



Dell AppAssure recovery of Exchange™ Server environments

Protecting one of your most visible IT resources

Microsoft Exchange Server is a lynchpin of your company's communications strategy and when it goes down, everyone – users, customers and partners included – will know. You can't afford to let that happen. Dell AppAssure is Microsoft-aware backup and recovery designed specifically to keep your Microsoft Exchange Environment up and running, minimizing downtime.

Dell AppAssure's advanced approach to Microsoft Exchange protection includes:

- **TrueScale™ architecture** allows you to back up as frequently as you like, as often as every five minutes, rather than just once a day. **Disk snapshot images** are taken without slowing or interrupting user access to the system. It's so fast that you reduce your potential for data loss dramatically.
- **Second, it features Recovery Assure™ technology**, which automatically tests every single backup on a nightly basis on the AppAssureCore server by running an actual production instance of Exchange, eliminating the need for manual testing. Production machines aren't impacted at all by the testing process.
- Third, it offers exceptionally fast Live Recovery™ technology. No need to wait for all the data to be restored to the server, a process that can take hours when hundreds of megabytes or even terabytes of data are involved.
- Finally, there is the Dell AppAssure **replication** feature, which allows you to quickly set up and update a clone of a business-critical machine in any location, including offsite or in the cloud. Because it's backed up in the same way as your primary machine, if you lose your primary machine for any reason, you can turn on the replicated machine immediately for near-continuous Exchange Server availability and near-zero data loss.

What's more, Dell AppAssure avoids the traditional pitfalls of Microsoft Exchange recovery.

- Doesn't require two backups for flexible recoveries – one for system-level recovery and another for message and folder recoveries
- Backups don't take hours to complete, so you can do multiple backups in a single day, even with big email databases
- Built-in global deduplication and compression maximizes the use of available disk storage space
- Doesn't require frequent administrative intervention

How Recovery Assure works

The ultra-lightweight and highly intelligent Dell AppAssure Smart Agent is a vital part of TrueScale architecture, allowing application-aware backups to be scheduled as frequently as every five minutes.

The Smart Agent advantage

Protecting Microsoft Exchange is simple and straight forward. Once the Smart Agent is deployed to a system it will automatically detect Exchange and begin to back up these applications and all volumes associated with it. Simply designate:

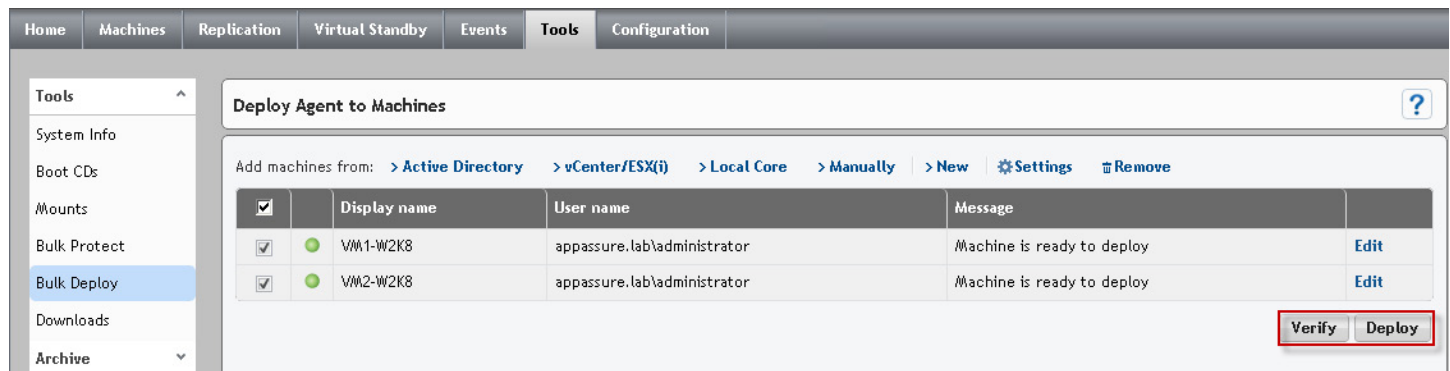
- An AppAssure Repository (where the backups are to be stored)
- Encryption settings
- Frequency of backups (default is 60 minutes, but you can set any time period down to as frequently as every five minutes, for 288 recovery points a day)

Once you've made those choices, AppAssure runs on a set-and-forget basis.

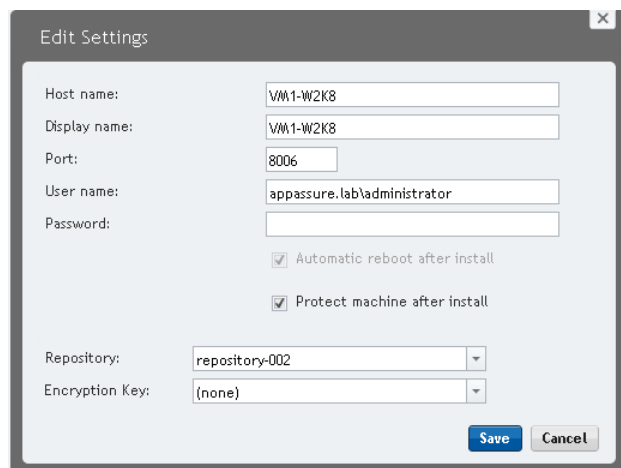
Smart Agent deployment example

Below is an example of how to deploy an AppAssure Smart Agent that enables application-aware protection and automated Recovery Assure testing of an Exchange Server.

1. Connect to the Dell AppAssure Core Server and deploy the Smart Agent



2. During deployment the Smart Agent will automatically protect the machine and give the administrator the option to choose the machines repository and encryption settings



3. Once the machine is protected snapshots will immediately start and afterwards the Core Server will perform the appropriate checks.

Getting it all backed up

Dell AppAssure runs incremental-forever backups with changed-block tracking after the first full backup for much greater speed and storage efficiency.

AppAssure is automatically aware of Microsoft Exchange and its file systems, and it carries out an application-aware backup that preserves the relationship between the application and its data. Each night, the Recovery Assure function goes into action to validate every backup. When the backup is validated, a green mark appears on the management screen next to that specific backup. This is your assurance of total application recoverability in the event of a disaster.

In the rare instance where corruption has occurred, the Exchange backup is identified as invalid in red on the management screen and the administrator is notified immediately to take action. Otherwise, no operator involvement is required.

The details

The backup is automatically checked in twoways to ensure that Exchange data is recoverable. These checks are SHA-256 checksum and mountability, and they're executed automatically when an AppAssure Smart Agent detects the presence of Microsoft Exchange.

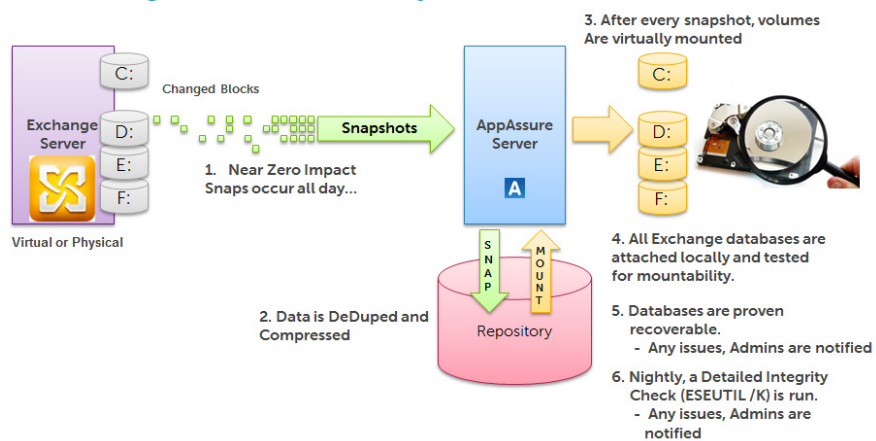
Dell AppAssure performs checksums on the Exchange database (EDB). Every Exchange database page has a field that contains a checksum of that page which is calculated every time the page is modified. AppAssure automatically calculates the checksum of the backed up EDB pages and then compares the values to the ones stored in the EDB pages themselves to ensure the integrity of the backed up page. We are unaware of another backup and recovery product that allows log truncation (truncation helps avoid excessive space use on the Exchange server), but only if the checksum is successful. This is important because without a successful Exchange backup or the presence of transaction logs, Exchange recovery becomes impossible.

Also, to ensure that checksums are done quickly, AppAssure only performs a checksum on EDB pages that have changed since the last checksum.

Checksum is not enough

While the checksum ensures the integrity of Exchange data, it alone cannot guarantee that a backup is recoverable. That's why Dell AppAssure also performs a **mountability check**.

Exchange Mountability Check



Microsoft Exchange best practices alert: the second critical step to ensure backup recoverability

Performing a checksum verification on the EDB enables administrators to adhere to Microsoft's best practices of performing checksum verification before log truncation. But checksum alone is not enough to ensure complete recoverability from a backup.

That's why Dell AppAssure software also performs mountability check nightly on every Exchange backup, running an actual instance of Exchange on the AppAssure Core. This is the extra step we take to ensure Exchange recoverability, not just bootability. It's one of the reasons Dell AppAssure means application assurance.

An EDB that passes a checksum for the integrity of its pages can fail a mountability check due to missing data like incomplete volume groups or missing EDB, log or file paths that are not located in the location specified by metadata. Any problem found with a mountability check is an early warning that backup will not be recoverable and that a new one should be taken.

SummaryRecovery PointsEventsToolsConfiguration

EXCH-001 Recovery Points

Summary

Total Recovery Points: 247

Passed Checks Count: 208

Required Checks Count: 33

Failed Checks Count: 2

Total Protected Data: 129.75 GB

Repository: Repository 2

Repository Status

Repository 2

1.8

Size (TB)

UsedFree

Recovery Points

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Status	Encrypted	Contents	Type	Creation Date	Size
		(Volume Labeled 'System Reserved'), C:\, E:\, F:\	Incremental	11/29/2012 12:15:07 PM	13.22 MB

Actions

MountExportRollbackDeleteCheck

Contents

Status	Title	Size
>	(Volume Labeled 'System Reserved')	496 KB
>	C:\	11.35 MB
>	E:\F:\	1.38 MB

Capacity: 159.99 GB

Free space: 124.79 GB

Status	Name
>	Mailbox Database 0669475687

AppAssure’s dashboard lets you know when a backup fails a Recovery Assure Mountability check or Checksum

Mountability check provides assurance that an Exchange mount will work during recovery

Mountability checks work by simulate a real mount of the Exchange database to the AppAssure Core server. It leverages technology from AppAssure and from Microsoft (ESUTIL) to mount the volumes containing the EDB, system and log paths. This mount is done in the same manner that Exchange mounts its databases to provide certainty that the mount will work during a recovery.

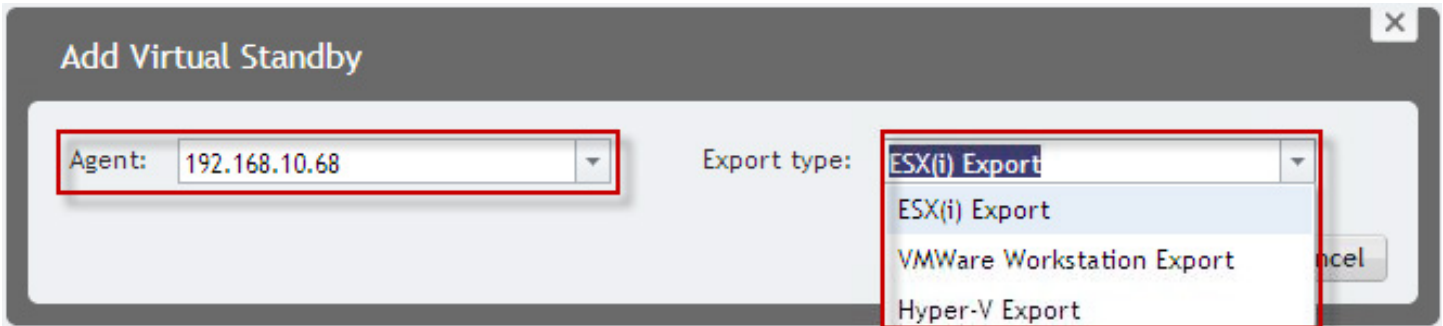
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Recovering in a hurry when you need it most

In addition to ensuring that your backup is recoverable AppAssure will make the recovery fast and simple by leveraging its Universal Recovery and Live Recovery technology.

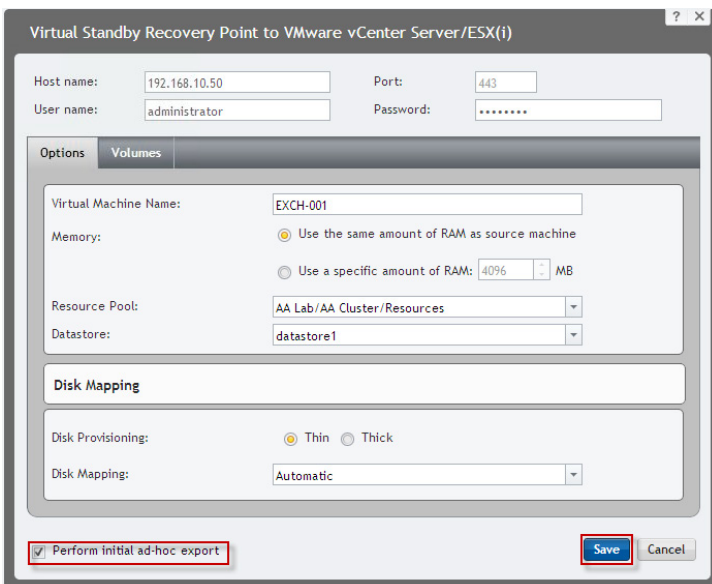
How Universal Recovery creates a virtual standby

With Universal Recovery it's possible to have a virtual VMware ESX(i) and Workstation or Microsoft Hyper-V standby of your Exchange server in a powered off state waiting to go at a moment's notice, reducing your Recovery Time Objective (RTO) from hours to less than five minutes. This virtual standby is created by recovering a backup of the primary machine on the VM and then updating it from that point on as frequently as every five minutes with new snapshots from the AppAssure repository. It's far faster than having to constantly recreate standbys, so the standbys are as up to date as your primary machines. This makes it possible to set and achieve highly time-granular Recovery Point Objective (RPOs).



Creating a virtual standby is as simple as selecting the agent that needs a standby and the platform it should run on.

When creating the standby VMs you have the ability to adjust all of vital settings for properly configuring a new VM. These settings consist of RAM, Resource Pool, Datastore, Disk Provisioning and the mapping of the volumes.

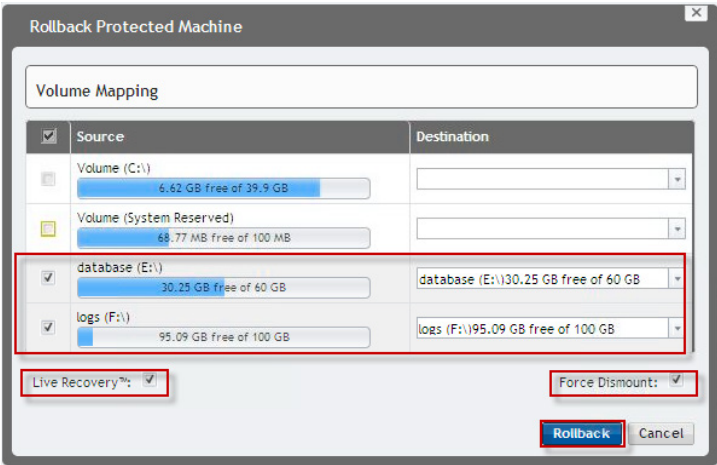


Settings screen for ESX(i) Virtual Standby VM

Restore instantly with Live Recovery

In cases when a virtual standby is not the best option for an organization, Live Recovery allows machines to be recovered in minutes, not hours. It instantly runs or resumes physical or virtual (VMware vSphere ESX(i), or Hyper-V) servers directly from the backup file without waiting for a complete system restore, even if the restore involves terabytes of data.

Live Recovery works by providing the operating system and applications with the illusion that a system volume(s) has been fully restored when in reality the data is being restored in the background. This is achieved by restoring the volumes Master File Table (MFT) which contains all file information such as size, permissions and more. In the case of Microsoft Exchange, AppAssure can perform a Live Recovery of the database and log volumes making the data immediately available to the Exchange server and its users. As Exchange and users request data AppAssure will automatically prioritize the restoration data stream and deliver requested data before delivering arbitrary data that is not currently needed. This process ensures that requested data is delivered in real time as not to cause any delay.



Live Recovery of Exchange database and log volume

The final result is that Exchange is recovered instantaneously from the perspective of your end users and IT is a hero for delivering a higher average uptime for Exchange with RTO's of only five minutes.

For more information

For more information on Dell AppAssure protection for Microsoft Exchange, or to see it in action, please contact a sales rep and schedule a one-on-one demonstration of Dell AppAssure backup and recovery software. Or, if you're ready to try it yourself, why not download a full working copy for your own 14-day trial evaluation?

