A Guide to Hyper V 2012
Failover Clustering Migration

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New Install - Never Setup

HARDWARE
• 2 Identical Servers (at least)
• SAN storage array
• Network Setup
  • iSCSI network
  • Internal network

SOFTWARE
• Server 2012 DataCenter
• Server 2012 Standard
  • Does not support failover clustering
Moving to New Hardware - Upgrade

Hardware/Software
Same as new setup

Export VMs
Import into new setup
Migration from 2008r2

Make a Plan...
- What you have
- What you need
- What changes are needed
- What is the outage - is there an outage
- Are there VMs that need to stay up
- Will your hardware support 2012
- Will your array support 2012

Save VMs - Export for a backup
Map your network setup
Document, Document, Document
What we did...

Fort Thomas
- 2 Clusters
- Dell 2950 (2)
- Dell R710 (3)
  - 7 VMs (TMG is on here)
  - Server 2008r2 SP1 DataCenter
  - 48 GB Ram
  - 146 GB Raid 1 (System Drives)
  - 12 NICs
- SAN - Dell MD3000 with MD1000
  - 12TB of Storage
- Total Time to Complete - 1.5 Hours
- Does not include original server 2012 build which took about 5 hours
Migration Steps

- Using spare server - build server 2012
  - Load all drivers
  - Configure all NICs
  - Run all updates
  - Install Hyper V Role
  - Install Failover Clustering Role
  - Install Multipath I/O Role
  - Configure IE for Admins
  - Load Storage Array Software
  - Activate Windows Server 2012
- Clone server - used Clonzilla
- Configure NICs
  - KETS & iSCSI
- Join to Domain and place in OU
- iSCSI
  - MPIO
  - Setup iSCSI initiators on MD3000
    - Join to existing Host Group
  - Configure iSCSI connections
  - Check Connections/Volumes
Finishing up

- Create new cluster (target cluster)
  - Add new server
  - Run validations
  - Run all tests except storage (in use)
- On existing cluster (prepare migration)
  - Delete all unused VMs
  - Delete all snapshots (if any)
  - Delete all saved states of VMs
  - Shutdown all VMs (outage - schedule)
  - Take all Volumes offline
  - Take all configurations offline
  - Outage was less than 3 minutes
- Target Cluster
  - Click Migrate Roles
  - Wait till done, shutdown other 2 servers
  - Ensure migration completes
  - Check migration
  - Bring Volumes online
  - Start VMs
Almost There...

- Remaining 2 Nodes
  - Clone with image made earlier
- Configure Nodes
  - NICs
    - KETS/iSCSI
  - iSCSI
    - MPIO
    - Configure iSCSI connections
    - Configure Volumes
- Check Settings - Reboot
- Add to Cluster (witness drive hooks in)
- Run Validation Tool
  - Except storage
- Repeat for last node
  - Another outage (at some point)
  - Shut down all VMs
  - Run validation tool - all this time
  - Fix any problems
  - Startup VMs
- Your done! Enjoy!
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What we did...
- Network Planning
  - Identify 2012 RP2020s
  - Identify 2012 RP2020s

- Network Setup
  - Configure VLANs
  - Configure LACP
  - Configure STP

- Hardware
  - Configure 2012 RP2020s

- Software
  - Install Hyper-V
  - Install Windows Server 2012

- Cluster
  - Configure Failover Clustering
  - Configure Same Network for Both Sites
  - Configure Different Network for Both Sites

- Migration
  - Migrate from 2008 R2 to 2012
  - Migrate from 2008 R2 to 2012

- Testing
  - Test Failover Clustering
  - Test Migration

- Conclusion
  - Successful migration to Hyper-V 2012
  - Improved performance and reliability

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Fort Thomas
- 2012 RP2020s
  - Dual 256GB RAM
  - Quad Core

- 2012 RP2020s
  - Dual 256GB RAM

- Server 2008 R2
  - 2 CPU
  - 2GB RAM
  - 1TB Storage

- Network
  - VLANs
  - LACP
  - STP

- Cabling
  - Cat 5e

- Power
  - UPS

- Backup
  - Local

- Testing
  - Failover Clustering
  - Migration

- Support
  - Microsoft Support
  - In-house Support
What we did...

Dayton
- 1 Clusters
  - Dell R710 (2)
    - 15 VMs (Lunchbox is on here)
    - Server 2008r2 SP1 DataCenter
    - 24 GB Ram
    - 250 GB Raid 1 (System Drives)
    - 8 NICs
  - SAN - Dell MD3000 with MD1000
    - 2TB of Storage
- Time to Complete - 18 hours
Migration Steps

1. Live Migrated VMs to Node 2
2. Powered off VM (one at a time)
   a. Configured Static MAC address
3. Powered VMs back up
4. Set each VM Preferred Owner to Node 2
   a. This prevents fall over during upgrading
5. Evict Node 1 from Cluster
6. Clean install Windows Server 2012 Datacenter
7. Configure Network Cards with Static IPs
   a. District IP
   b. SAN private IP
      i. Configured as no VLAN set on Switch for SAN
8. Registered Server with Domain
9. Placed Server in proper OU in Active Directory
Migration Steps

10. Activated Windows Server 2012
11. Turn off IE Enhanced Security Configuration for Administrators – personal preference
12. Update any Drivers – NIC or Video
13. Add Failover Clustering and Multipath I/O Features
14. Restart Server
15. Activate the Multipath I/O
16. Restart Server
17. Configure iSCSI Initiator with proper IP settings
18. Add Hyper-V Manager Role
   a. If using SAN the C:\Storage\Volume## will become available for the default VHD and Configuration Locations
Migration Steps

19. Create New Cluster (Target Cluster)
   a. Add Newly install Server 2012 Node
   b. Run Validations
   c. Run all tests
      i. This will give you a report to fix anything that needs fixed prior to building a new cluster

20. Shutdown VMs on old cluster (Source Cluster)

21. Migrate Old Cluster Services and CSV to new Cluster by Running Cluster Migration Wizard
   a. Services from 2008R2 will now be Roles in Server 2012

22. Down Source Cluster

23. Online CSV on Target Cluster
Migration Steps

24. Bring VMs online
   a. If VM fails and stays in failed state, recreate VM Settings file by re-creating VM and attaching to VHD within CSV
25. Down other Node(s) and rebuild with Windows Server 2012 Datacenter. Install Hyper-V Manager Role and Failover Clustering & Multipath I/O Features
26. On target Cluster down all VMs
27. Add 2nd Node to Cluster and run all verification Tests, including storage
28. Verify Quantum (Witness) drive is added to the Cluster
29. Move VMs to 2nd Node to balance Cluster
30. Bring up VMs
Tips/Tricks

NICs
- Only need to set your VMs to Static if the NICs are shared across multiple VMs
- Wire all servers exactly the same

Warnings
- Some warnings are ok and expected if not doing all the validation tests

Witness Drive
- Only needed on 2 node clusters
- 3rd node will function as a witness

Testing - Document, Document, Document
- Try failovers - test your system so you know how they respond in an emergency
- Be unique - pull power cables, nic cables, iSCSI cables
- You created a failover cluster to avoid being down - are you sure it works?
Resources

http://tinyurl.com/kystehyperv1

http://tinyurl.com/kystehyperv2

http://tinyurl.com/kystehyperv3

http://tinyurl.com/kystehyperv4
Suggestions

- Multiple power sources
- Multiple iSCSI paths
- 3 Nodes
- Multiple SANs
- Bios Updates
- Research/Test if can
- Document, Document, Document

Questions??
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