NORTEL NETWORKS™

Engineering Tips & Tricks

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Did You Know...

Stock Quotes on MCS 5100

When version 2.0 is deployed and the OS hardened, it causes DNS to be turned off. In MCS code the URL "quotes.nasdaq.com" has a hard coded IP 208.249.117.65. This is a valid IP for NASDAQ quotes. URLs are no longer used in 2.0 with hardened OS, only IP addresses, which is fine as the MCS code relates URL to IP for quotes in 2.0.

To get stock quotes working:
From Management Console Modify IPCM-->Domains Tab ...
set Stock Query Provider field : Nasdaq
set Stock Query URL :
http://quotes.nasdaq.com
Leave all other fields as default.....

Login to the IPCM / IPCMs..
cd /IMS/esm/data/esm/config
vi Servers.Properties file......add line to file..... Application.Embedded=true ....position not relevant

Save file and restart IPCM for changes to take effect.
This needs to be done on all IPCMs in network. Phones connecting to IPCMs that haven't had this procedure done will not receive stock quotes.

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IN THE SPOTLIGHT
Fibre Channel Distance & Throughput Calculation

Ports require memory, or "buffers", to temporarily store frames as they arrive, then assembled in sequence, and delivered to the upper layer protocol. The number of buffers, or the number of frames a port can store, is called a "Buffer Credit" (BB_C).

Buffer credits within the switches and directors have a large part to play in the distance equation and utilization for a given bandwidth. The BB_C in the sending and receiving nodes heavily influence the throughput that is attained within the Fibre Channel. Fibre Channel architecture is based on a flow control that ensures a constant stream of data to fill the available pipe. A basic rule-of-thumb says that to maintain acceptable performance one BB_C is required for every 2 km distance covered.

Distance/2 KM = buffer credits
100 KM/2KM = 50 BB_C

Some FC switches can enable a feature that optimizes switch buffering to ensure the highest possible performance on ISLs. When this feature is installed on gateway switches, the ISLs (E_Ports) are configured with up to 60 buffer credits. The enhanced switch buffers help ensure that data transfer can occur at near-full bandwidth to efficiently utilize the connection over extended links. Distances vary depending on the manufacturer of the FC switch, typically 50 to 100 km.

Some FC switches have a limited pool of buffers that are rationed amongst its ports, to maximize buffer credits usage; a more precise formula can be used to calculate a more accurate number of BB_C for a given E port.
Using the previous example of 100 KM, the formula is as follows;

2 * distance in meters/4311 = BB_C (round-up)
2 * 100000/4311 = 46.39 or 47 BB_C

Another consideration is the achievable throughput for a given distance and frame size. For the same 100 KM distance with a 2 Kbyte frame size plus 8b/10b encoding (add two bits per byte) and the maximum BB_C configurable for that port, the following formula can be use to determine what maximum bandwidth that can be achieved, hence determining the type of connection.

BB_C * (frame size + 8b/10b)/round trip delay @ 5 usec per KM = max achievable BW

60 BB_C * 20 000/0.0005 = 2.4 Gbp/s

If only a 1 Gbp/s connection is available, then adjustment BB_C would be required.

25 BB_C * 20 000/0.0005 = 1 Gbp/s

If for a given connection speed and distance and maximum number of BB_C, you can the determine maximum achievable bandwidth;

Connection speed * (BB_C * 2 KM/ distance in KM) = max BW
1 Gbp/s * (60 * 2 KM/100 KM) = 1.2 Gbp/s

At this point, adjustment would be made by either decreased BB_C or increased distance.

ETHERNET SWITCHING
Using Mitel Phones with the "Untag PVID Only" Feature on BayStack 460

Recently a Nortel customer was connecting Mitel VoIP phones to a BayStack 460 switch running BoSS 3.0 software. The phone set contains an integrated switch which provides workstation connectivity. Traffic from the phone to the BayStack consists of VoIP traffic which is 802.1q tagged and Data traffic from the workstation which is untagged.

The customer wanted Voice and Data traffic to be placed into different VLANs which were defined on the BayStack. To accomplish this, the "tagging" parameter for the port (i.e. 1 in the CLI sample below) was set to "untagPvidOnly":

BS460(config)#**vlan ports 1 tagging untagPvidOnly**

In addition, the PVID (Port VLAN Id) was set to the VLAN Id of the Data VLAN. Thus, untagged Data packets received by the port are placed into this "default" VLAN while tagged Voice packets are classified to the appropriate VLAN.

For traffic leaving the BayStack port, the "untagPvidOnly" feature enables the BayStack 460 to transmit Voice traffic with the appropriate VLAN header and transmit Data traffic as untagged. This prevents broadcasts in one VLAN from being received by both the phone and workstation.

IP TELEPHONY

BCM 3.5 Professional Call Center Screen Pops

A popular request among medium size businesses that sell products over the phone are screen pops for Professional Call Center.

BCM 3.5 comes with Personnel Call Manager that shows screen pops on the registered workstation. The application may not be the exact functionality the customer needs, yet it indicates TAPI and CTE engine work together. In our Richardson lab, Windows XP is running with PCM and a sample Visual Basic .NET application to show other screen pops that indicate the incoming caller. Below is information on the Microsoft TAPI.

➢ TAPI version 3.0 requires Windows 2000 or later.
➢ TAPI version 3.1 requires Windows Server 2003 family or Windows XP.

Nortel Networks provides a developers program that an individual or a group of developers can develop applications for the BCM. Visit the link below:

Developer Program
http://www.nortelnetworks.com/prd/dpp/

Developer Categories
http://www.nortelnetworks.com/prd/dpp/join/ent_mem.html

Developer Partners
http://www.nortelnetworks.com/prd/dpp/ent_bcm_partners.html

NETWORK AND SERVICE MANAGEMENT

How to Make BayStack-5510 and WSS-2250 Icons Appear in InfoCenter on Client-Installed Optivity NMS Systems

To support new switching devices such as the Wireless Security Switch (WSS) 2250 and BayStack 5510 switch in Optivity NMS (ONMS) 10.1, you must install their respective Optivity Integration Toolkit (OIT) on the ONMS server. OIT packages for all Nortel switching and routing products can be downloaded from the Nortel Networks Customer Support website at *www.nortelnetworks.com*.

After installing the OIT packages on your ONMS server, it is possible that the icons for BayStack 5510 and WSS-2250 switches may not be populated in the InfoCenter - Resources/Switches folder on your MS Windows NT/2000 ONMS client. The diagram below illustrates an example of what you might encounter.
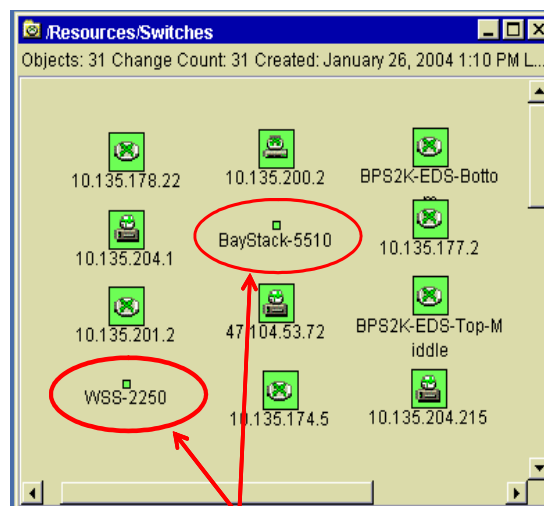

Missing icons

To enable the proper icons in InfoCenter, you must copy (or FTP) the GIF files for these devices to the *<drive>:\Optivity\NMS\images\devices* directory on your Windows NT/2000 client machine. After the transfer is completed, exit and restart InfoCenter on your client PC for the new icons to take effect (see diagram below).

The *GIF* files for a given device are incorporated in its OIT package. For instance, the WSS-2250 "*gifs*"

folder can be found under the main '*NMS_WSS2250 _v110_A*' folder in the WSS OIT.
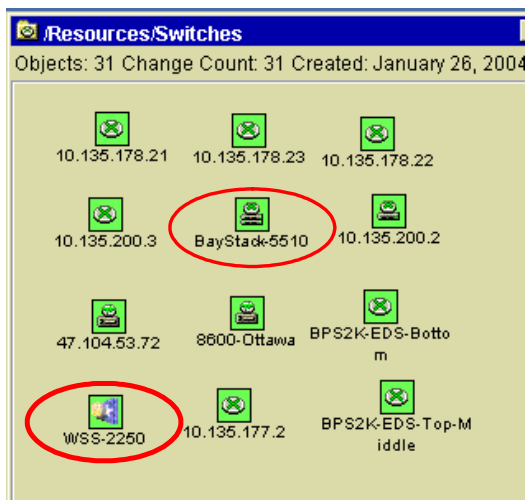
OPTICAL ENTERPRISE
High Level Overview of OM3500 Shelf Software Upgrade

Assuming that there is an NPx in the ring, you have a workstation running Preside Site Manager (PSM) that is able to connect to the NPx, and the new software is available on the workstation, follow these high level steps to perform the software upgrade. Check the CAPs available under "Technical Documentation" for OPTera Metro 3500 on www.nortelnetworks.com for more details.

1. Before performing the upgrade do the following:
    a. Backup Shelf Configurations by connecting to the NP using PSM and selecting the "Configuration"-"Backup and Restore" option. Select the "Save All SPs to NP" which saves the shelf configurations to the NP. Once on the NP you can download the config information to the workstation.
    b. Save OPE config files by connecting to the OPE either in-band or out-of-band and issuing the "save" command.
    c. From PSM obtain Hardware Revision numbers for each Circuit Pack under "Configuration"-"Inventory". Check this info against the "OM3500 SW Release 10

and 11 Hardware Baseline" document available at www.nortelnetworks.com in order to make sure that existing hardware will be compatible with the new software.

2. Upgrade the NPx
    a. Connect to the NPx and make sure there is enough free disk space. There should be more than 20 Meg available.
    b. In PSM select "Configuration"-"Release Management" and "Add" the software from the workstation to the NPx's hard disk.
    c. In PSM select "Configuration"-"Upgrade Management" and specify the new software release to use.   The software is loaded from the NPx. Go through the following steps to upgrade:
        i.   Check – verifies that hardware is in correct state for upgrade
        ii.   Load – verifies the checksum and transfers software to the circuit pack
        iii. Invoke – resets the circuit pack and applies the software to memory
        iv.   Commit – deletes previous software version from memory

3. Upgrade the Network Elements by connecting to the shelf and repeating step 2c.

4. If necessary, upgrade the OPE FPGA firmware – In PSM select "Configuration"-"FPGA Download". Select the OPE module and "Load" the firmware from the NPx. Once the code is loaded the OPE must be Cold Restarted which is traffic affecting.

Once the upgrade is complete repeat step 1a.

SECURITY/VIRTUAL PRIVATE NETWORK
Contivity

[Contivity 221 Asymmetric Branch Office Tunnel](#) configurations for deployment from Central Office locations using the Web GUI.

[Contivity – Cisco PIX IPSec peer-to-peer branch office tunnel using pre-shared key authentication](#)

Contivity - Cisco PIX IPSec peer-to-peer branch office tunnel using certificates authentication

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- *If you are an Enterprise customer*, you can receive it through our Nortel Networks Update. Subscribe for this monthly e-newsletter to provide you with the latest updates on Nortel Networks, Products and Solutions, Training and Certification, Industry News, Events, Promotions, and much more.

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It's easy to do! If you already have a Nortel Networks User ID/Password you can simply Modify Your Profile. (an easy check to see if you are already personally registered is when you can login to the Customer Support website, in the upper left hand corner your name will appear and advise if you are logged in or not).

If your name does not appear, you must Register with Nortel Networks first and then you can Modify Your Profile to receive technical updates.

This publication will evolve based on your content and information requirements, therefore please feel free to provide feedback on the design and organization of this publication to: pnf@nortelnetworks.com.