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Introduction
This guide provides basic information on proper switch configuration for use with a Dell Networking N2024 switch (or switches) and the Scale HC3 cluster. This quick setup guide is not intended to cover hardware installation or advanced configuration options available with the Dell Networking N2024. If you are a more advanced user, you can reference switch guides from their manufacturers.

About the Dell Networking N2024
The Dell Networking N2024 switch is a high-performance Gigabit Ethernet 24 port switch. It provides easy scalability to include up to 12 switches. It combines simple setup with robust performance to meet the needs of customers setting up a Scale HC3 cluster.

About the HC3 Cluster
The HC3 cluster combines the benefits of server virtualization and shared storage into a converged IT infrastructure platform where virtualized workloads have direct access to a distributed, scalable pool of shared storage and compute resources. The cluster eliminates complex virtualization and storage architectures for greater cost savings and improved management efficiency.

Software Requirements for this Application Note
Prior to configuring the Dell Networking N2024 for use you will need to ensure the following software requirements are met:
- A computer with terminal emulator software configured for a baud rate of 9600, 8 data bits, 1 stop bit, no parity, and no flow control.

Equipment Requirements for this Application Note
Prior to configuring the Dell N2024 for use you will need to ensure the following environmental requirements are met:
- USB to Serial adapter
- Network cables with a minimum rating of CAT-5e
- (Optional) mini-SAS cables to configure multiple Dell Networking N2024 switches into a stack

Switch Configuration Planning
This section provides information on the switch configuration example used in this guide and the additional planning that may be required for your network requirements.

Example Used: Two Switches, Local Area Network (LAN) and Backplane – This example uses a very basic setup with two switches configured for High Availability (HA). The backplane is isolated on a separate VLAN. The remaining switch ports are put on the default VLAN for LAN network use. The two switches are configured in a stack using an HDMI interconnect.

In addition to this setup you may need to plan for additional configuration such as creating a separate VLAN for your LAN ports that match your existing LAN network or configuring a trunk link for additional VLANs. This type of setup is beyond the scope of this guide.

NOTE: Any changes made to the switch could potentially cause downtime. It is recommended to only make changes to the switch during the initial install or during a maintenance window.
Stacking (Recommended)
The Dell Networking N2024 switch has two mini-SAS ports for stacking multiple switches. You can stack two or more switches together for increased bandwidth and redundancy between the switches.

1. Insert one mini-SAS cable into the left port on the top switch in the rack and the other end in the right port on the switch below it.
2. Insert the mini-SAS cable into the right port on the top switch and the other end in the left port of the switch below it.

When the switches are powered on one switch will be configured with a Unit ID of 1, this is the Master switch. The second switch will have a Unit ID of 2, this will be the Master Backup switch. Any further switches connected would be Slave switches in the stack. You can see the Unit ID of the switch on the LED on the front panel of the switch. If you would like to set the Unit ID manually refer to the Setup Guide from Dell.

Initial Setup
This section describes how to log into the cli menu and begin configuration.

1. Connect to the switch with the Master Unit ID 1 using the console cable and terminal emulator. Reboot the switch and it will start the Setup Wizard.
2. Enter Y to begin the Setup Wizard.
3. When prompted to setup SNMP Management enter N. This can be configured in the UI at a later time.
4. Setup a User Account and Password for managing the switch stack.
5. When prompted to Setup VLAN 1 Routing Interface select Y.
6. Manually enter an IP Address, Subnet Mask, and Default Gateway for the switch. Alternatively you can enter DHCP to allow it to pull this information automatically from a DHCP server. This will be for the default VLAN 1.
7. An output will be displayed showing the configuration that was just completed. If everything is correct select Y to save the configuration. If anything is incorrect you can select N to restart the setup wizard.

Virtual Local Area Network (VLAN) Creation
VLANs should be used to divide the LAN and backplane networks of the HC3 cluster into separate broadcast domains.

1. Connect to the User Interface (UI) of the Dell Networking N2024 by navigating in a web browser to the IP address that you defined for the switch in the “Initial Setup” section.
2. In the left hand menu navigate to Switching > VLAN > VLAN Membership
3. Select the Add button at the top of the window
4. Add a new VLAN for the backplane network. We are creating a backplane VLAN only in this example and will leave the LAN side connections on the default VLAN 1. Ensure no existing traffic elsewhere in the network can possibly cross with backplane traffic on the VLAN ID you choose to assign. An example of a simple configuration would be:
   
   **VLAN ID: 100**
   **VLAN Name: Backplane**
5. Select Apply to create the VLAN

You are ready to assign ports to your VLAN in the “Assigning Ports to VLANs” section.

NOTE: Any configuration changes in the UI are saved to the running configuration. Once you are satisfied with the changes you have made you should select the Save button in the upper right of the UI to save the current running configuration to the startup configuration.
Assigning Ports to VLANs

This section describes how to assign ports to your newly created VLAN. Your configuration determines how ports are assigned. We recommend configuring 8 ports on each switch as backplane ports to allow for future expansion even if you do not currently have 8 nodes.

Example VLAN Port Assignment:
Two Switches, Local Area Network (LAN) and Backplane

To assign ports, take the following steps:
1. In the UI of the Dell Networking N2024 navigate to Switching > VLAN > Port Settings.
2. Select the Edit button at the top of the window.
3. Select gi1/0/17 for Unit ID 1 in the Port dropdown menus. This selects port 17 on the top switch.
4. Ensure the Port VLAN Mode is set to Access.
5. In PVID type 100.
6. Leave all other options default and select Apply.
7. Repeat steps for gi1/0/18-24 on Unit ID 1 and gi 1/0/17-24 on Unit ID 2.

NOTE: As stated previously, additional configuration may be required for LAN access with your existing network. This type of configuration is beyond the scope of this guide.

Disable Spanning Tree (Recommended)
The Spanning Tree Protocol (STP) is a network protocol that ensures a loop-free topology for bridged local area networks (LANs). STP allows a network design to include spare (redundant) links to provide automatic backup paths via STP without the need for manual intervention.

When STP is enabled, the protocol monitors the participating ports/ VLANs. Should there be a change in topology (a port goes active or a port goes down) STP blocks traffic on participating ports until the network topology is determined. When a topology change is discovered, the ports participating in STP are in a Blocking state; they will then move through a Listening, Learning, and then finally a Forwarding state (when traffic is then forwarded).
For this reason, STP should be disabled on the ports that Scale nodes are connected to. In order to disable STP on the Dell Networking N2024 take the following steps:

1. In the UI of the Dell Networking N2024 navigate to Switching > Spanning Tree > STP Port Settings.
2. Select the Edit button at the top of the window.
3. Select the first port that the Scale cluster is connected to in the Select a Port dropdown.
4. Set the STP dropdown to Disable.
5. Leave all other options default and select Apply.
6. Repeat steps for all ports that the Scale cluster is connected to.

Provide Feedback or Contact Support
If you have comments or suggestions regarding this document or other Scale Computing documentation, you can send them to documentation@scalecomputing.com.

If you need help, call +1-877-SCALE-59 (877-722-5359), and someone from the Scale Computing Technical Support Team will be happy to help you. You can also email Scale Computing Technical Support at support@scalecomputing.com or find them on the web at www.scalecomputing.com.

Disclaimer
This document provides information about using the Scale HC3 cluster with a Dell Networking N2024 switch. The Dell Networking N2024 switch is not a product of Scale Computing and is not covered under the support and warranty for the HC3 cluster. Scale Computing is not responsible for, and expressly disclaims all liability for, any issues or damages of any kind arising out of use of the Dell Networking N2024 switch. If you need assistance troubleshooting issues with your switch, you can contact Dell technical support.