Administrative points on this webinar

- Questions
  - Can use the virtual Q&A panel.
  - This webinar is recorded and available for replay after a few days.
  - At the end of the webinar, we can raise virtual hand for dialog questions.
  - **Stick around** until the end of the webinar!
    - Winners will receive a choice of books!

- Overview of Veeam
About Veeam

- Veeam Software develops innovative products for virtual infrastructure management and data protection.
- Reduce costs, mitigate risk, and fully realize the promise of virtualization with Veeam.
“Should I Virtualize my DCs?”

- It’s a great question, and a completely valid one!
  - Our industry is moving evolving towards the reality that every IT workload can now be virtualized.
  - SQL servers, Exchange servers, even heavy-duty Oracle servers, all are virtualization candidates thanks to core improvements by the platform vendors.
  - Yet, DCs are special…
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- Yet, DCs are special…

If I do, what mistakes could I make?”

- Short answer: *Plenty.*
“Should I Virtualize my DCs?”

- ADDCs are unlike other IT workloads in many ways…
  - Multi-master replication must be carefully designed to avoid errors.
  - Its services require a transactional database that can’t be backed up like regular files and folders.
  - Its functionality exists as the foundation for every other IT service.
  - Lose AD, you’ve lost everything.
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- Yet, DCs are also not large resource consumers.
  - An AD database for 1000 users probably maxes out at 400M.
  - Relatively small CPU and memory utilization footprint.
  - Dual processors and a couple of gigs of RAM are usually enough for even the biggest DCs.
  - DCs typically come in pairs+, making them redundant by nature.
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Thus, DCs are in many ways the **perfect** virtualization candidate!
#1: DCs Require VM High Availability

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  - Write caches are disabled for volumes hosting database and log files.
  - Multi-master replication dislikes lost servers.
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- Multi-master replication introduces the expectation that DCs are always operational.
  - Write caches are disabled for volumes hosting database and log files.
  - Multi-master replication dislikes lost servers.

- Any virtualized DCs should be hosted in a highly-available environment.
  - Clustering + HA can provide this.
#2: Never Snapshot, Never Pause, Never Clone

- Virtualization adds lots of fancy features for VMs.
  - Snapshots protect against risky actions.
  - Pausing stops their processing without stopping the machine.
  - Cloning trivially copies their contents elsewhere.
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  - Snapshots protect against risky actions.
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- However, using any of these against a Domain Controller is never recommended.
  - AD’s multi-master replication wasn’t designed to handle snapshotting and disk rollback. Database corruption and USN rollback can occur.
  - Pausing DCs for too long a time could create similar problems.
  - Cloning DC disks can force replication isolation, and unexpected results with users and computers.
  - Important caveat: Some data protection solutions provide full application-aware quiescence during a snapshot.
Not All Backups are Created Equal

- Virtual platform snapshotting and cloning are activities one should never attempt against a DC.
  - But the terms “snapshot” and “clone” sometimes have other meaning.
  - Some backup solutions use these terms as well.
#3: Not All Backups are Created Equal

- Virtual platform snapshotting and cloning are activities one should never attempt against a DC.
  - But the terms “snapshot” and “clone” sometimes have other meaning.
  - Some backup solutions use these terms as well.

- Educate yourself on all the backup options for DCs.
  - The backup solution you want gathers the necessary data quickly.
  - Uses an image-based, block-level approach.
  - Seek near-continuous data protection, not just “daily backups”.
  - This you can’t get with Windows’ native tools alone.
  - The right solution will enable you to restore any object, server, or forest back to any period in time – “yesterday” or even “15 minutes ago”.

VEEAM
#4: Avoid Clock Drift

- Yep, 11+ years of Active Directory and we’re still talking about time synchronization.
  - Time synch hasn’t been a problem for a long, long time.
  - But virtualization introduces a new twist on clock skew: Hypervisor time slicing.
#4: Avoid Clock Drift

- Yep, 11+ years of Active Directory and we’re still talking about time synchronization.
  - Time synch hasn’t been a problem for a long, long time.
  - But virtualization introduces a new twist on clock skew: Hypervisor time slicing.

- **Clock drift in a VM can be handled by the virtual platform’s installed toolset, or it can be handled by synchronizing clocks to an external time source.**
  - Pick one. Use it.
  - Pay extra attention to your DC VM clocks.
  - Sometimes that virtual toolset has an issue and stops synching.
#5: Don’t Overprovision Resources

- “Dual cores and four gigs of RAM”
  - That was just fine for physical servers, a dumb idea for virtual ones.
  - We did this with physical servers because resources are cheap. With virtual resources, we lose optimization.
#5: Don’t Overprovision Resources

- “Dual cores and four gigs of RAM”
  - That was just fine for physical servers, a dumb idea for virtual ones.
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- *Use performance management toolsets to find and assign the right resources. Avoid multiple processors.*
  - Overcommitment was great for the verbal hypervisor war.
  - Overcommitment isn’t that great for actual VM provisioning.
  - Even VMware’s guidance suggests against overcommitting RAM.
  - Multiple processors only benefit multi-threaded applications. They in fact hurt single-threaded applications.
“Foolish is the IT pro who focuses exclusively on backups; wise is the IT pro who recognizes restorability is the ultimate goal.”

- Even referring to this class of software as “backup solutions” obscures the reality that a backup isn’t usable unless it can be verifiably restored.
#6: Ensure Backups Actually Work

- “Foolish is the IT pro who focuses exclusively on backups; wise is the IT pro who recognizes restorability is the ultimate goal.”
  - Even referring to this class of software as “backup solutions” obscures the reality that a backup isn’t usable unless it can be verifiably restored.

- The right solution not only backs up and restores AD data, it also automatically verifies data integrity.
  - You want a solution that gives you the automated integrity check that guarantees AD objects and servers will restore correctly.
#7: Implement Anti-Affinity Rules

- VMs are constantly moving around in their virtual environment.
  - Load balancing technologies are important to maintaining the best distribution of resources across hardware.
  - Yet this constant relocation introduces the possibility that two DCs could end up collocated on the same host.
  - This is bad.
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- **Anti-affinity rules are important to ensure DCs never end up on the same host.**
  - Separating out those DCs ensures a host loss doesn’t also mean an Active Directory outage.
#8: Separate Client and Administrator Traffic

- The red VCR button to power down a virtual server is no different than the physical button on a physical server.
  - Hit that button and you’re going down.
  - You lock the doors of your datacenter, why not also lock out access to that virtual VCR button as well?
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  - Hit that button and you’re going down.
  - You lock the doors of your datacenter, why not also lock out access to that virtual VCR button as well?

- Separating client network traffic from virtual administration traffic is just as important as locking your datacenter doors.
  - Segregate out management traffic to different subnets.
  - Extend access to those subnets to IT control only.
  - Keep users from clicking that button.
Prior to 2008 R2, AD wasn’t well-equipped to handle individual object restores.

- Even with 2008 R2, the AD Recycle Bin remains a challenge to use.
- It requires complex PowerShell operations to find and restore data.
- Quick restores must be a priority.
#9: Prioritize Quick Object Restores

- Prior to 2008 R2, AD wasn’t well-equipped to handle individual object restores.
  - Even with 2008 R2, the AD Recycle Bin remains a challenge to use.
  - It requires complex PowerShell operations to find and restore data.
  - Quick restores must be a priority.

- Seek an Active Directory backup solution that restores deleted objects and containers with a minimum of time and effort.
  - Restore objects with a few clicks.
  - Graphical user interfaces eliminate the risk of error.
  - Resurrecting DCs to protected areas ensures safe restoration without production environment impact.
#10: Monitor Storage Performance

- In virtualization’s early days, performance was all about processing and memory.
  - Today, we realize that storage and IOPS can be a major contributor to poor performance – particularly with databases.
  - Incorrectly-configured or oversubscribed connections are bad.
  - Overtaxed SAN disks and spindle contention are hard to track down.
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- While virtualized DCs tend not to have heavy storage performance requirements, monitoring IOPS is still an important activity.
  - Even though DCs might not require the fastest disks, the activities of other VMs can (and will) impact DC operations.
#11: Remain a Bit Physical

- Even with virtualization’s seemingly-magical capabilities, your virtual environment itself could be a SPOF.
  - Hypervisor vulnerabilities
  - Storage interruptions
  - Resource overutilization
  - Misconfiguration
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- Even with virtualization’s seemingly-magical capabilities, your virtual environment itself could be a SPOF.
  - Hypervisor vulnerabilities
  - Storage interruptions
  - Resource overutilization
  - Misconfiguration

- **Preserving at least one DC as a physical server will ensure AD remains during the worst of virtual environment outages.**
  - If directory services aren’t available, the steps to resurrect your virtual environment grow more complex.
#12: Have a Plan Solution for Disaster Recovery

- Everybody these days seems to have a DR plan.
  - But a plan does you no good without a solution for executing that plan.
  - DR with native tools alone is a prescription for a very bad day.
Everybody these days seems to have a DR plan.
- But a plan does you no good without a solution for executing that plan.
- DR with native tools alone is a prescription for a very bad day.

Incorporating the tools for backing up AD data is only part of that solution. Regularly ensuring and testing their functionality is what fulfills the solution.
- A solution that works can restore entire DCs in minutes rather than days.
- That solution gets VMs up and running fast, while full data restores occur in the background.
- Online means “ready to service users”, not necessarily “fully-restored”.
- Have that solution now, before you need it.
Questions and Answers

- Winners receive a choice of the following books:
  - VMware vSphere 4.1 HA and DRS Technical Deep Dive
  - System Center Operations Manager 2007 R2 Unleashed
  - Time Management for System Administrators

- Thank you for attending!

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