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### **show port** command

This command provides status of all available user ports of the given switch, including:

Admin State: Online, Offline, Down, Diagnostics

Operational State: whether the port is online or offline

Login Status: whether a device is logged into the port, or not

Config State: GL, G, F, FL, or Donor

Running Type: If a device is not logged into the port, it will be listed as: Unknown. If a device is logged into the port, possible fields, include: E, F, FL, Donor.

Link State: Provides whether a device is currently communicating with the port. It will list it as either: Inactive, or Active.

Link Speed: Provides information on the set port speed. Options include: 1Gb/s, 2Gb/s, 4Gp/s, or Auto. If the 10Gig ISL ports are available with this switch: 10Gb/s

Uses:

Use this command to determine if a device is logged into, and communicating correctly with switch port. If the device is not logged into the port, check the Link Speed, and compare the port speed setting of the device.

Example:

```
SANbox #> show port
```

```
Admin Operational Login Config Running Link Link
```

```
Port State State Status Type Type State Speed
```

```
-----
```

```
0 Online Offline NotLoggedIn GL Unknown Inactive Auto
```

```
1 Online Offline NotLoggedIn GL Unknown Inactive Auto
```

```
2 Online Online LoggedIn GL F Active 2Gb/s
```

```
3 Online Online LoggedIn GL F Active 2Gb/s
```

4 Online Online LoggedIn GL F Active 2Gb/s  
5 Online Online LoggedIn GL F Active 2Gb/s  
6 Online Online LoggedIn GL FL Active 2Gb/s  
7 Online Online LoggedIn GL FL Active 2Gb/s  
8 Online Offline NotLoggedIn GL Unknown Inactive Auto  
9 Online Offline NotLoggedIn GL Unknown Inactive Auto  
10 Online Offline NotLoggedIn GL Unknown Inactive Auto  
11 Online Online LoggedIn GL E Active 2Gb/s  
12 Online Online LoggedIn GL E Active 2Gb/s  
13 Online Online LoggedIn GL E Active 2Gb/s  
14 Online Online LoggedIn GL E Active 4Gb/s  
15 Online Online LoggedIn GL E Active 2Gb/s

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show port x command

This command provides information about a specific port in the switch. Contains the same information as 'show port', plus a wide variety of additional information.

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### **SFP information command**

This command provides information about the SFP vendor, Part Number, Revision, etc. Fields include: MediaPartNumber, MediaRevision, MediaType, MediaVendor, MediaVendorID, SyncStatus, and XmitterEnabled.

Uses:

Use to determine if SFP is supported for that specific switch. If not, it could be the reason why there is a connection or I/O problem. Can also be used to determine elementary SFP problems. On occasion, a SFP that is having problems, will report no information, or garbled information to the switch when it was queried.

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### **FC Frame and Ordered Set Counters**

This section of the 'show port x' output contains the same information as found in the 'Port Stats' tab of the QLogic® SANsurfer® Switch Manager.

Uses:

DecodeErrors: This counter increments when there are transmission protocol errors at the FC-1 Layer. This contains 8B/10B encoding, order of word transmission, and error detection. This Layer is described in the FC-PH standard. It is common to see this counter increment up to several thousand times over a second or two, especially when a cable is unplugged and then re-

plugged into the switch port or attached device. However, if this has incremented millions of times over a short time period, or is incrementing at a steady rate while connected, this would indicate a problem with the SFP or SFF (at the device end), and/or the cable. If using long lengths of cable between the switch port and the device, this could indicate a problem with signal integrity. A smaller diameter Fiber cable may be necessary, or a different SFP/SFF with a stronger signal.

**LIP\_Counters:** If these counters are incrementing at a steady rate, it would indicate a problem with the attached device staying logged into the switch port. The device is either losing its ALPA, or can be having a problem logging into the switch port, if it is trying to transition from a Loop device (FL\_Port) to a Fabric Point-to-Point device (F\_Port). This can also be due to compatibility issues with the device's firmware and/or OS driver software.

**LinkFailures, LoopTimeouts, LossofSync:** When any of these counters increment, the attached device has failed to login to the switch port, or is failing offline (losing connection with the switch port). These counters can indicate a failing HBA or storage controller. Look at the other counters given above to help determine cause.

**RxLinkResets:** This counter increments when the switch port has received a Link Reset from the attached device. When this counter normally increments, it generally comes from a HBA. When a HBA performs a Link Reset, it is primarily told to do so by the OS. This will occur when the OS driver has not received a response for a specified period of time (TOV). This is commonly seen when the HBA has sent to many SCSI commands to a storage device, and the storage has not returned any responses. This can indicate that the storage is too busy to respond, and thus requires that the queue depth or execution throttle needs to be reduced.

**TxLinkResets:** This counter increments when the switch port issues a Link Reset to the attached device. This is generally due to the port buffers being full, and/or the attached device has not responded to requests by other devices in the Fabric.

Example:

```
SANbox #> show port 6
Port Number: 6
-----
AdminState Online OperationalState Online
AsicNumber 0 PerfTuningMode Normal
AsicPort 6 PortID 650600
ConfigType GL PortWWN 20:06:00:c0:dd:06:fe:cc

DiagStatus Passed RunningType F
EpConnState None MediaPartNumber PL-XPL-00-S23-28
EpIsoReason NotApplicable MediaRevision
IOStreamGuard Disabled MediaType 200-M5-SN-I
LinkSpeed 2Gb/s MediaVendor PICOLIGHT
LinkState Active MediaVendorID 00000485
```

LoginStatus LoggedIn SymbolicName Port6  
MaxCredit 16 SyncStatus SyncAcquired  
MediaSpeeds 1Gb/s, 2Gb/s XmitterEnabled True

ALInit 3 LIP\_F8\_F7 0  
ALInitError 0 LinkFailures 0  
BadFrames 0 Login 1  
BBCR\_FrameFailures 0 Logout 0  
BBCR\_RRDYFailures 0 LongFramesIn 0  
Class2FramesIn 0 LoopTimeouts 0  
Class2FramesOut 0 LossOfSync 0  
Class2WordsIn 0 LostFrames 0  
Class2WordsOut 0 LostRRDYs 0  
Class3FramesIn 9713674 PrimSeqErrors 0  
Class3FramesOut 761598 RxLinkResets 0  
Class3Toss 0 RxOfflineSeq 0  
Class3WordsIn 4564222774 ShortFramesIn 0  
Class3WordsOut 11525729 TotalErrors 0  
DecodeErrors 0 TotalLinkResets 1  
EpConnects 0 TotalLIPsRecvd 0  
FBusy 0 TotalLIPsXmitd 5  
FlowErrors 0 TotalOfflineSeq 4  
FReject 0 TotalRxFrames 9713674  
InvalidCRC 0 TotalRxWords 4564222774  
InvalidDestAddr 0 TotalTxFrames 761598  
LIP\_AL\_PD\_AL\_PS 0 TotalTxWords 11525729  
LIP\_F7\_AL\_PS 0 TxLinkResets 1  
LIP\_F7\_F7 0 TxOfflineSeq 4  
LIP\_F8\_AL\_PS 0

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show config port command

This command is similar to the 'show port' command. All ports of the switch are shown. Duplicate columns include: 'Admin State', 'Link Speed', and 'Port Type'/'Config Type'.

This command provides these additional parameters: 'Symbolic Name' and 'IOStreamGuard'.

Uses:

This command is primarily used to quickly view any names assigned to the switch ports, and how I/O StreamGuard has been applied to each port. This command, however, does not tell the user where or not I/O StreamGuard is enabled or disabled for a specific port, unless it has been manually set.

Example:

SANbox #> show config port  
Configuration Name: default

-----  
Symbolic Admin Port Link  
Port Name State Type Speed IOStreamGuard

-----  
0 Port0 Online GL Auto Disabled  
1 Port1 Online GL Auto Auto  
2 Port2 Online GL Auto Auto  
3 Port3 Online GL Auto Auto  
4 Port4 Online GL Auto Auto  
5 Port5 Online GL Auto Auto  
6 Port6 Online GL Auto Auto  
7 Port7 Online GL Auto Disabled  
8 Port8 Online GL Auto Auto  
9 Port9 Online GL Auto Auto  
10 Port10 Online GL Auto Auto  
11 Port11 Online GL Auto Auto  
12 Port12 Online GL Auto Auto  
13 Port13 Online GL Auto Auto  
14 Port14 Online GL Auto Auto  
15 Port15 Online GL Auto Auto

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show config port x command

This command allows the user to view numerous settings for a given switch port. Most of these settings cannot be viewed using SANsurfer Switch Manager.

Admin State: Online, Offline, Down, Diagnostics  
LinkSpeed: 1=1Gb/s, 2=2Gb/s, 4=4Gb/s, A=Auto  
PortType: GL / G / F / FL / Donor  
SymPortName: string, max=32 chars  
ALFairness: True / False  
DeviceScanEnable: True / False  
ForceOfflineRSCN: True / False  
ARB\_FF: True / False  
InteropCredit decimal value, 0-255  
ExtCredit: dec value, increments of 15, non-loop only  
FANEnable: True / False  
AutoPerfTuning: True / False  
MSEnable: True / False  
NoClose: True / False

IOStreamGuard: Enable / Disable / Auto  
PDISCPingEnable: True / False

Uses:

When using JBODs, make sure that **ALFairness** is enabled. This is especially true for older FC disk drives. ALFairness allows multiple concurrent Hosts to equally share each disk drive in the JBOD array. Although the Fibre Channel standards requires fairness of use, older disk drives do not always follow this standard. ALFairness enforces this by allowing no Host to have access to a single Loop Target for more than one Exchange, when multiple Hosts are trying to access the same drive.

**DeviceScanEnable** by default is enabled. This routine, provides the additional information to the switch to determine if the port-attached device is an Initiator or a Target. It also is used to try and gather additional information from the device that it does not provide when it registers with the switch's Name Server. This can include Vendor Make and Model, Serial Number, Revision Number, etc.

Certain devices, such as older 1- and 2-Gig HBAs do not behave well when this routine is used on it by the switch. In certain situations such as the initial Apple-branded LSI PCI HBAs can lockup when it receives this standard inquiry command. If this occurs, this switch option should be disabled on any port that is connected to such a device. It is worth noting, that when DeviceScanEnable is disabled, the device in question may be seen in the SANsurfer Switch Manager, or commands as 'show ns' and 'show ns all', as "Unknown", or the Initiator/Target field may be blank.

This will also affect I/O StreamGuard, especially if this option is set to 'Auto'. Since the switch cannot tell if it is an Initiator or Target, the wrong I/O StreamGuard setting maybe applied. So, if DeviceScanEnable is DISABLED, then I/O StreamGuard MUST be manually set.

**IOStreamGuard** performs two different operations:

- 1.) Masks a device from Initiator-based Name Server queries.
- 2.) Does not allow Port RSCNs to be propagated to other I/O StreamGuard enabled ports.

When DeviceScanEnable is active, the switch can determine if the attached device is an Initiator or a Target. If IOStreamGuard is set to 'Auto', the switch will automatically enable I/O StreamGuard if the attached device is an Initiator, or disable it, if it is a Target.

However, if DeveiceScanEnable is disabled, the switch will not be able to enable, or disable I/O StreamGuard. Hence, it needs to be set manually.

Under certain circumstances, the IOStreamGuard option has to be manually disabled.

- 1.) If a MetaData Controller(s) is being used in the Fabric, that MDC may require the need to 'see' all of the Hosts in the Fabric. If this is the case, then I/O StreamGuard MUST be disabled for any port that has an Initiator that the MDC is required to integrate.

2.) Certain storage arrays, such as Hitachi Data Storage products (including TagmaStore) require the ability to 'see' all Hosts that it will be communicating with during I/O. As a result, the IOStreamGuard option MUST be disabled for those Hosts.

**PDISCPingEnable** by default is set to True. This routine will ping a device every 5 seconds that is attached to the specified port where this option is enabled. It is primarily used to "check-in" on disk drives in JBOD arrays. When a disk drive fails, it rarely notifies the Fabric that it is leaving. This routine periodically will check to make sure that these devices are still active. If they do not respond to the PDISC ping, the switch will remove that device from the Name Server. A RSCN will then be issued into the Fabric to notify all Hosts that this device is no longer available.

Under certain conditions, especially very heavy I/O, older FC disk drives will not be able to respond to this ping. If this occurs, and the disk drive is still active, then PDISCPingEnable MUST be disabled for this specific port.

Example:

```
SANbox #> show config port 1
```

```
Configuration Name: default
```

```
-----
```

```
Port Number: 1
```

```
-----
```

```
AdminState Online  
LinkSpeed Auto  
PortType GL  
SymbolicName Port1  
ALFairness False  
DeviceScanEnabled True  
ForceOfflineRSCN False  
ARB_FF False  
InteropCredit 0  
ExtCredit 0  
FANEnabled True  
AutoPerfTuning True  
MSEnabled True  
NoClose False  
IOStreamGuard Auto  
PDISCPingEnabled True
```

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show config threshold command

Threshold Monitoring is disabled, by default. This command allows the user to view the various trigger settings for each of the threshold monitors that the switch supports. When enabled, these monitors will generate alarms, and recorded events in the switch log file.

The threshold monitors used, include:

**CRCErrorsMonitoringEnabled** - Indicates that bad frames are being created and sent to the switch. The switch will pass these onto the destination, and let this device determine a course of action.

**DecodeErrorsMonitoringEnabled** - These errors are created at FC-1Layer. This Layer is where the Fibre Channel transmission protocol is found. Large numbers of these errors indicate a physical layer problem; including failing SFP or SFF, deteriorating cable, a cable with too sharp of a bend radius, or physical connection problem (not fully locked into position).

**ISLMonitoringEnabled** - This will log the number of times an ISL connection occurs. It is used to help determine if there interswitch connection problems. Should be used in conjunction with other monitor counters to determine cause of an ISL going offline and coming back online.

**LoginMonitoringEnabled** - This will log the number of times there are device login errors to the switch port. Can be used in conjunction with other threshold monitors and port counters to document and determine cause of connection failure.

**LogoutMonitoringEnabled** - Same as above, but logs the number of device logout errors.

**LOSMonitoringEnabled** (LOS = Loss of Signal) - This counter should not log anything unless a device has been physically unplugged from the switch port, or an improper logout procedure. Alarm messages generated by this monitor would indicate a physical failure occurring with the connection between the port and the attached device.

**show donor** - Provides the administrator with information about what port's buffers have been donated to another port, and how many credits have been provided. The output provided is for all ports, except the 10Gbps ports.

Example:

SANbox #> show donor

Port Config Ext Credit Max Credit Donated Member of Valid Groups to  
Number Type Requested Available to Port Donor Group Extend Credit

-----  
0 GL 0 16 None 0 0  
1 GL 0 16 None 0 0  
2 GL 0 16 None 0 0  
3 GL 0 16 None 0 0  
4 GL 0 16 None 0 0  
5 GL 0 16 None 0 0  
6 GL 0 16 None 0 0



7 GL 0 16 None 0 0  
8 GL 0 16 None 0 0  
9 GL 0 16 None 0 0  
10 GL 0 16 None 0 0  
11 GL 0 16 None 0 0  
12 GL 0 16 None 0 0  
13 GL 0 16 None 0 0  
14 GL 0 16 None 0 0  
15 GL 0 16 None 0 0

Donor Group Credit Pool

-----  
0 0

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show perf command

This command provides throughput performance in either bytes/second or frames/second. Various options can provide overall throughput values, or can be delineated to input bytes or frames, output bytes or frames, or only errors.

This command is used to provide an alternative to the graphical SANsurfer Performance Viewer. It can be used to view any throughput issues, or potential or problems. Can also be used to determine utilization rates of connections and I/O between Initiators and Targets.

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show ns all command

This command provides an accumulative view of all Name Server entries in the Fabric. It provides the Domain ID of the switch, Port IDs of the registered devices, along with its configured port type Class of Service, along with the WWNN and WWPN associated with those devices. Can be used to quickly determine if specific devices are online and have registered with a Name Server.

Example:

SANbox #> show ns all

Seq Domain Port Port

No ID ID Type COS PortWWN NodeWWN

-----

1 97 (0x61) 610000 N 3 21:01:00:e0:8b:25:a8:26 20:01:00:e0:8b:25:a8:26  
2 97 (0x61) 610100 N 3 21:00:00:e0:8b:05:a8:26 20:00:00:e0:8b:05:a8:26  
3 97 (0x61) 610200 N 3 21:00:00:e0:8b:05:a6:8d 20:00:00:e0:8b:05:a6:8d  
4 97 (0x61) 610300 N 3 21:00:00:e0:8b:05:b8:8e 20:00:00:e0:8b:05:b8:8e

```
5 97 (0x61) 610400 N 3 21:01:00:e0:8b:29:c2:c3 20:01:00:e0:8b:29:c2:c3
6 97 (0x61) 610500 N 3 21:00:00:e0:8b:09:c2:c3 20:00:00:e0:8b:09:c2:c3
```

Seq Domain Port Port

No ID ID Type COS PortWWN NodeWWN

```
-----
1 98 (0x62) 620000 N 3 28:00:00:06:53:38:be:e0 10:00:00:06:53:38:be:e0
2 98 (0x62) 620f00 N 3 29:00:00:06:53:38:be:e0 10:00:00:06:53:38:be:e0
```

Seq Domain Port Port

No ID ID Type COS PortWWN NodeWWN

```
-----
1 99 (0x63) 630c00 N 3 21:01:00:e0:8b:a3:13:cd 20:01:00:e0:8b:a3:13:cd
2 99 (0x63) 630d00 N 3 21:00:00:e0:8b:83:13:cd 20:00:00:e0:8b:83:13:cd
```

Seq Domain Port Port

No ID ID Type COS PortWWN NodeWWN

```
-----
1 100 (0x64) 640000 N 3 28:00:00:06:53:38:bd:00 10:00:00:06:53:38:bd:00
2 100 (0x64) 640f00 N 3 29:00:00:06:53:38:bd:00 10:00:00:06:53:38:bd:00
```

Seq Domain Port Port

No ID ID Type COS PortWWN NodeWWN

```
-----
1 101 (0x65) 650600 N 3 21:60:00:c0:ff:80:49:6d 20:60:00:c0:ff:00:49:6d
2 101 (0x65) 650700 N 3 22:60:00:c0:ff:a0:49:6d 20:60:00:c0:ff:00:49:6d
3 101 (0x65) 650800 N 3 25:60:00:c0:ff:c0:49:6d 20:60:00:c0:ff:00:49:6d
4 101 (0x65) 650900 N 3 26:60:00:c0:ff:e0:49:6d 20:60:00:c0:ff:00:49:6d
5 101 (0x65) 650adc NL 3 21:00:00:04:cf:73:9f:48 20:00:00:04:cf:73:9f:48
6 101 (0x65) 650ae0 NL 3 21:00:00:04:cf:73:a1:65 20:00:00:04:cf:73:a1:65
7 101 (0x65) 650ae1 NL 3 21:00:00:04:cf:73:a1:c3 20:00:00:04:cf:73:a1:c3
8 101 (0x65) 650ae2 NL 3 21:00:00:04:cf:73:9f:92 20:00:00:04:cf:73:9f:92
9 101 (0x65) 650bdc NL 3 22:00:00:04:cf:73:9f:48 20:00:00:04:cf:73:9f:48
10 101 (0x65) 650be0 NL 3 22:00:00:04:cf:73:a1:65 20:00:00:04:cf:73:a1:65
11 101 (0x65) 650be1 NL 3 22:00:00:04:cf:73:a1:c3 20:00:00:04:cf:73:a1:c3
12 101 (0x65) 650be2 NL 3 22:00:00:04:cf:73:9f:92 20:00:00:04:cf:73:9f:92
```

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show ns <port id number(s)> command

The results of this command provides the same information as 'show ns all', but only for a specific switch port, or specified group of ports. It can be used to quickly validate a specific device located on this port.

Example:

```
SANbox #> show ns 650600
Port ID: 650600
-----
PortType N
PortWWN 21:60:00:c0:ff:80:49:6d
SymbolicPortName (NULL)
NodeWWN 20:60:00:c0:ff:00:49:6d
SymbolicNodeName (NULL)
NodeIPAddress 0.0.0.0
ClassOfService 3
PortIPAddress 0.0.0.0
FabricPortName 20:06:00:c0:dd:06:fe:cc
FC4Type FCP
FC4Desc DotHill SANnet II FC (Rev. 327P)
```

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show fabric command

Provides information about all switches, routers, and gateways that are in the Fabric, which share Domain information. Information included with this commands output include: DomainID, WWN, any inband or out-of-band Ethernet addressing, and symbolic name.

This command can be used to make a quick check to make sure all switches are in the Fabric and are communicating with each other. It can also be used to validate IP addresses of each switch, router, or gateway.

Example:

```
SANbox #> show fabric
Domain WWN Enet IP Addr FC IP Addr SymbolicName
-----
97 (0x61) 10:00:00:c0:dd:06:fb:f6 10.31.80.199 0.0.0.0 DG199
98 (0x62) 10:00:00:06:53:38:be:e1 10.31.80.236 0.0.0.0 cLAB_5428
99 (0x63) 10:00:00:c0:dd:06:fb:fb 10.31.4.48 0.0.0.0 DG200
*100(0x64) 10:00:00:06:53:38:bd:01 10.31.80.237 0.0.0.0 SYS237
101(0x65) 10:00:00:c0:dd:06:fe:cc 10.31.80.201 0.0.0.0 DG201
```

\* indicates principal switch

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show fdmi command

This command provides information related to the Fabric Device Monitoring Interface specification for Initiators and Targets. If the Initiator HBA or Target have been enabled to

support FDMI, various specification about the device can be provided. They include: HBA identification, port number ID, manufacturer of the HBA, model number of the HBA, and the number of ports.

Example:

```
SANbox #> show fdmi
```

```
HBA ID Port ID Manufacturer Model Ports
```

```
-----  
21:00:00:e0:8b:05:a8:26 610100 QLogic® Corporation QLA2344 1  
21:01:00:e0:8b:25:a8:26 610000 QLogic Corporation QLA2344 1
```

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```
show fdmi <port wwn(s)> command
```

The results of this command provides the same information as 'show fdmi', but only for a specific switch port or ports. It can be used to quickly validate a specific device is located on this port.

Example:

```
SANbox #> show fdmi 21:00:00:e0:8b:05:a8:26  
FDMI Information
```

```
-----  
Manufacturer QLogic Corporation  
SerialNumber 516838  
Model QLA2344  
ModelDescription  
PortID 610100  
NodeWWN 20:00:00:e0:8b:05:a8:26  
HardwareVersion A  
DriverVersion 4.13.01  
OptionRomVersion 2.00.05  
FirmwareVersion 2.2.6  
OperatingSystem SunOS 5.9  
MaximumCTPayload  
NumberOfPorts 1
```

```
Port 21:00:00:e0:8b:05:a8:26
```

```
SupportedFC4Types FCP  
SupportedSpeed 1Gb/s  
CurrentSpeed 1Gb/s  
MaximumFrameSize 2048
```

OSDeviceName qla2300(1)  
HostName

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show domains command

This command provides a list of all switches, routers, etc that the local switch (the switch where this command has been run from) can find. The Domain IDs of each are provided along with their respective WWN.

Uses:

Use this command to quickly verify and/or find all of the switches that reside within the Fabric.

Example:

```
SANbox #> show domains  
Principal switch is (remote): 10:00:00:06:53:38:bd:01  
Upstream Principal ISL is : 19
```

Domain ID List:

```
Domain 97 (0x61) WWN = 10:00:00:c0:dd:06:fb:f6  
Domain 98 (0x62) WWN = 10:00:00:06:53:38:be:e1  
Domain 99 (0x63) WWN = 10:00:00:c0:dd:06:fb:fb  
Domain 100 (0x64) WWN = 10:00:00:06:53:38:bd:01  
Domain 101 (0x65) WWN = 10:00:00:c0:dd:06:fe:cc
```

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