

The logo for SEP, consisting of the letters 'SEP' in a bold, dark blue, sans-serif font. The letter 'E' has a small yellow square above its top bar.

Backup & Disaster Recovery

**CITRIX**<sup>®</sup>

Citrix XenServer  
& XenDesktop  
Backups with  
Xen & Now  
by SEP

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## *Introduction and Overview*

SEP sesam, by SEP Software, is a robust, easily manageable, and secure backup solution for businesses of any size. The SEP sesam extension, Xen & Now, provides fast and efficient backup capabilities for Citrix XenServer and XenDesktop. SEP's patented Multi-Streaming Technology allows for multiple streams to be backed up simultaneously and entire company infrastructures can be managed by a single interface. This enterprise solution is designed to simplify and automate backups of any environment.

The SEP Xen & Now Citrix backup solution provides:

- Built-in encryption capabilities
- Agentless backups
- Guest backup consistency
- Platform-independent functionality
- A single enterprise management interface

## *Citrix XenServer Backup Methods*

There are several ways to back up guest virtual machines on Citrix XenServer with Xen & Now:

- Offline Backup – occurs when the virtual guest is powered down
- Online Live Memory Backup – includes the virtual guest’s active RAM
- Online Quiesced Backup – uses the XenServer VSS provider to allow a complete backup without interruption to the production system
- Online Normal Backup – completed without interruption to the production system

All backup methods are fully managed and integrated into a heterogeneous, cross-platform, centralized interface.

### *Offline Backup*

The offline backup solution will perform a backup of the guest virtual machine by shutting down the operating system. This option allows the backup to occur when no changes are occurring on the virtual guest. While this guarantees the consistency of the guest virtual machine as a specific point in time, it is not an optimal solution for applications that require high availability.

Pros:

- All data is in a consistent state
- Operating system independent
- Application independent

Cons:

- The guest virtual machine is off for the entire backup

## *Online Live Memory Backup*

The online memory backup solution will perform a backup of the guest virtual machine and its memory. This guarantees the full consistency of the guest virtual machine and the current state of the memory.

Pros:

- Consistent state of the machine for that point in time
- Guest virtual machine does not have to be powered off

Cons:

- Locks the guest virtual machine in a “frozen” state while backing up the memory, keeping it from responding while the memory file is locked
- Must be used in conjunction with file or database specific component backups to guarantee a fully recoverable dataset

## *Online Quiesced Backup*

The online quiesced backup solution will perform a backup of an active guest virtual machine on the fly. This provides better performance for active users or processes accessing the guest virtual machine, eliminating any downtime during the backup. This process uses Citrix XenTools to take advantage of the Citrix VSS provider to allow consistent application backups for applications that are VSS-aware, like Exchange and SQL. The Citrix VSS provider is only available for Windows Server 2003 and above. The final backup will also retain the guest virtual machine configuration, storage information and VIF's.

Pros:

- No downtime required on the guest virtual machine
- VSS-aware applications setup a consistent state of the files for backup

Cons:

- VSS capabilities are only available for Windows
- Does not work with all applications

## *Online Normal Backup*

The online normal backup solution will perform a backup of an active guest virtual machine on the fly. This provides better performance for active users or processes accessing the guest virtual machine, eliminating any downtime during the backup. This process will back up the guest virtual machine configuration, storage information, and VIF's on any operating system.

Pros:

- No downtime required on the guest virtual machine

Cons:

- Cannot guarantee the consistency of the data that is in active memory
- Does not work with all applications

## *Agentless Backups*

The SEP sesam server is able to communicate natively with the XenServer environment using Easy Access Technology (EAT), eliminating the need for a backup agent on the hypervisor. This optimizes backup performance and reduces the need to communicate with agents on the guest virtual machines (note: depending on the state of application data, this should not be the only backup method utilized to provide consistent backups). Communication to the Citrix XenServer can be initiated from the SEP sesam backup server or a SEP sesam Remote Device Server, optimizing the backup strategy for network performance while still providing centralized management.

Since Xen & Now communicates directly with the hypervisor, it does not matter what operating system is running as a virtual guest. Windows, Linux or any other operating system is treated as a virtual guest and backed up directly via the hypervisor. The SEP sesam server uses Snapshot Detection and Citrix XenTools to analyze the operating system of the guest virtual machine and can initiate a VSS snapshot on the Windows guest.

## *Security*

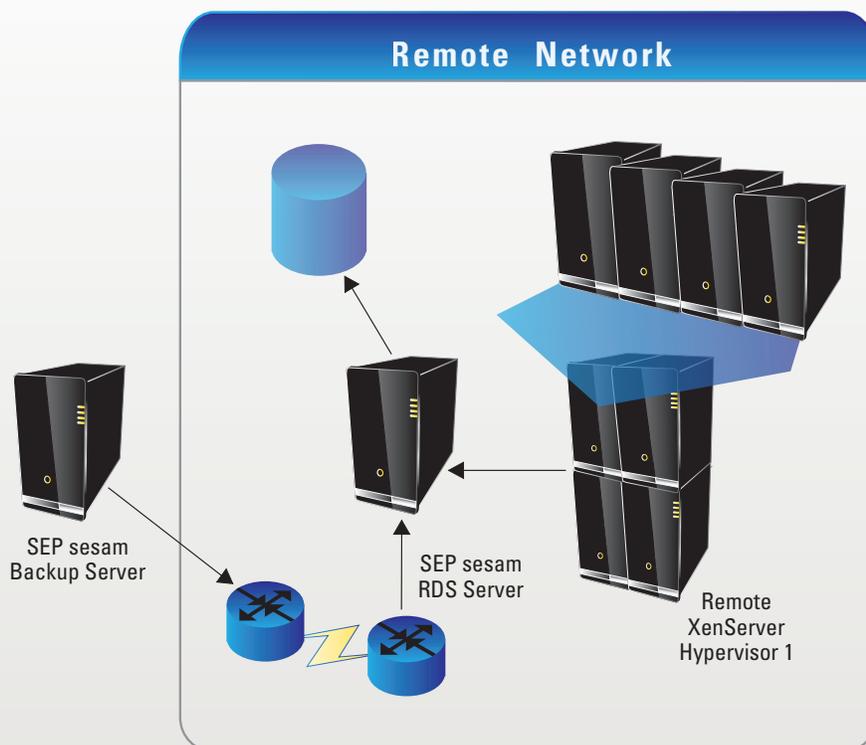
Xen & Now is capable of providing many options to enhance security and assist in meeting compliance requirements:

- The backup data streams can be encrypted to protect access to the guest virtual machine backup from unauthorized users
- Logs can be sent to a syslog server to maintain a single centralized location for tracking information
- Notifications can be sent to email addresses or mobile phones to provide immediate alerts for failed or completed jobs

## Feature-Rich

Additional features of using SEP's Xen & Now for Citrix XenServer backups:

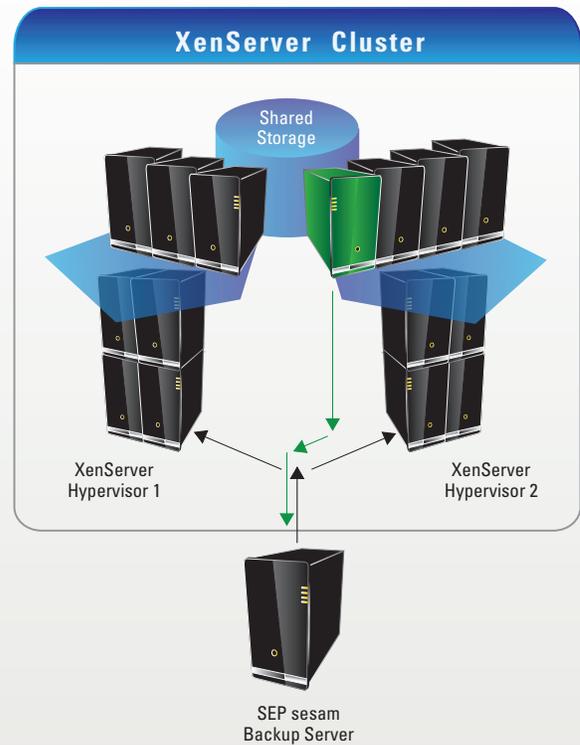
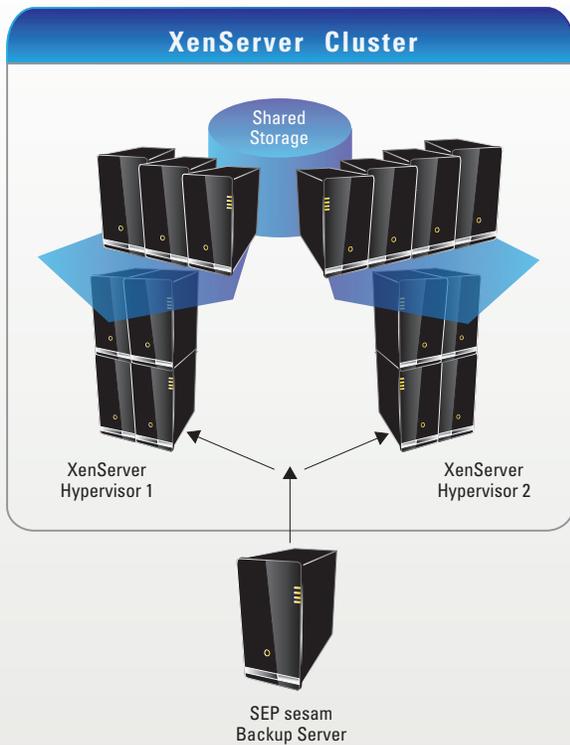
- Xen & Now leverages Citrix XenServer's integrated software compression to stream small files to the backup media
- SEP's patented Multi-Streaming Technology can also be leveraged to simultaneously back up and restore multiple VM's to multiple nodes within the XenServer cluster
- Xen & Now is optimized to allow backups for guest virtual machines on 64-bit platforms
- The same technology can be used for Citrix XenServer and Citrix XenDesktop
- A Remote Device Server can be configured to allow backups to occur at a remote location and still be operated by the central management console



## High Availability

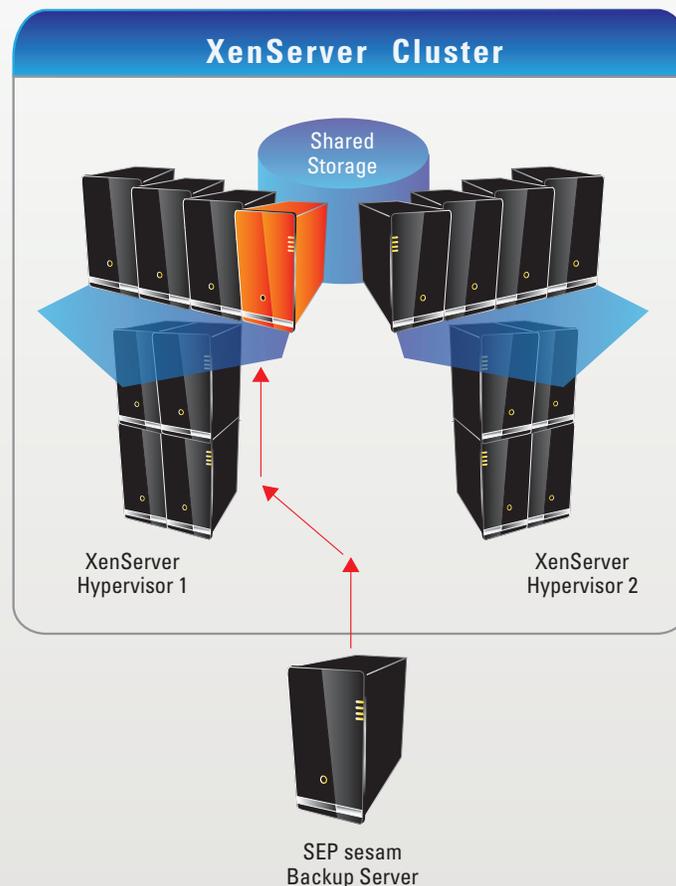
SEP's Xen & Now fully supports the backup of all guest virtual machines in a high availability Citrix XenServer cluster environment. As Xen & Now communicates directly with the XenServer resource pool, backup tasks are able to properly follow virtual machines if they have failed over to a different XenServer cluster host.

These diagrams show how Xen & Now can find any guest on the cluster and is then able to initiate a backup.



## Restore

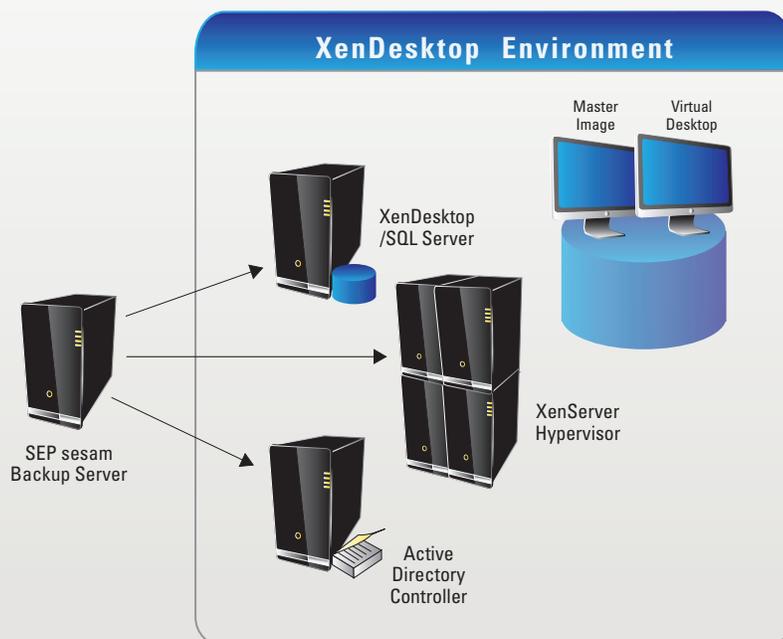
The simplicity of the Xen & Now management interface allows for quick and easy restores. Xen & Now includes the capability to use a point-in-time backup to restore any snapshot, from any time. A guest virtual machine can be restored to the same location or to a different location. This allows a guest virtual machine to be restored without downtime on any Citrix XenServer connected to the network. These features can be used to schedule guest virtual machine replication or even to export guest virtual machines to onsite or off-site systems. After a replication restore has been completed, the startup type can be set to "offline" to avoid network conflicts. This allows the use of the same UID for the restored virtual guest or even assignment of a new UID during replication.



## *Citrix XenDesktop Environment*

The Citrix XenDesktop environment is composed of several different components that work together to provide the virtual desktop infrastructure. For smaller environments, these components can be installed on a single server and larger deployments can be broken out into many back-end servers. Xen & Now provides the same backup capabilities, regardless of the topology that has been implemented for the Citrix XenDesktop solution. In particular, the Citrix XenDesktop components that must be included in the backup strategy of the virtual desktop environment are:

- Citrix Desktop Delivery Controller Datastore
- Citrix License Server
- Active Directory Domain Controller
- Citrix XenServer Cluster to Host the Virtual Desktops
  - Windows Desktop Master Image
  - Windows Quick Deploy Desktops
  - Windows Dedicated Virtual Desktops
  - Metadata, Host-Specific Information, Templates



## *Citrix Desktop Delivery Controller Backup*

The Desktop Delivery Controller datastore holds all the information about the virtual desktop infrastructure, including the virtual desktops, applications, the license server location and all other configuration settings. Protecting the Desktop Delivery Controller requires the backup of the following items with a single SEP sesam Windows agent on the server:

- SQL Backup
- Entire File System
- System Recovery Information

XenServer agentless backups (detailed in the Citrix XenServer Backup Methods on page 6) protect all virtual desktops, and in particular, the Master Image. In addition, if dedicated virtual desktops have been configured, they can also be backed up.

## *Citrix License Server Backup*

The Citrix License Server provides license validation for the different features of the Citrix XenDesktop environment. To fully protect the integrity of the Citrix License Server, backups should be completed for the following components on the corresponding server:

- Entire File System
- System Recovery Information

This backup method requires a single SEP sesam Windows agent

## *Active Directory Domain Controller Backup*

The Active Directory Domain Controller provides user and computer authentication as well as GPO control. Protection of the Active Directory Domain Controller requires backups of the following components on the corresponding server(s) with a Windows agent on each server:

- Entire File System
- System Recovery Information

## *Conclusion*

SEP's Xen & Now is one of the most robust and scalable backup solutions on the market today. The single interface to manage all backup agents and device servers, whether local or remote, makes it the perfect solution for the Enterprise. Busy network administrators especially appreciate the ease of implementation of Xen & Now for their XenServer environments. Installation is quick and seamless due to the direct communication with the XenServer hypervisor.

When using XenDesktop with XenServer, creating a backup task that includes virtual desktops and XenDesktop components is just as quick and easy with Xen & Now. Experience the benefits SEP's Xen & Now has to offer by downloading a 30 day trial license at [www.sepusa.com](http://www.sepusa.com).