



*HYPER-V Backup*

# Upcoming features in Hyper-V vNext

## Presented by:

Aidan Finn (Hyper-V MVP)

Rick Claus (Senior Technical Evangelist, Microsoft)

## Hosted by:

Andrew Syrewicze (Hyper-V MVP)

## Our Agenda

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## Presenters

### Aidan Finn (Hyper-V MVP) @Joe\_elway



- Technical Sales Lead with MicroWarehouse (<http://www.mwh.ie>)
  - Irish technology distributor
  - Learning, evangelizing and teaching Microsoft infrastructure to Microsoft partners
- Background in Windows Server and desktop management, virtualization, Azure IaaS and IT infrastructure
- Blogging and writing
  - <http://www.aidanfinn.com>
  - <http://www.petri.com/author/aidan-finn>
  - Published author/contributor of several books

### Rick Claus (Senior Technical Evangelist, Microsoft) @RicksterCDN



- 10 year veteran at Microsoft
  - Moved to “The Mothership” in Redmond, WA 3 years ago
  - On-premises Datacentre Infrastructure Specialist
  - Transitioned to “Cloud” with Azure IaaS with Hybrid datacentres
- Over 20+ years experience ranging from “the guy who jiggled the cable to get the printer to work” to “enterprise consultant” specializing in systems coexistence and migration
- Blogging and video
  - Tech Blog: <http://RegularITguy.com>
  - Channel 9 Videos: <http://channel9.msdn.com/Niners/RicksterCDN>

## Host

Andrew Syrewicze (Hyper-V MVP) @asyrewicze



- Sr. Cloud Services Engineer for the Trivalent Group (<http://www.trivalentgroup.com>), a West Michigan based Service Provider
  - Provider of cloud based solutions for everyday business problems
  - Champion of all things Hyper-V and Microsoft for Trivalent and associated customer base
- Skills are focused on virtualization, storage, Microsoft Azure, and the Windows Server Stack
- Blogger and Published Author
  - <http://syrewiczeit.com>, <http://www.altaro.com/hyper-v/>

## Altaro Software

Altaro Software is a fast growing developer of easy to use backup solutions targeted towards small- to medium-sized organizations worldwide

### Altaro Hyper-V Backup

- Backup & Restore VMs quickly and easily from Microsoft Hyper-V
- Easiest to use and fastest
- Great value – Full-Featured, affordably priced (and free for 2 VMs)
- Outstanding Support



# Windows Server 2012 R2 Hyper-V

## Windows Server 2012 R2 Hyper-V

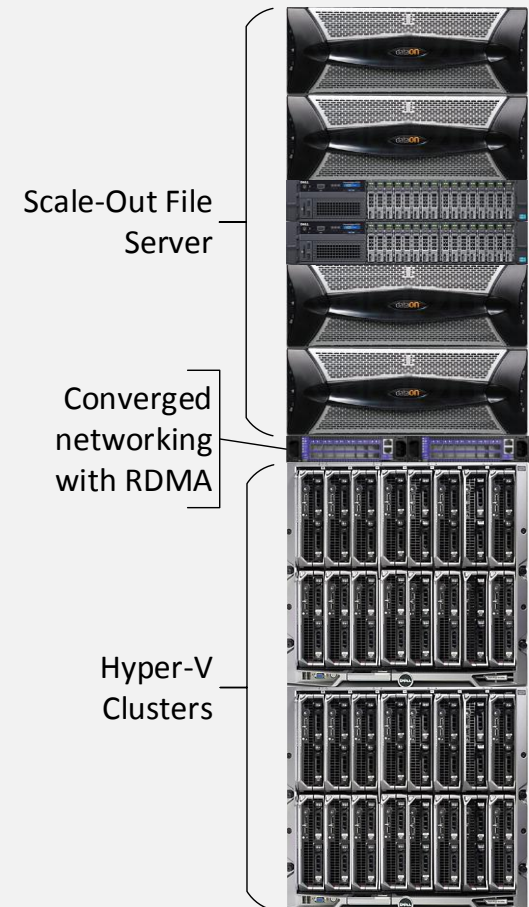
### Where we are now

- Enterprise-class hypervisor
- Designed for private, public, and hybrid cloud
- Huge scalability
- Hardware offloading
- SMB 3.0 storage and Live Migration
- Easy migration from WS2012 hosts/clusters
- Linux backup and Dynamic Memory
- Software-defined networking
- System Center and Windows Azure Pack

### Moving towards:

- Abstracting not just host hardware, but also storage and networking
- A service driven model with automation

### A WS2012 R2 Hyper-V Rack



## Where Is MSFT Going Next

### The Next Version of Windows Server Hyper-V

- Windows Server & System Center vNext out in 2016
- Technical Preview of Windows Server available since Oct 1, 2014
- Goal: Software-defined everything
- Based on:
  - Lessons learned in WS2012 R2 deployments
  - Microsoft Azure
  - Feedback

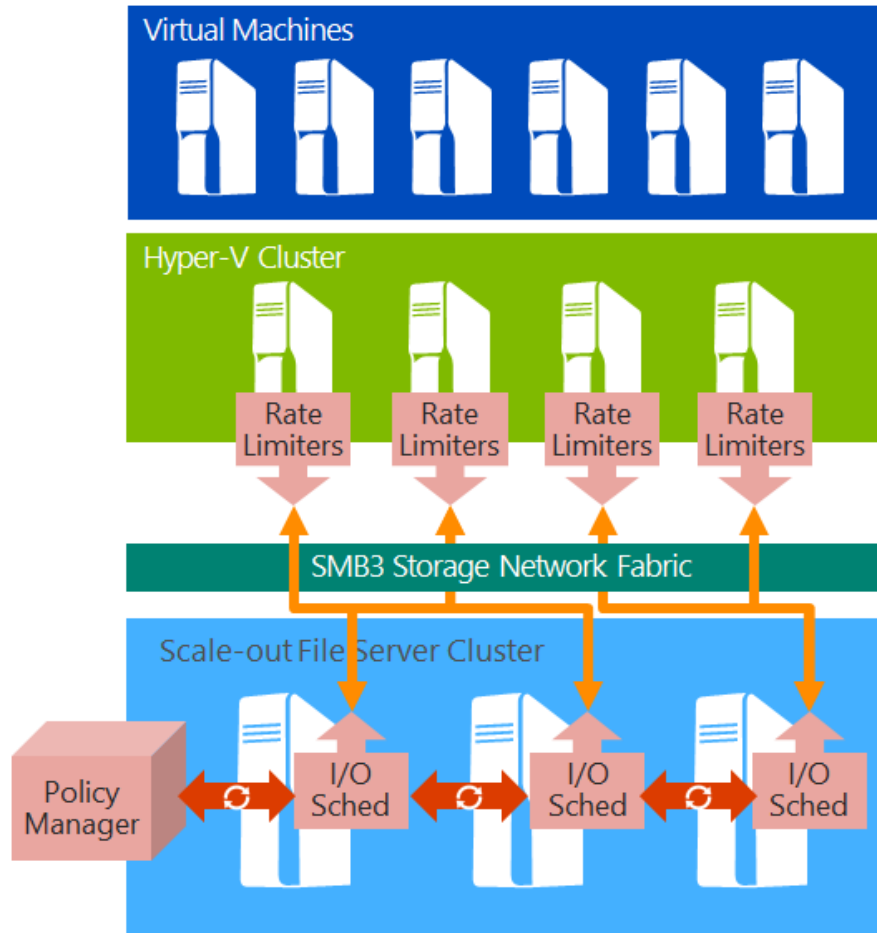
# What's Coming in vNext



# Distributed Storage QoS

Delivering predictable storage performance

- A feature of SMB 3.0 and Scale-Out File Server (SOFS)
- Per Tenant/VM/VHD Storage policies set on the SOFS
- IOPS rates limited at the host
- Guarantee an SLA
- Offer fair distribution of
- Create performance & price bands
- Limit damage by misbehaving VMs or tenants



## Cluster Cloud Witness

- Clusters require a quorum of votes in order to determine who should run the workloads in the event of a site outage
- Stretch clusters / Multi-Site clusters need this too, but you need 3rd “impartial” site to reliably pull this off
- vNext clusters will support using a “Cloud Witness” in Azure
  - Create a blob in a storage account in Azure
  - Configure Quorum settings with Account name and storage key for security

Voila!

## Handling of Transient Errors

### Preventing unwanted failovers and increasing uptime

- Storage transient errors
  - Pause a virtual machine when there is a temporary storage outage
- Cluster compute resiliency
  - Place a host into isolation during temporary cluster network issue
- Cluster quarantine
  - Prevent placement of services on a “flapping” host

## Cluster OS Rolling Upgrade

- Works on the foundation for your private cloud components (Management, Compute and Storage)
- “Mixed-OS Mode” is a new state that allows Windows Server 2012 R2 and Windows Server vNext nodes in the same cluster
- A Mixed-OS Mode cluster can be reverted back to Windows Server 2012 R2
- Mixed OS mode is a transition state
  - Optimizations don't run
  - New features are not available
  - Do not plan on running your cluster in Mixed OS Mode for longer than one month



Simple

Rolling Upgrades with Win2012 R2 and vNext nodes within the same cluster

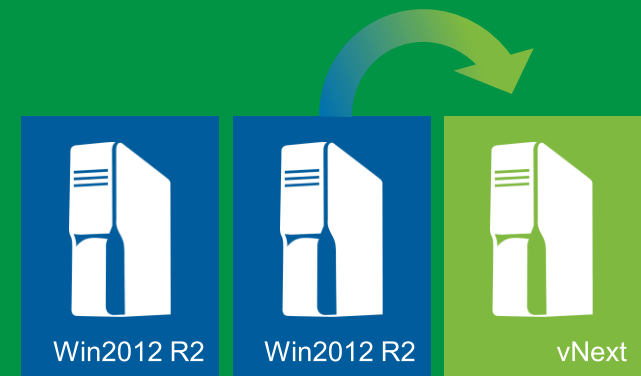
Easily roll in nodes with new OS version



Seamless

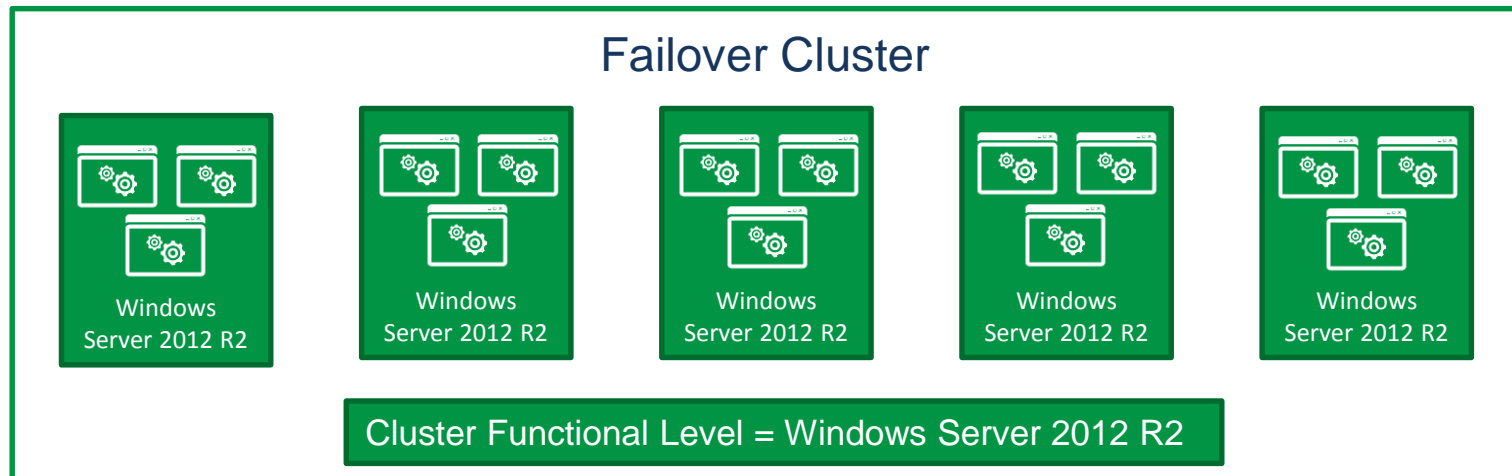
Zero downtime cloud upgrades for Hyper-V and Scale-out File Server

### Cluster



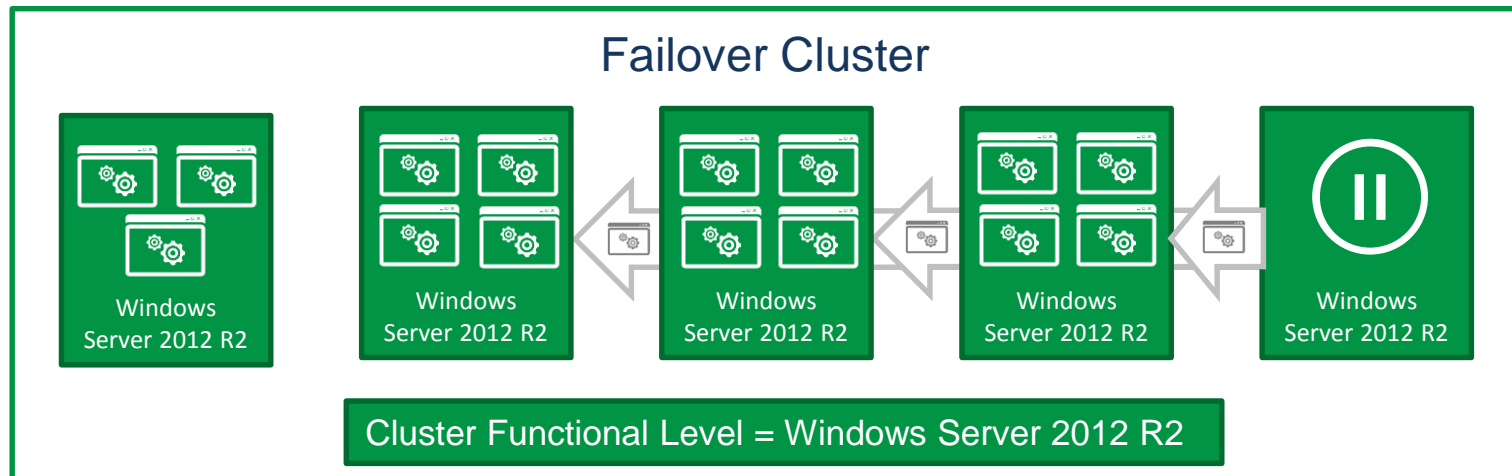
## Cluster OS Rolling Upgrade Process (1/10)

- Start with a Windows Server 2012 R2 cluster
  - All nodes running Windows Server 2012 R2
  - The workload supports Cluster OS Rolling Upgrade process



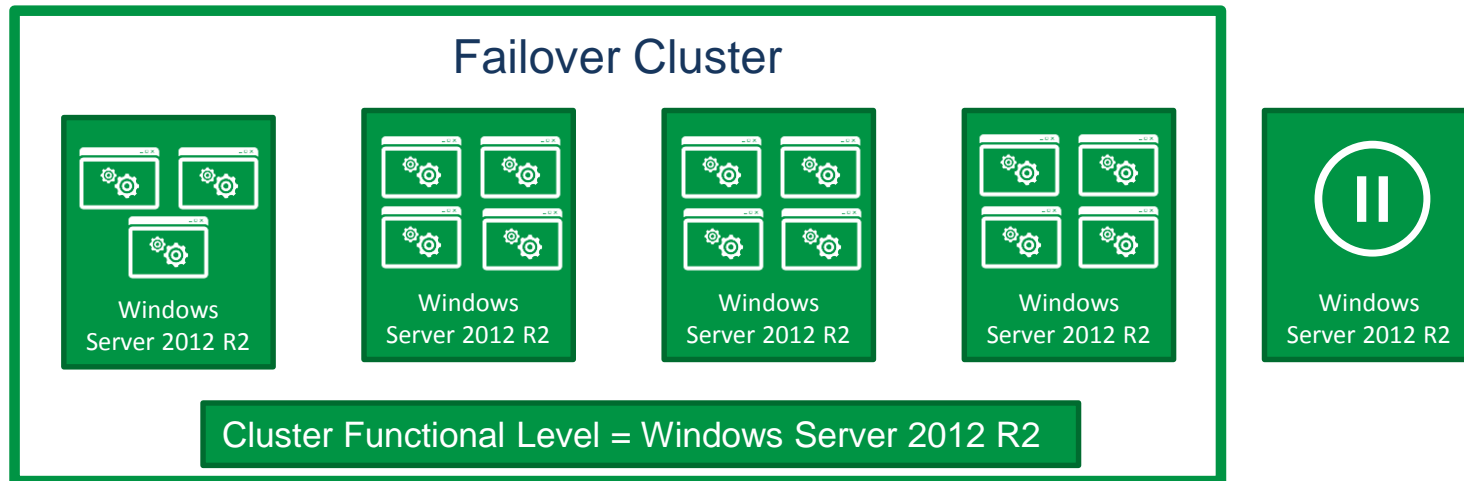
## Cluster OS Rolling Upgrade Process (2/10)

- Migrate Workloads Off Cluster Node
  - Pause | Drain the node



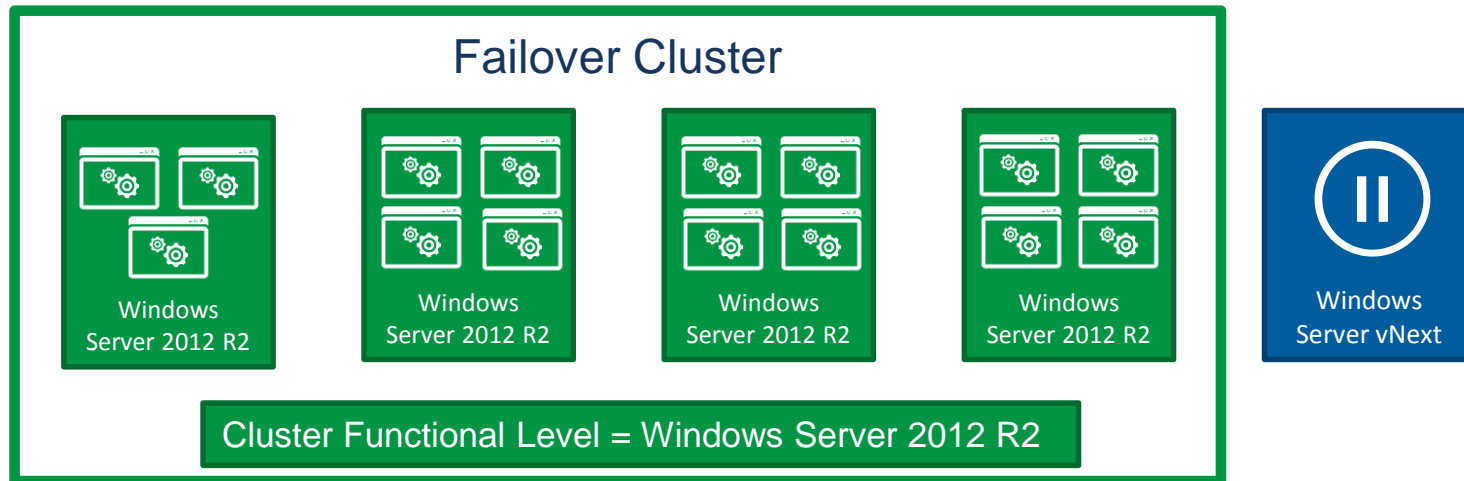
## Cluster OS Rolling Upgrade Process (3/10)

- Evict Idle Cluster Node



## Cluster OS Rolling Upgrade Process (4/10)

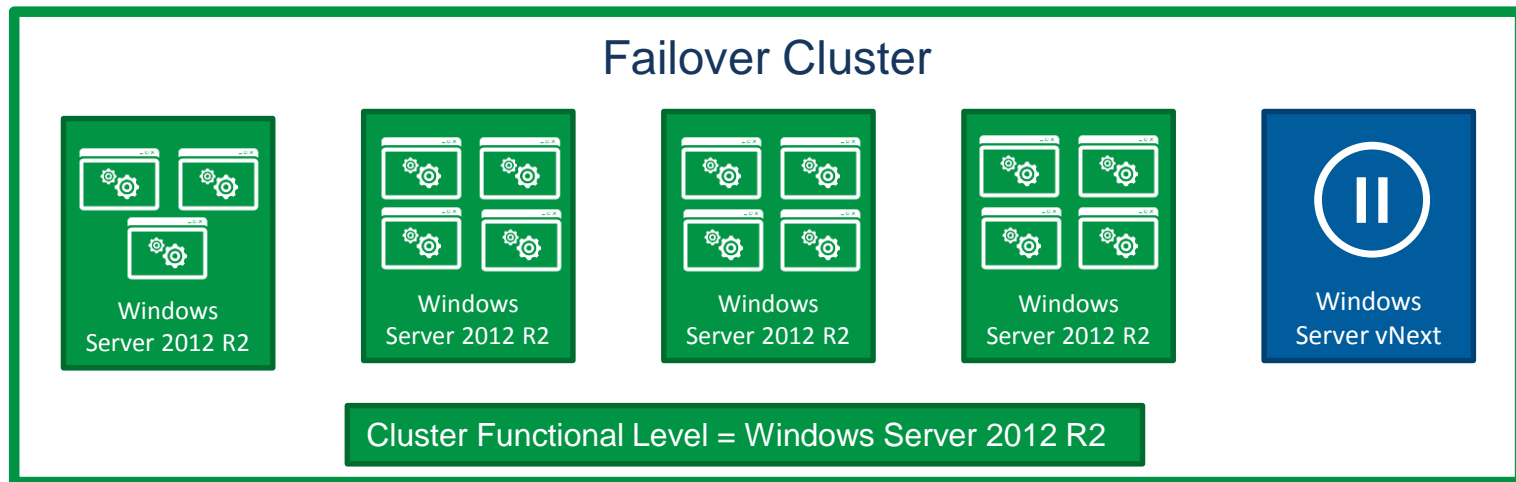
- Re-Provision Node
  - Install New OS
  - Install and Configure any Workload Requirements





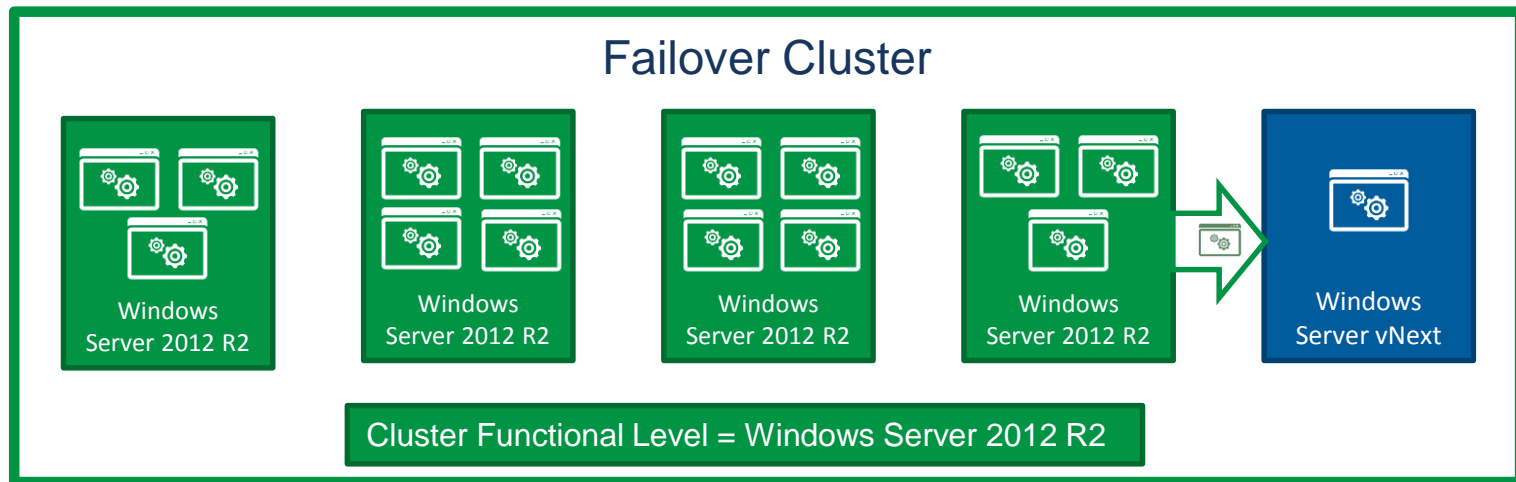
## Cluster OS Rolling Upgrade Process (5/10)

- Re-Add Node To Cluster
  - Using Cluster UI or PowerShell
  - Cluster Functional Level Remains Windows Server 2012 R2



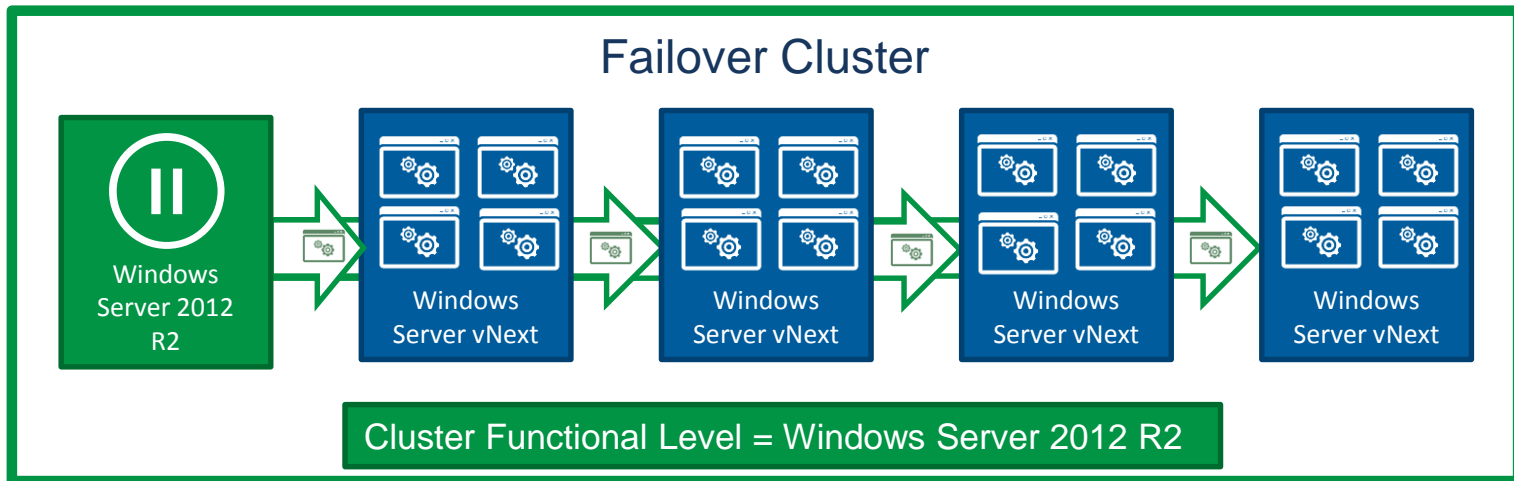
## Cluster OS Rolling Upgrade Process (6/10)

- Ready To Migrate Workloads Back
  - Migrate workloads to Windows Server vNext Node
  - Validate functionality



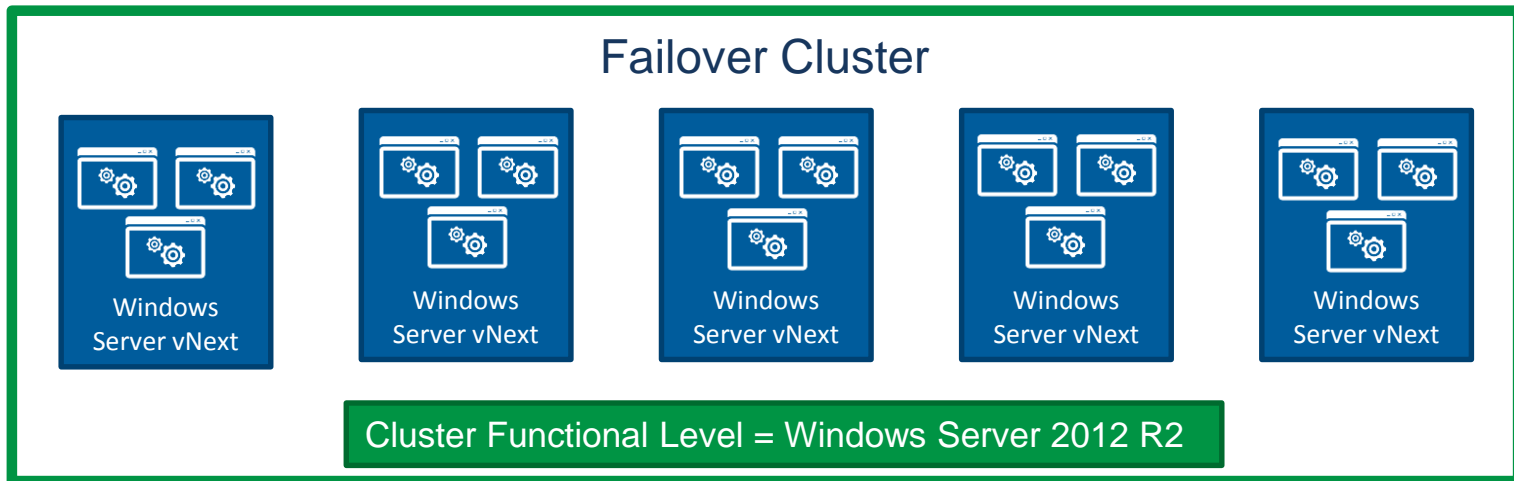
## Cluster OS Rolling Upgrade Process (7/10)

- Repeat For Remaining Nodes



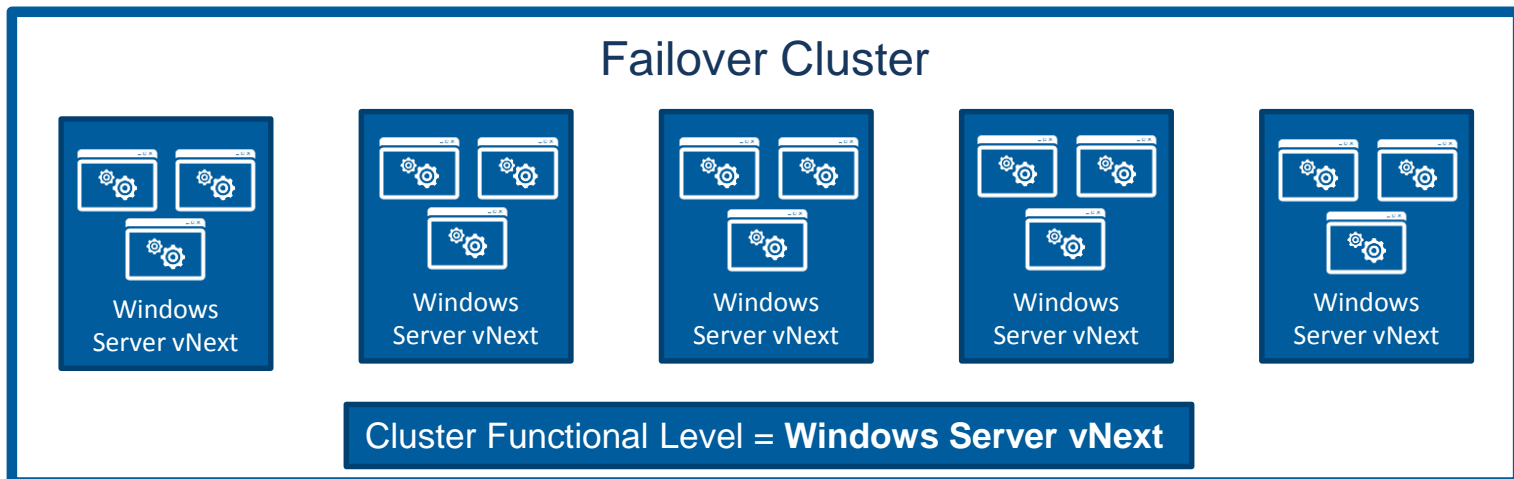
## Cluster OS Rolling Upgrade Process (8/10)

- All Nodes Are Upgraded
  - Cluster Functional Level remains Windows Server 2012 R2
  - Functionality is limited to Windows Server 2012 R2 levels
  - Still possible to add a Windows Server 2012 R2 node to the cluster



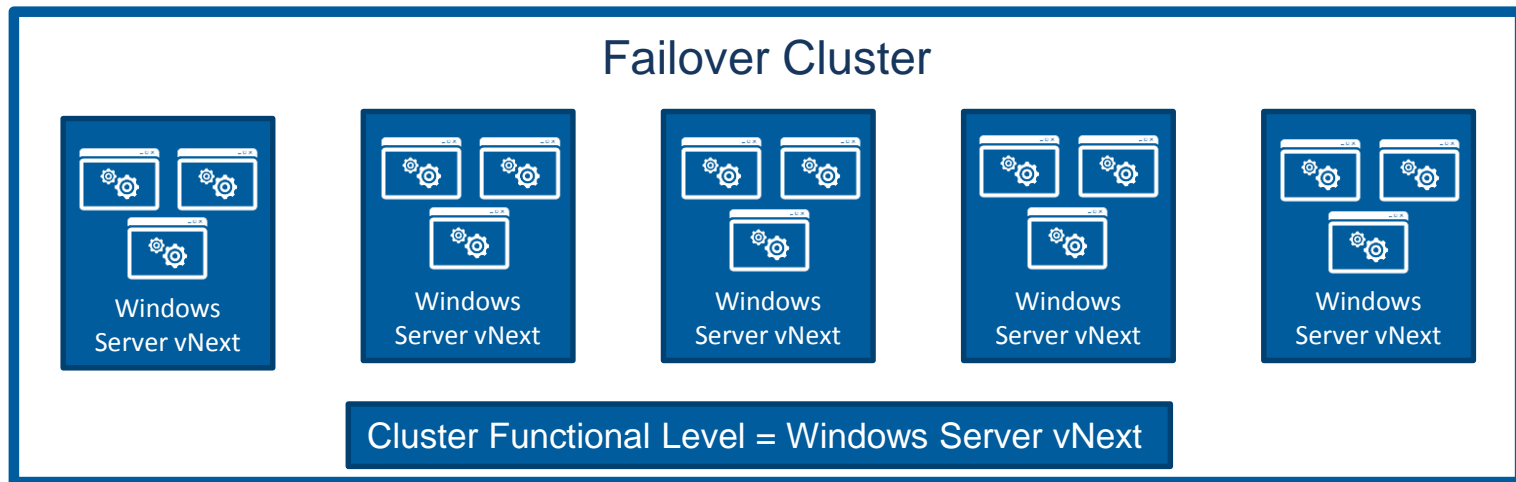
## Cluster OS Rolling Upgrade Process (9/10)

- Upgrade Functional Level
  - Cluster Functional Level upgraded To Windows Server vNext:
    - ◆ **Update-ClusterFunctionalLevel** cmdlet
  - New functionality added in Windows Server vNext enabled
  - No longer possible to add a Windows Server 2012 R2 node to the cluster



## Cluster OS Rolling Upgrade Process (10/10)

- Upgrade is completed



## Backup Improvements

### More scalable and reliable

- Devolving the use of VSS for volume level backup of VMs
- Resilient Change Tracking
  - Built-in block-based change tracking for VHDs
  - In-memory (granular) and on-disk (resilient)
- File-based backup
  - A “Backup Checkpoint” allows live export of VHD as a backup
- Differential Export
  - Enabling an incremental backup

## Online Resize of Memory / Hot Add Nic / RENAME of Nic

- For Windows Server Technical Preview guests, you can now increase and decrease the memory assigned to virtual machines *while they are running*
- Network adapters can be added and removed from Generation 2 virtual machines while they are running
- You can name individual network adapters in the virtual machine settings – and see the same name inside the guest operating system



## Lots of new Features

### Some quick stops

- Binary VM configuration files
- Alternative credentials and WinRM support in Hyper-V Manager
- Support for Connected Standby
- ICs for VM Guests will be rolled into Windows Update
- Production checkpoints with guest OS VSS consistency
- RDMA to management OS vNICs
- SMB 3.11: negotiated encryption (AES GCM) and forced encryption
- Virtual machine groups for orchestrated checkpoints (Shared VHDX)

<http://aka.ms/AidanAwesomeHypervNextPost>

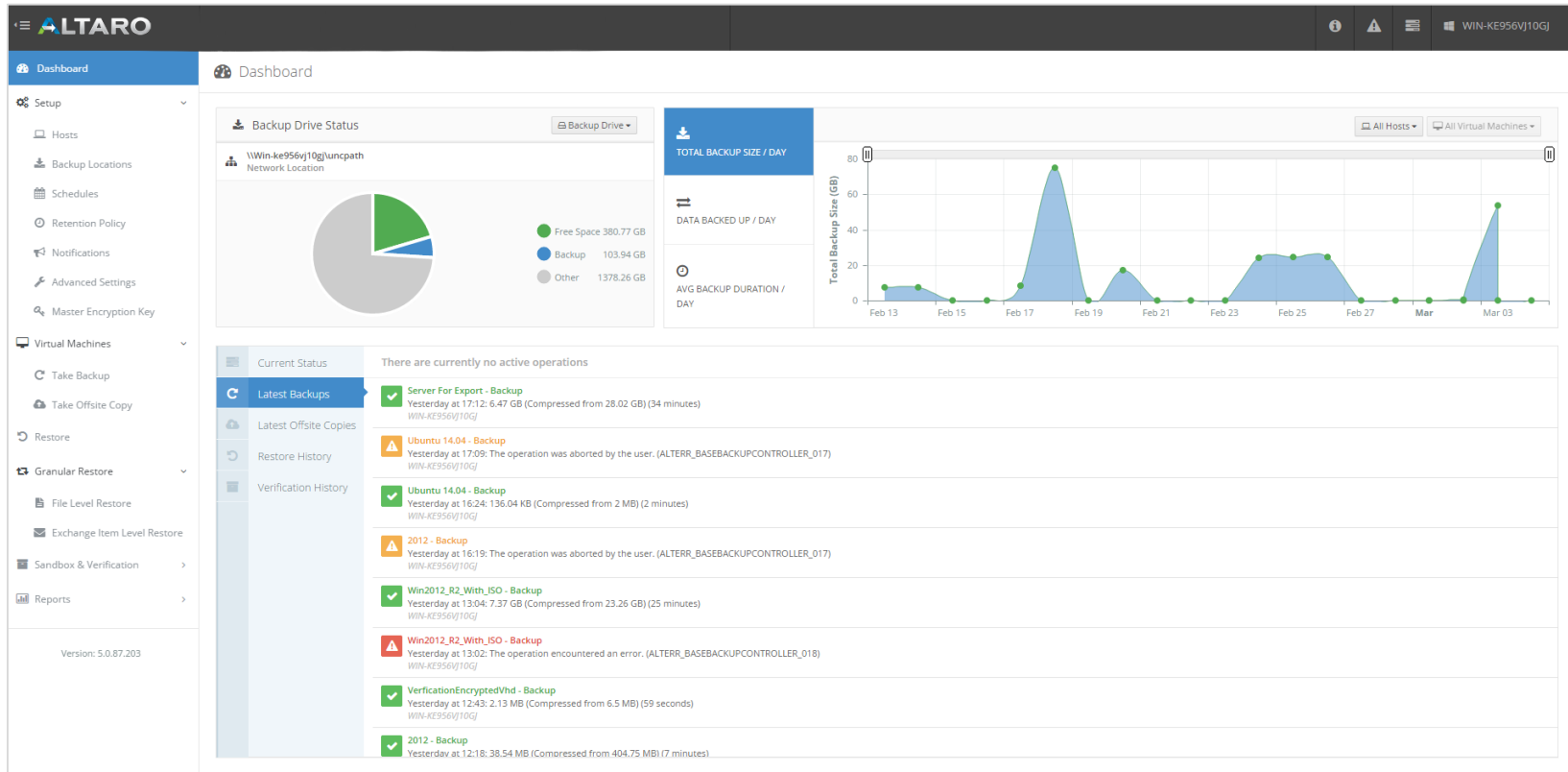
# Altaro Hyper-V Backup

## Altaro Hyper-V Backup Product Overview (1/2)

- Backup & Restore VMs quickly and easily from Microsoft Hyper-V
- Simple, quick and easy to setup and use – backup in 5 clicks
- Works with Windows Server 2012 R2 / 2012 / 2008 R2 / Core
- Instant granular restores at File level and Exchange level
- Very low resource requirements Fully Hyper-V Aware – Does all the complex configuration connections for you
- Fully Hyper-V Cluster and CSV compatible – full support for CSVs and SMB3 Clusters



# Altaro Hyper-V Backup Product Overview (2/2)



Download your copy here: [altaro.com/download](http://altaro.com/download)  
 (30-Day trial OR Free for 2 VMs, forever)

# Webinar Q&A



*HYPER-V Backup*

# Thank you for attending

For more information visit: [www.altaro.com](http://www.altaro.com)