



The science behind the report:

Dell EMC PowerEdge R650 servers running VMware vSphere 7.0 Update 2 can boost transactional database performance to help you become future ready

This document describes what we tested, how we tested, and what we found. To learn how these facts translate into real-world benefits, read the report [Dell EMC PowerEdge R650 servers running VMware vSphere 7.0 Update 2 can boost transactional database performance to help you become future ready](#).

We concluded our hands-on testing on May 19, 2021. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on May 17, 2021 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

To learn more about how we have calculated the wins in this report, go to <http://facts.pt/calculating-and-highlighting-wins>. Unless we state otherwise, we have followed the rules and principles we outline in that document. The results for the Dell EMC™ PowerEdge™ R640 and R630 server-based VMware® vSAN™ clusters are from a report that we published in September 2019 (<http://facts.pt/qnuhaw1>).

Table 1: Total orders per minute that each solution achieved while running online transaction processing (OLTP) workloads against SQL Server 2019 VMs. Higher is better.

Server cluster	Total orders per minute (OPM)
3 x Dell EMC PowerEdge R650	1,659,697
3 x Dell EMC PowerEdge R640	845,914
3 x Dell EMC PowerEdge R630	330,494

System configuration information

Table 2: Detailed information on the servers we tested.

Server configuration information	Dell EMC PowerEdge R650	Dell EMC PowerEdge R640	Dell EMC PowerEdge R630
BIOS name and version	Dell 1.1.2	2.1.8	2.9.1
Non-default BIOS settings	N/A	Performance per watt (OS)	Performance per watt (OS)
Operating system name and version/build number	VMware ESXi™ 7.0.2, 17867351	VMware ESXi 6.7.0, 13006603	VMware ESXi 6.7.0, 13006603
Date of last OS updates/patches applied	5/07/2021	5/29/2019	5/29/2019
Power management policy	N/A	Performance per watt (OS)	Performance per watt (OS)
System profile settings	Performance	N/A	N/A
Processor			
Number of processors	2	2	2
Vendor and model	Intel® Xeon® Gold 6330	Intel Xeon Gold 6230	Intel Xeon E5-2690 v3
Core count (per processor)	28	20	12
Core frequency (GHz)	2.00	2.10	2.60
Stepping	Model 106 Stepping 6	6	2
Memory module(s)			
Total memory in system (GB)	1,024	256	256
Number of memory modules	16	8	16
Vendor and model	Hynix HMAA8GR7AJR4N-XN	Micron 36ASF4G72PZ-2G9E2	Samsung® M393A2G40DB0-CPB
Size (GB)	64	32	16
Type	PC4-3200	PC4-2933	PC4-2133
Speed (MHz)	3,200	2,933	2,133
Speed running in the server (MHz)	3,200	2,933	2,133
Storage controller			
Vendor and model	N/A	PERC H740P Mini	PERC H730 Mini
Cache size (GB)	N/A	8	1
Firmware version	N/A	50.5.0-1750	25.5.5.0005
Driver version	N/A	7.708.07.00	7.708.07.00
Local storage (OS)			
Number of drives	2	2	2
Drive vendor and model	Micron MTFDDAV480TDS	Intel SSDSC2KB019T8R	Seagate® ST1200MM0007
Drive size	480 GB	1.92 TB	1.2 TB
Drive information (speed, interface, type)	6Gbps, SATA, M.2 SSD	6Gbps, SATA, SSD	10K, SAS, HDD

Server configuration information	Dell EMC PowerEdge R650	Dell EMC PowerEdge R640	Dell EMC PowerEdge R630
Network adapter			
Vendor and model	2 x Intel Ethernet 25G 2P E810-XXV	Intel XXV710	QLogic BCM57800
Number and type of ports	4 x 25Gb	2 x 25Gb	4 x 10Gb
Driver version	20.5.4	18.8.9	14.10.07
Cooling fans			
Vendor and model	Dell 03JYGF	Dell 384-BBQE	Dell TGC4J
Number of cooling fans	4	8	7
Power supplies			
Vendor and model	PWR SPLY, 1400W, RDNT, LTON	Dell 0PJMDN	Dell 0Y9VFC
Number of power supplies	2	2	2
Wattage of each (W)	1,400	750	750

Table 3: Detailed VMware vSAN storage configuration.

	Dell EMC PowerEdge R650	Dell EMC PowerEdge R640	Dell EMC PowerEdge R630
Number of vSAN nodes	3	3	3
vSAN disk groups per node	2	2	2
Total number of drives per vSAN node	8	8	6
vSAN cache tier			
Number of drives per disk group	1	1	1
Drive vendor and model	Samsung MZ-WLJ1T60	Dell Express Flash NVMe™ P4610	Intel SSDSC2BA40
Drive size	1.6 TB	1.6 TB	400 GB
Drive information (speed, interface, type)	NVMe PCIe® Gen 4, SSD, 2.5	NVMe PCIe Gen 3.1, SSD, 2.5	6 Gbps, SATA, SSD
vSAN capacity tier			
Number of drives per disk group	3	3	2
Drive vendor and model	Samsung MZ-WLJ1T60	Intel SSDSC2KB019T8R	Dell 31Y1M
Drive size	1.6 TB	1.92 TB	960 GB
Drive information (speed, interface, type)	NVMe PCIe Gen 4, SSD, 2.5	6 Gbps, SATA, SSD	6 Gbps, SATA, SSD

How we tested

In our data center, we set up a three-node vSAN cluster of Dell EMC PowerEdge R650 servers powered by Intel Xeon Gold 6330 CPUs and running VMware vSphere® ESXi 7.0 Update 2. With the release of 7.0 Update 2, VMware introduced remote direct memory access (RDMA) capability with vSAN, which allows each node to use remotely mapped memory from the other nodes without having to involve the CPU or OS, saving CPU cycles for additional work. We configured our cluster of PowerEdge R650 servers to use this new functionality.

To use RDMA with vSAN, you first need to set up a lossless layer 2 or layer 3 network, depending on whether you are routing traffic or not. For our testing, we set up a lossless layer 2 network on a Dell S5048 25-gigabit switch. See the section [Networking configuration details](#) on page <?> for configuration information. In addition, you need to enable Data Center Bridging (DCB) and Priority Flow Control (PFC) on the switchports you're using for vSAN. You will also need to set up a dcb-map with the priority group and the priority slot set to 3. We allocated 95 percent of the bandwidth to this priority group and enabled PFC on it as well. Additionally, VMware requires that the dcbx mode is set to IEEE and solutions use RoCEv2-capable network cards.

After configuring the switch, we installed the OS on each node, attached them to our VMware vCenter 7.0 Update 2 instance, and updated them with the included baselines through the update manager. Once the firmware and software updates completed, we enabled RDMA on the ESXi driver module, and enabled RoCEv2 on the Intel RDMA driver module. We restarted each system for the module to take effect and continued configuring vSAN. Finally, we created a cluster in vCenter and added the three nodes.

Next, we configured the networking for vSAN in ESXi. We created a virtual distributed switch (vDS) for VMware vSphere vMotion® using two of our four 25Gb ports and created another vDS for vSAN using one dedicated 25Gb port as our uplink. We further isolated our vSAN and vMotion traffic with the use of VLANs in the vDS and on the physical switch. We also set the MTU size to 9,000 from end to end and enabled the LLDP discovery protocol on each vDS.

Our all-flash vSAN cluster featured 1.6TB mixed-use NVMe SSDs. We created two diskgroups per node, using one SSD for caching and three SSDs for capacity in each diskgroup. After we configured and enabled vSAN and the health checks came back with no errors, we enabled RDMA for vSAN and created our VMs for testing. We created a primary SQL Server VM, installed Windows Server 2019 Datacenter and Windows SQL Server 2019, and updated the OS. After that, we cloned our primary VM to have 18 total VMs and ran our tests.

We stopped at 18 VMs for two reasons. First, we wanted to make sure that we balanced our VMs across each host and CPU. With a three-node cluster and 18 VMs, we achieved that balance with 6 VMs per node and 3 VMs per CPU. Second, we wanted to push the total CPU utilization of the cluster over 90 percent and leave room for any spikes or vSAN traffic.

For our infrastructure server and client host, we used a four-socket server with a 10Gb connection for DVD Store 2 traffic.

Installing VMware ESXi

1. Boot to the VMware ESXi installation media using a USB stick or CD/DVD.
2. To continue, press Enter.
3. To accept and continue, press F11.
4. Under Storage Device, select the installation drive, and press Enter.
5. Select US Default for keyboard layout, and press Enter.
6. Enter the root password twice, and press Enter.
7. At the Confirm Install window, press F11.
8. At the Installation Complete window, press Enter to reboot.
9. After reboot, press F2.
10. Log in with the root user/password, and press Enter.
11. Scroll to Configure Management Network, and press Enter.
12. Scroll to IPv4 Configuration, and press Enter.
13. Scroll to Static IPv4, and use the spacebar to select it.
14. Set the IPv4 address, Subnet Mask, and Default gateway.
15. To continue, press Enter.
16. Scroll to IPv6 Configuration, and press Enter.
17. Scroll to Disable IPv6, and use the spacebar to select it.
18. To continue, press Enter.
19. Scroll to DNS Configuration, and press Enter.
20. Scroll to manually configure DNS, and use the spacebar to select it.
21. Add Primary DNS Server, Alternate DNS Server, and provide the hostname for the system.
22. Scroll to Custom DNS Suffixes, and press Enter.
23. Add the suffix that is required for testing, and press Enter.
24. To accept the changes, press Esc.
25. To confirm changes, press Y. The system will reboot.

26. To configure the system after reboot, press F2.
27. Log in with the root user/password, and press Enter.
28. Scroll to Troubleshooting Options, and press Enter.
29. Select Enable ESXi Shell, and press Enter to enable it.
30. Select Enable SSH, and press Enter to enable it.
31. Scroll to Restart Management Agents, and press Enter.
32. To confirm, press F11.
33. To exit, press Esc.
34. To log out, press Esc.

Deploying the VMware vCenter Server 7.0

1. On a Microsoft Windows server or VM, locate the VMware-VCSA installer image using a USB stick or CD/DVD.
2. Mount the image, navigate to the vcsa-ui-installer folder, and double-click win32.
3. Double-click installer.exe.
4. Click Install.
5. Click Next.
6. Accept the terms of the license agreement, and click Next.
7. Leave selected the default Center Server with an Embedded Platform Services Controller, and click Next.
8. Enter the FQDN or IP address of the host onto which you are deploying the VMware vCenter Server® Appliance™.
9. Provide the server's username and password, and click Next.
10. To accept the certificate of the host you chose to connect to, click Yes.
11. Provide a name and password for the vCenter Appliance, and click Next.
12. Set an appropriate Appliance Size, and click Next.
13. Select the appropriate datastore, and click Next.
14. At the Configure Network Settings page, configure the network settings as appropriate for your environment, and click Next.
15. Review your settings, and click Finish.
16. When the deployment completes, click Continue.
17. At the Introduction page, click Next.
18. At the Appliance configuration page, select the time synchronization mode and SSH access settings, and click Next.
19. Select Create a new SSO domain.
20. Provide an SSO Domain name and SSO Site name.
21. Provide a password, confirm it, and click Next.
22. At the CEIP page, click Next.
23. At the Ready to complete page, click Finish.
24. At the Warning pop-up, click OK.
25. Once Stage 2 has completed successfully, click Close.

Creating a cluster and adding the hosts to VMware vCenter

1. Once logged into vCenter, navigate to Hosts and Clusters.
2. Select the primary site management vCenter.
3. Right-click the vCenter object, and select New Datacenter...
4. Enter a name for the new data center, and click OK.
5. Right-click the new data center, and click New Cluster...
6. Type vSAN for the name of the new cluster.
7. Leave all of the options untoggled, and click Next.
8. Review the details, and click Finish.
9. Once the cluster has been created, right-click the cluster, and click Add Host.
10. In the spaces provided, for the first server, enter the FQDN or the IP address and root credentials.
11. To add the remaining servers, click Add host, complete step 10 two more times, and click Next.
12. Check the box beside all three servers to accept the server's certificate, and click OK.
13. On the Host Summary page, click Next.
14. Click Finish.

Updating the hosts in the cluster

1. From the left-hand menu of vCenter, click the cluster.
2. Click Updates.
3. Under Attached Baselines, click Attach → Attach Baseline or Baseline Group.
4. Check the box next to each of the predefined patches, and click Attach.
5. Click Check Compliance.
6. Under Attached Baselines, check the box next to each Attached Baseline, and click Remediate.
7. Click Remediate.

Enabling RDMA on the Intel E810 NICs

Note: RDMA support in vSphere is available only on E800 controller NVMe firmware versions 2.42 or higher.

1. SSH into the first node in the cluster.
2. To enable RDMA and ROCEv2, type the following commands:

```
esxcli system module parameters set -m icen -p "RDMA=1,1,1,1"
esxcli system module parameters set -m irdman -p "ROCE=1,1,1,1"
```
3. Repeat steps 1 and 2 for the remaining two nodes in the cluster.
4. For the parameter changes to take effect, reboot each node.

Configuring the vSAN networking

1. Right-click Datacenter → Distributed Switch → New Distributed Switch.
2. Name the switch vMotion, and click Next.
3. Select 7.0.2, and click Next.
4. Set the number of uplinks to two.
5. Name the port group vMotion-PG, and click Next.
6. Click Finish.
7. Right-click Datacenter → Distributed Switch → New Distributed Switch.
8. Name the switch vSAN, and click Next.
9. Select 7.0.2, and click Next.
10. Set the number of uplinks to one.
11. Name the port group vSAN-PG, and click Next.
12. Click Finish.
13. Right-click the vMotion DVS → Settings → Edit Settings.
14. Click Advanced.
15. Change the MTU size to 9,000.
16. Change the discovery protocol to Link Layer Discovery Protocol.
17. Click OK.
18. Complete steps 13 through 17 on the vSAN DVS.
19. Right-click vMotion-PG → Edit Settings.
20. Select VLAN.
21. Change the VLAN type to VLAN, and set the VLAN ID to 100.
22. Click OK.
23. Right-click vSAN-PG → Edit Settings.
24. Select VLAN.
25. Change the VLAN type to VLAN, and set the VLAN ID to 200.
26. Click OK.
27. Right-click the vMotion DVS, and click Add and Manage Hosts.
28. Select Add Hosts, and click Next.
29. Click New hosts.
30. Select all three hosts, and click OK.
31. Click Next.
32. Select vmnic2, and click Assign uplink.
33. Select Uplink 1, and check the box next to Apply this uplink assignment to the rest of the hosts.
34. Click OK.

35. Select vmnic3, and click Assign uplink.
36. Select Uplink 2, and check the box next to Apply this uplink assignment to the rest of the hosts.
37. Click OK.
38. Click Next three times until you reach the screen where you can click Finish. Click Finish.
39. Right-click the vSAN DVS, and click Add and Manage Hosts.
40. Select Add Hosts, and click Next.
41. Click New hosts.
42. Select all three hosts, and click OK.
43. Click Next.
44. Select vmnic4, and click Assign uplink.
45. Select Uplink 1, and check the box next to Apply this uplink assignment to the rest of the hosts.
46. Click OK.
47. In Hosts and Clusters, expand the vSAN cluster.
48. Select the first host, and navigate to Configure.
49. Under Networking, select VMkernel adapters, and click Add Networking.
50. Select VMkernel Network Adapter, and click Next.
51. Under Select an existing network, click Browse.
52. Select vMotion-PG, and click OK.
53. Click Next.
54. Check the box next to the vMotion service, and click Next.
55. Select Use static IPv4 settings, assign an IP address, and click Next.
56. Click Finish.
57. Under Networking, select VMkernel adapters, and click Add Networking.
58. Select VMkernel Network Adapter, and click Next.
59. Under Select an existing network, click Browse.
60. Select vSAN-PG, and click OK.
61. Click Next.
62. Check the box next to the vSAN service, and click Next.
63. Select Use static IPv4 settings, assign an IP address, and click Next.
64. Click Finish.
65. For the remaining nodes in the vSAN cluster, complete steps 47 through 64.

Enabling three-node vSAN

1. Log into the vCenter web client, and navigate to Hosts and Clusters.
2. Expand the primary site management vCenter, and select the vSAN cluster.
3. Select Configure, and under Configuration, click Quickstart.
4. In Cluster basics, click Edit.
5. Toggle the vSAN option, and click OK.
6. In Configure cluster, click Configure.
7. Check the box next to Configure networking settings later, and click Next.
8. Keep the vSAN option defaults.
9. Under host options, add the IP address or FQDN of your time server, and click Next.
10. On the Claim disks screen, mark two disks from each server as cache drives, and mark the remaining six drives as capacity.
11. Click Next two times until you reach the screen where you can click Finish. Click Finish.

Enabling RDMA for vSAN

Note: It is possible to enable RDMA when initially setting up the cluster, but we configured vSAN first to make sure there were no errors before enabling RDMA.

1. After setting up the cluster, verify that there are no errors by selecting the cluster, going to the Monitor tab, and under vSAN, clicking Skyline Health.
2. Once verified, click Configure.
3. Under the vSAN drop-down menu, click Services.
4. Under Network, click Edit.
5. Toggle the RDMA support radio button, and click Apply.

Creating the SQL Server primary VM

1. In VMware vCenter, navigate to Virtual Machines.
2. To create a new VM, click the icon.
3. Leave Create a new virtual machine selected, and click Next.
4. Enter a name for the virtual machine, and click Next.
5. Place the VM on the desired host with available CPUs, and click Next.
6. Select the vSAN datastore to host the VM, and click Next.
7. Select the appropriate guest OS, and click Next.
8. In the Customize Hardware section, use the following settings:
 - a. Set the vCPU count to 16
 - b. Set the Memory to 8GB
 - c. Add one 80GB VMDK for OS, one 100GB VMDKs for database files, and one 60GB VMDK for database logs
9. Create two additional VMware Paravirtual SCSI controllers, and assign the data and log VMDKs to the new controllers.
10. Attach the Microsoft Windows Server 2019 ISO to the CD/DVD drive.
11. Click Next.
12. Click Finish.

Installing Windows Server 2019

1. Attach the Windows Server 2019 ISO to the virtual machine.
2. Open the VM console, and start the VM.
3. When prompted to boot from DVD, press any key.
4. When the installation screen appears, leave language, time/currency format, and input method as default, and click Next.
5. Click Install now.
6. When the installation prompts you, enter the product key.
7. Select Windows Server 2019 Datacenter Edition (Server with a GUI), and click Next.
8. Check I accept the license terms, and click Next.
9. Click Custom: Install Windows only (advanced).
10. Select Drive 0 Unallocated Space, and click Next. This starts Windows automatically, and Windows will restart automatically after completing.
11. When the Settings page appears, fill in the Password and Reenter Password fields with the same password. Log in with the password you set up previously.
12. Install VMware Tools in the VMs hosted on the ESXi servers.
13. From Server Manager, disable Windows Firewall.
14. Run Windows Updates.

Installing SQL Server 2019 on the primary VM

1. Attach the installation media ISO for SQL Server 2019 to the VM.
2. Double-click the Setup application.
3. In the left pane, click Installation.
4. Click New SQL Server stand-alone installation or add features to an existing installation.
5. Click the checkbox to accept the license terms, and click Next.
6. Click Use Microsoft Update to check for updates, and click Next.
7. On the Install Rules page, click Next.

8. Check the boxes for the following features, and click Next:
 - Database Engine Services
 - Full-Test and Semantic Extractions for Search
 - Client Tools Connectivity
 - Client Tools Backwards Compatibility
9. Leave the default instance, and click Next.
10. Leave the default Service Accounts, and click Next.
11. In Server Configuration, choose Mixed Mode, and enter and confirm a password for the SQL Server system administrator (sa) account.
12. Click Add Current User to Specify the SQL Server administrators.
13. In Data Directories, change the Data root directory to the database volume.
14. Choose the log volume for the User database log directory.
15. If you plan to have a locally stored backup, change the Backup directory to point to that drive.
16. Click TempDB.
17. Change the number of TempDB files to eight, and change its location to the Data volume.
18. Change the location of the TempLog file to the Log volume.
19. Click Next.
20. At the Error and usage reporting screen, click Next.
21. At the Installation Configuration Rules screen, check that there are no failures or relevant warnings, and click Next.
22. At the Ready to Install screen, click Install.
23. Close the installation window.
24. Download and install SQL Server Management Studio.

Enabling lock pages in memory on the Dell EMC PowerEdge R750 VMs

1. Click Start, type `gpedit.msc`, and press Enter.
2. In the Local Group Policy Editor, expand Computer Configuration → Windows Settings → Security Settings → Local Policies.
3. Select User Rights Assignment, and in the right pane, scroll to Lock pages in memory.
4. Right-click Lock pages in memory, and click Properties.
5. Click Add User or Group, and add your SQL user account (NT SERVICE\MSSQLSERVER).
6. Click OK.

Configuring and running the DVD Store 2 benchmark

Generating the data generation

We generated the data using the `Install.pl` script included with DVD Store version 2.1 (DS2), providing the parameters for our 20GB database and the database platform we used. To generate the database schema, we ran the `Install.pl` script on a utility system running Linux®.

After processing the data generation, we transferred the data files and schema creation files to a Windows-based system running SQL Server 2019. We built the 20GB database in SQL Server and performed a full backup, storing the backup file remotely for quick access.

We used that backup file to restore the database when necessary.

The only modification we made to the schema creation scripts were the specified file sizes for our database. We explicitly set the file sizes higher than necessary to ensure that no file-growth activity would affect the outputs of the test. Other than this file size modification, we created and loaded the database in accordance with the DVD Store documentation. Specifically, we followed these steps:

1. Generate the data, and create the database and file structure using database creation scripts in the DS2 download. Make size modifications specific to a 20GB database, and make the appropriate changes to drive letters.
2. Transfer the files from the Linux data generation system to a Windows system running SQL Server.
3. Create database tables, stored procedures, and objects using the DVD Store scripts.
4. Set the database recovery model to bulk-logged to prevent excess logging.
5. Load the generated data into the database. For data loading, use the import wizard in SQL Server Management Studio. Where necessary, retain options from the original scripts, such as Enable Identity Insert.
6. Create indices, full-text catalogs, primary keys, and foreign keys using the database-creation scripts.
7. Update statistics on each table according to database-creation scripts, which sample 18 percent of the table data.

- On the SQL Server instance, create a ds2user SQL Server login using the following Transact SQL (TSQL) script:

```
USE [master]
GO
CREATE LOGIN [ds2user] WITH PASSWORD=N'',
DEFAULT_DATABASE=[master],
DEFAULT_LANGUAGE=[us_english],
CHECK_EXPIRATION=OFF,
CHECK_POLICY=OFF
GO
```

- Set the database recovery model back to full.
- Using SQL Server Management Studio, create the necessary full text index.
- Create a database user, and map this user to the SQL Server login.
- Perform a full backup of the database. This backup allows you to restore the databases to a pristine state.

Cloning additional SQL Server VMs

After generating the database, creating the ds2user login, and storing the backup on the primary SQL VM, we cloned the rest of our VMs from the primary VM. For our testing, we created 18 SQL VMs.

- From a web browser, log into vCenter.
- Right-click the primary SQL VM, and select Clone → Clone to Virtual Machine.
- Enter a name for the VM, select a datastore location to store it, and click Next.
- Select the compute resource on which the VM will reside, and click Next.
- Set Select virtual disk format to Same format as source.
- Set VM Storage Policy to Keep existing VM storage policies.
- Select the appropriate datastore, and click Next.
- Deselect all clone options, and click Next.
- Review your settings, and click Next.

Running the DVD Store tests

We created a series of batch files, SQL scripts, and shell scripts to automate the complete test cycle. DS2 produces an orders-per-minute metric, which is a running average calculated through the test. We report the last OPM that each target reported.

Each complete test cycle consisted of the following steps:

- Clean up prior outputs from the target system.
- Drop the database from the target.
- Restore the database on the target.
- Reboot the target host and VMs.
- Wait for ping responses from the target VMs and the client system.
- Let the test server idle for 10 minutes.
- Start the DVD Store driver on the clients.

In addition, use the following parameters for testing:

```
ds2sqlserverdriver.exe --target=<target _ IP> --ramp_rate=10 --run_time=30 --n_threads=32 --db_
size=20GB --think_time=0.00 --detailed_
view=Y --warmup_time=15 --report_rate=1 --pct_newcustomers=20 --csv_output=<drivepath>
```

Networking configuration details

Configuration information the Dell S5048 switch

```
Current Configuration ...
! Version 9.14(2.8)
! Last configuration change at Tue Jun  1 16:07:52 2021 by admin
! Startup-config last updated at Sat May 29 05:02:36 2021 by admin
!
boot system stack-unit 1 default system://A
!
logging coredump stack-unit 1
logging coredump stack-unit 2
logging coredump stack-unit 3
logging coredump stack-unit 4
logging coredump stack-unit 5
logging coredump stack-unit 6
!
hostname DellEMC
!
protocol lldp
  advertise dot1-tlv port-protocol-vlan-id port-vlan-id
  advertise dot3-tlv max-frame-size
  advertise management-tlv management-address system-capabilities system-description system-name
  advertise interface-port-desc description
!
redundancy auto-synchronize full
!
enable password level 15 7 b125455cf679b208977c4f7f88315f9a4bfb576bb4df134f
!
username admin password 7 297a4f435cb9010182895c1658f993e7
!
stack-unit 1 provision S5048F-ON
!
interface twentyFiveGigE 1/1
  description vsan-n1-p1
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  spanning-tree rstp edge-port
  dcb-policy buffer-threshold RDMA
  dcb-map RDMA
  no shutdown
!
interface twentyFiveGigE 1/2
  description vsan-n1-p2
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  spanning-tree rstp edge-port
  dcb-policy buffer-threshold RDMA
  dcb-map RDMA
  no shutdown
!
```

```

interface twentyFiveGigE 1/3
  description vsan-n2-p1
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  spanning-tree rstp edge-port
  dcb-policy buffer-threshold RDMA
  dcb-map RDMA
  no shutdown
!
interface twentyFiveGigE 1/4
  description vsan-n2-p2
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  spanning-tree rstp edge-port
  dcb-policy buffer-threshold RDMA
  dcb-map RDMA
  no shutdown
!
interface twentyFiveGigE 1/5
  description vsan-n3-p1
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  spanning-tree rstp edge-port
  dcb-policy buffer-threshold RDMA
  dcb-map RDMA
  no shutdown
!
interface twentyFiveGigE 1/6
  description vsan-n3-p2
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  spanning-tree rstp edge-port
  dcb-policy buffer-threshold RDMA
  dcb-map RDMA
  no shutdown
!
interface twentyFiveGigE 1/17
  description vmotion-n1-p1
  no ip address
  mtu 9416
  portmode hybrid
  switchport
  no shutdown
!
interface twentyFiveGigE 1/18
  description vmotion-n1-p2
  no ip address
  mtu 9416

```

```
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/19
description vmotion-n2-p1
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/20
description vmotion-n2-p2
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/21
description vmotion-n3-p1
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/22
description vmotion-n3-p2
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/33
description Infrac1-port1
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/34
description Infrac1-port2
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/35
description Infrac2-port1
no ip address
mtu 9416
```

```

portmode hybrid
switchport
no shutdown
!
interface twentyFiveGigE 1/36
description Infra2-port2
no ip address
mtu 9416
portmode hybrid
switchport
no shutdown
!
interface ManagementEthernet 1/1
ip address 10.220.86.3/16
no shutdown
!
interface Vlan 1
!untagged twentyFiveGigE 1/1-1/6,1/17-1/22,1/33-1/36
!
interface Vlan 100
description vMotion
no ip address
mtu 9416
tagged twentyFiveGigE 1/17-1/22
no shutdown
!
interface Vlan 200
description vSAN
no ip address
mtu 9416
tagged twentyFiveGigE 1/1-1/6
no shutdown
!
management route 0.0.0.0/0 10.220.0.1
!
service-class dynamic dot1p
!
ip ssh server enable
!
dcb-buffer-threshold RDMA
priority 3 buffer-size 100 pause-threshold 95 resume-offset 75
!
dcb enable
!
dcb-map RDMA
priority-group 0 bandwidth 5 pfc off
priority-group 3 bandwidth 95 pfc on
priority-pgid 0 0 0 3 0 0 0 0
!
line console 0
line vty 0
line vty 1
line vty 2
line vty 3
line vty 4
line vty 5

```

```
line vty 6
line vty 7
line vty 8
line vty 9
!
reload-type
  boot-type normal-reload
  config-scr-download enable
!
end
```

Read the report at <http://facts.pt/MbQ1xCy> ►

This project was commissioned by Dell EMC.



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