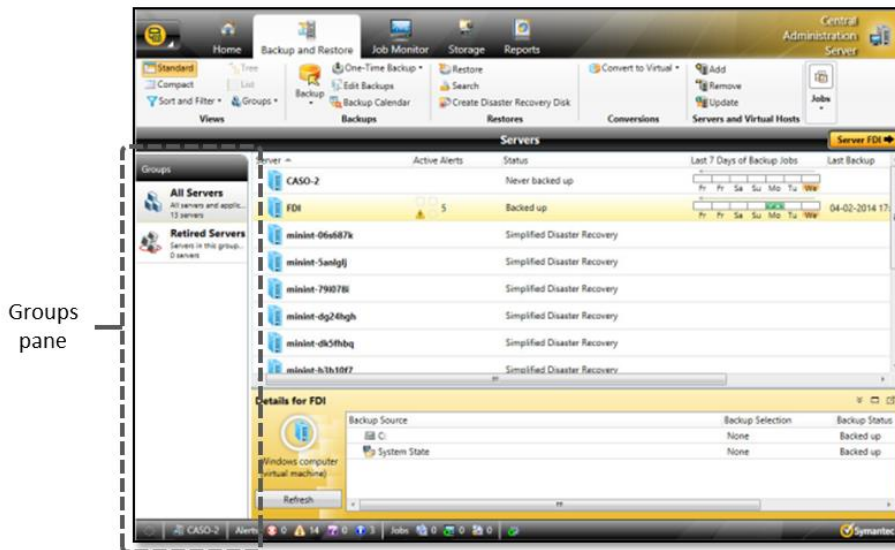
#### *Client Site Monitoring and Management*

Another benefit of a Private Cloud Services configuration is the ability of the managed service provider to remotely monitor and manage the backup operations of their customers' sites from the Central Administration Server console on each cloud Backup Exec server. From this single console, the managed service provider can see a centralized view of the backup status of all client servers, create and dispatch backup and recovery jobs, run reports, and perform other tasks associated with managing their Private Cloud Services environment.

The grouping features of the Backup Exec™ 2014 console make the management and monitoring of large customer sites even easier. From the Central Administration Server console on the cloud Backup Exec server,



the managed service provider can easily create logical groups of the protected servers and virtual hosts at each client site, allowing them quickly view only servers in certain groups.



**Figure 5: Logical Server Grouping**

### *Exporting Backups to Removable Media*

After centralizing client backups to a cloud Backup Exec server, MSPs retain the ability to duplicate backup sets to removable media, such as tape. This capability allows the managed service provider to add additional layers of protection to customer business data by storing copies of backup sets to removable media and shipping them to an alternate location, or to periodically provide their clients with copies of their backup data.

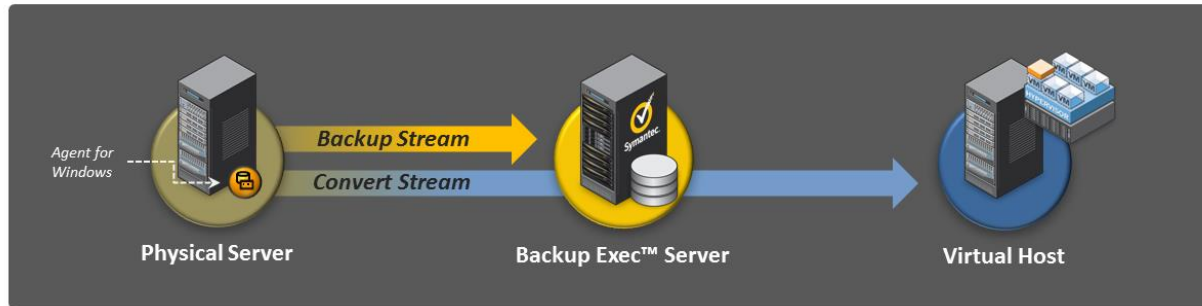
The MSPs can easily configure the duplicate stage in the backup definitions to store backup data to the managed Backup Exec server at the client side, copy backup data to the Cloud Backup Exec server at the managed service provider's site, and also copy backup data to tape (D2C2T)

### *Recovery Testing Services*

By centralizing customer data to a cloud Backup Exec server at the managed service provider's location, a Private Cloud Services implementation also allows the managed service provider to periodically run verify jobs against customer backup data or even perform test recovery operations. This allows peace of mind and ensures recoverability should an actual disaster occur, and can even be offered by the managed service provider as an additional service to clients.

### *Disaster Recovery in the Cloud*

Other features in Backup Exec™ 2014 give managed service provider additional recovery services that can be offered to their customers, such as the ability to automatically convert client backups to fully functioning virtual machines. Should the managed service provider decide to leverage this capability, a potential service could be an actual "cloud server recovery" service whereby the managed service provider launches a virtual replica of a client's server on their own infrastructure, allowing client business operations to resume and continue while the original production server is repaired or restored.



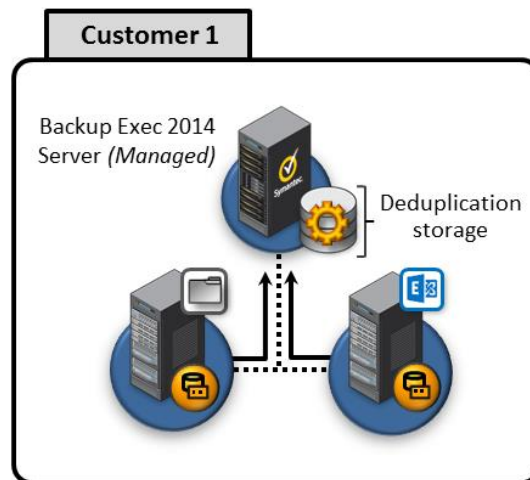
**Figure 6: Virtual Conversions**

The virtual conversion capabilities of Backup Exec™ 2014 support both the VMware vSphere and the Microsoft Hyper-V platforms.

### Customer Site

#### *Managed Backup Exec Server*

In a Private Cloud Services configuration, the Backup Exec server located at the client's site will be a managed Backup Exec server with a local deduplication storage folder. The local deduplication storage folder will be used to host local copies of backups captured from production servers in the client's environment. Backup sets captured from client production servers will be initially stored to the managed Backup Exec server at the client's site, and will then be replicated to the cloud Backup Exec server's deduplication disk storage device.



**Figure 7: Managed Backup Exec Server at Client Site**

#### *Backup Exec 3600 Appliance*

Depending upon the needs of a particular client, MSPs have the option of using the Backup Exec 3600 Appliance as the managed Backup Exec server at a client site as an alternative to building and implementing a Backup Exec server on custom hardware. Using a Backup Exec 3600 Appliance as the managed Backup Exec server at a customer site greatly reduces the time required to implement the client-side component of Private Cloud Services.

The Backup Exec 3600 Appliance is a pre-built and tested Backup Exec server on a known hardware configuration, and supports all required features for a Private Cloud Services implementation, such as virtual and physical server backup support, application backup support, and data deduplication.



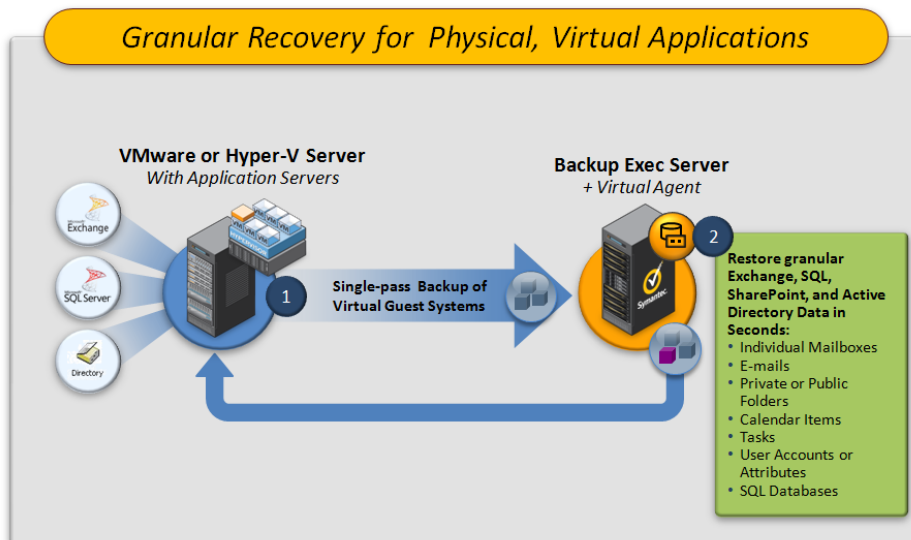
**Note:** White papers and other resources on the Backup Exec 3600 Appliance are available here: [Symantec PartnerNet](#).

### Local Recovery Capabilities

One of the most important benefits of using Backup Exec™ 2014's Private Cloud Services feature is the powerful backup and recovery capabilities of Backup Exec that a managed service provider can employ on behalf of a client at their local site. These capabilities include:

Physical Server Recovery Capabilities	Virtual Server Recovery Capabilities
Bare metal and dissimilar hardware recovery	Full virtual machine recovery
Virtual conversion to VMware or Hyper-V	Application recovery
Application recovery	Granular application recovery
Granular application recovery	Granular file and folder recovery
Granular file and folder recovery	Redirected recovery to alternate virtual host

These powerful recovery capabilities allow partners to respond to any recovery need at a remote client site, and most can be managed centrally from the cloud Backup Exec server's user interface.



**Figure 8: Powerful Recovery Capabilities**

**Note:** White papers and other resources on the powerful backup and recovery capabilities within Backup Exec™ 2014 are available here: [Symantec PartnerNet](#).

### Replicating Client Backups to Cloud Backup Exec Server

#### Optimized Duplication

The technology used to replicate customer backup data from managed Backup Exec servers at remote client sites to the Cloud Backup Exec server at the managed service provider's location is referred to as Optimized Duplication. Using data deduplication technology, managed Backup Exec servers only transmit unique data blocks to the Cloud Backup Exec server, greatly optimizing the transfer process. By only transmitting unique data blocks, bandwidth requirements to complete replication jobs are greatly reduced.

**Note:** White papers and other resources on Optimized Duplication technology are available here: [Symantec PartnerNet](#).



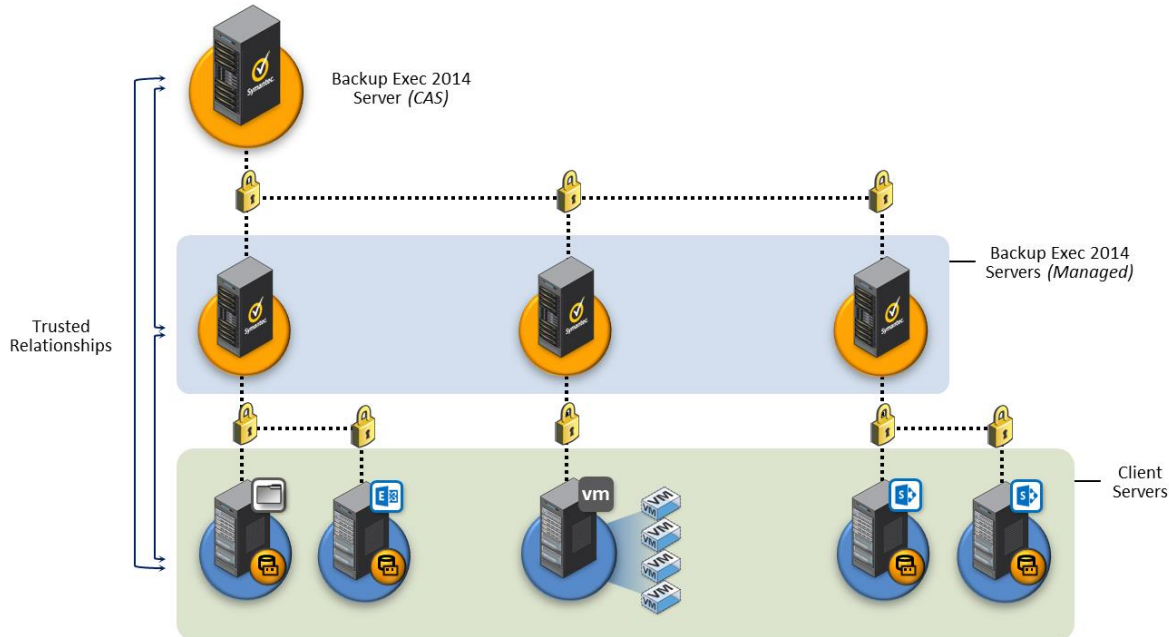
### Built-in Backup Exec Security Features

To help prevent unauthorized access to critical backup data captured by Backup Exec while it is being transmitted or “in flight,” all communications between Backup Exec™ 2014 components are encrypted using TLS/SSL encryption technology, and require a trust relationship to be established. This includes communication between the Cloud Backup Exec server and managed Backup Exec servers, communication between the Cloud Backup Exec server and protected servers, as well as communication between managed Backup Exec servers and protected servers.

To ensure critical backup data is encrypted and protected while “at rest” on the Cloud Backup Exec server at the managed service provider’s site, it is also recommended that encryption be enabled on the deduplication storage folder of the Cloud Backup Exec server.

For client sites using VMware technology, it is recommended that SSL be enabled on all VMware hosts with virtual machines being protected by Backup Exec™ 2014.

Encrypted communications in a Private Cloud Services environment ensure that backup data and related information remain secure and protected from unauthorized access.



**Figure 9: Backup Exec 2014 Communication Security Diagram**

### VPN Security Recommendations

Symantec requires that a VPN solution be used to secure the communication path between the Cloud Backup Exec server at the managed service provider’s location and managed Backup Exec servers at remote customer sites in a Private Cloud Services configuration. Any VPN solution preferred by the managed service provider can be used.

**Note:** The *Backup Exec Private Cloud Services Planning and Deployment Guide* offers additional information on VPN technology and is available here: [TECH172464](#).

### Transfer Drives

#### Seeding the Cloud Backup Exec Server



The managed service provider can leverage a transfer drive to seed the Cloud Backup Exec server's deduplication disk storage device. This reduces the amount of data that the managed Backup Exec server at a client site will need to replicate directly to the Cloud Backup Exec server at the MSP's location. This is done by storing a full backup of one or more client servers to an external storage device on the managed Backup Exec server, such as a USB drive. Then, the USB drive can be transported to the managed service provider's location where the backup data will be duplicated into the deduplication disk storage device on the cloud Backup Exec server.

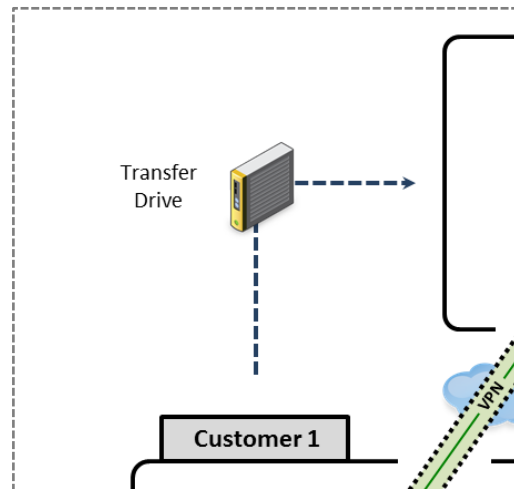


Figure 10: Transfer Drive

**Note:** Additional notes, recommendations, and guidelines for seeding the Cloud Backup Exec server using this process can be found in the *Backup Exec Private Cloud Services Planning and Deployment Guide* available here: [TECH172464](#).

#### *Transporting Backup Data Using Transfer Drives*

Transfer drives can also be leveraged to transport large amounts of backup data to a client site when a network-based recovery is not optimal or is not possible. This process is essentially the reverse of the seeding process described previously. Backup data contained in the deduplication disk storage device of the cloud Backup Exec server can be copied to an external device, such as a USB or tape, which can then be transported to the client's site. At the client's site, the external device is inventoried and catalogued by the local Backup Exec server, after which the data can be restored to the production servers at the client's location.

Using transfer drives in this manner can be useful for recovery operations involving large amounts of data or for disaster recovery scenarios.

#### *Private Cloud Services Backup Calculator*

Another tool provided by Symantec to help MSPs looking to leverage Private Cloud Services is the Backup Exec Private Cloud Services calculator spreadsheet. This spreadsheet tool helps MSPs determine time estimates for cloud backups using Private Cloud Services. The spreadsheet is available at no charge and can be found here: [TECH172473](#).





## Performance Considerations

### Latency and Connection Guidelines

#### *Network Recommendations*

A Private Cloud Services configuration requires persistent, high-fidelity network links between the managed service provider site and remote client sites. This includes the following requirements:

- Less than one percent packet loss during transmissions
- Round-trip network latency of 250 milliseconds or less

#### *Loss of Network Connection*

Should an event occur that results in the managed Backup Exec server at the client site losing communication with the cloud Backup Exec server, scheduled backup operations will cease. After the connection is restored, scheduled backup operations will resume as normal.

If necessary, the managed Backup Exec server at a client's site can be changed to standalone mode in order to perform a local recovery operation when a connection to the cloud Backup Exec server cannot be reestablished in a timely manner.

**Note:** Details for changing a managed Backup Exec server to a standalone Backup Exec server are outlined in the *Backup Exec Private Cloud Services Planning and Deployment Guide* available here: [TECH172464](#).

### Catalog Modes

While backing up data, Backup Exec creates a catalog that contains information about the backup sets and about the storage devices on which the backup sets are stored. In a Central Administration Server Option (CASO) environment, you can choose the catalog location. Regardless of the catalog location, if a persistent network connection is available between the central administration server and the managed Backup Exec server, you can browse the backup sets in the catalog and perform restore operations from both servers. There are 3 catalog modes offered by Backup Exec.

#### *Centralized Catalog (Central Administration Server)*

When using the centralized catalog configuration, all catalog data is stored centrally on the central administration server. The primary benefit of using the centralized catalog configuration is that it makes it relatively easy to back up the catalog data. However, this configuration places an increased demand on the network connection between the central administration server and managed Backup Exec servers as catalog data will be transferred between the two in order to centralize it at the central administration server location.

A persistent connection between the central administration server and the managed Backup Exec server is required for the centralized catalog configuration. If a persistent connection is not maintained, backup operations may be interrupted.

#### *Distributed Catalog (Managed Backup Exec Server)*

When using the distributed catalog configuration, most catalog data is maintained on the local managed Backup Exec server. Some minor catalog information is still transferred to the central administration server. This configuration is optimal for distributed environments where managed Backup Exec servers have a low bandwidth or unstable connection to the central administration server. However, protecting catalog files becomes more complex, since each managed Backup Exec server will need to have its local catalog files protected separately. A persistent connection between the central administration server and the managed



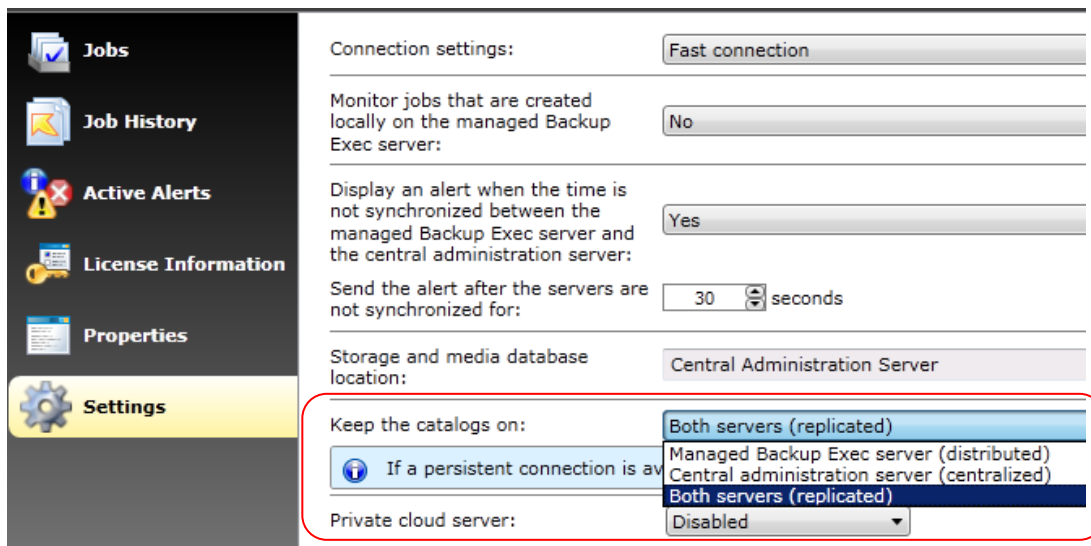


Backup Exec server is not required for the distributed catalog configuration. If a persistent connection is not maintained, backup operations may be interrupted.

Note: When performing optimized duplication between a central administration server and a managed Backup Exec server, the device and media information must be configured to be stored centrally on the central administration server.

#### *Replicated Catalog (Central Administration Server and Managed Backup Exec server)*

When using the replicated catalog configuration, an administrator gains both the advantages as well as the disadvantages of the centralized and distributed catalog configurations, as catalog files are maintained both at the local managed Backup Exec server as well as replicated to the central administration server. The replicated catalog configuration enables centralized backup of catalog files, but is not optimal for environments where the central administration server and the managed Backup Exec servers are separated by low bandwidth or unstable network connections. A persistent connection between the central administration server and the managed Backup Exec server is required for the replicated catalog configuration.



**Figure 11: Selecting a Catalog Mode**



## ExSP Licensing Program

The Symantec Enterprise Service Provider (ExSP) Program is designed to enable MSPs to easily license Symantec products to provide outsourced and managed services to their customers. Under the ExSP program, Symantec products are licensed to the service provider on a monthly subscription basis, with all payments quarterly in arrears.

Through the ExSP licensing program, Symantec helps MSPs reduce upfront investment costs by providing a licensing model that aligns with the way they do business with their end-user customers.

Unlike the standard internal use or Strategic Service Provider use licenses that are sold to end-users and service Providers on a perpetual basis, ExSP licenses grant MSPs the right to use our products to provide a service to its end-users on a limited term basis.

Here are some of the key global program features of the ExSP program:

**Flexible, convenient licensing** - Licensing designed to match the way MSPs do business with their customers:

- Access to the latest software versions available under maintenance/support
- Each license provides 1 month of commercial use rights and essential maintenance/support
- No upfront license or support fees
- Quarterly payments (in arrears) based on quarterly usage reports provided by service provider

More information on the Symantec ExSP licensing program and how partners can participate is available here: [Symantec PartnerNet](#).



## For More Information

Link	Description
<a href="http://www.symantec.com/connect/blogs/new-backup-exec-partner-toolkit-v10">http://www.symantec.com/connect/blogs/new-backup-exec-partner-toolkit-v10</a>	Backup Exec Partner Toolkit
<a href="http://www.symantec.com/business/backup-exec-for-windows-servers">www.symantec.com/business/backup-exec-for-windows-servers</a>	BE Family Landing Page
<a href="http://www.symantec.com/business/products/whitepapers.jsp?pcid=pcat_business_cont&amp;pvid=57_1">www.symantec.com/business/products/whitepapers.jsp?pcid=pcat_business_cont&amp;pvid=57_1</a>	BE White Papers
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<a href="#">TECH205797</a>	BE Compatibility Docs
<a href="http://www.backupexec.com/configurator">www.backupexec.com/configurator</a>	BE Product Configurator
<a href="http://www.backupexec.com/skugenerator">www.backupexec.com/skugenerator</a>	BE SKU Generator and BEST Tool





## About Symantec

Symantec is a global leader in providing security, storage, and systems management solutions to help consumers and organizations secure and manage their information-driven world. Our software and services protect against more risks at more points, more completely and efficiently, enabling confidence wherever information is used or stored. Headquartered in Mountain View, Calif., Symantec has operations in 40 countries. More information is available at [www.symantec.com](http://www.symantec.com).

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