



# Port Aggregator Quick Start and Troubleshooting Guide

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The Port Aggregator provides a simple Ethernet interface option for connecting the IBM BladeCenter system to the network infrastructure. The Port Aggregator's default configuration allows you to plug it into the BladeCenter Chassis and function correctly with no configuration changes. The configuration options are restricted to reduce the initial setup complexity and to minimize the impact on upstream networking devices.

For detailed installation and removal instructions, refer to Chapter 1 of the *Installation Guide* for the *Nortel Port Aggregator Module for IBM BladeCenter*.

For more details about the Port Aggregator's features and capabilities, refer to the *Alteon OS 21.0, version 90.0 User's Guide* for Nortel's *Port Aggregator for IBM BladeCenter*.

## Safety Instructions

Please read and understand the Safety Information listed in the *Installation Guide* included in the option kit.

## Quick Start

The Port Aggregator is shipped with a default configuration that allows you to plug it into the BladeCenter Chassis and function correctly with no configuration changes. You must make some configuration changes to the upstream networking device and the blades in the BladeCenter Chassis, as follows:

### Configuring the BladeCenter Management Module

The link through the management module is used to connect to the Port Aggregator. The management module is used to control several operational characteristics of the Port Aggregator:

- Plug the Ethernet cable into the management module and verify that you get link and can connect to the management module.
- Configure the Port Aggregator IP Address, Network Mask and Default Gateway.
- Verify that the External Ports are enabled.
- Verify that “Preserve new IP configuration on all switch resets” is enabled.

### Configuring the Upstream Networking Device

If only one link is required to the Port Aggregator, do the following:

- Plug in the Ethernet cable (straight through or crossover) that connects the Port Aggregator to the upstream networking device.
- Configure the upstream networking device to transmit the desired data on a single untagged (native) VLAN.
- Verify that the upstream networking device is configured to auto-negotiate the link’s speed, duplex and flow control. If fixed port characteristics are desired, configure the Port Aggregator port characteristics using the appropriate BBI or CLI interfaces.

If more than one link is required to the Port Aggregator, configure a static link aggregation group (also referred to as a trunk group or EtherChannel) to include all of the ports that are being connected.

### Configuring the BladeCenter Processor Blades

The operating system should be configured to have a single 802.1Q untagged interface. If two Port Aggregators are used in the chassis, the blades can be configured to support Network Adaptor Teaming Failover (refer to the appropriate documentation for your operating system).

## Troubleshooting

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This section identifies some common error conditions that may occur when using the Port Aggregator, and the steps required to isolate and resolve the issues causing each condition.

### 1. Cannot ping management IP address

This condition is commonly caused by incorrect configuration of the management module IP Information, Management IP Address, Network Mask and/or Default Gateway.

- Verify that the Port Aggregator has successfully booted, by viewing the **Monitors > System Status > I/O Modules** screen on the management module's Web interface. Verify that the switch status is GREEN.
  - If the status is YELLOW or RED, make note of the POST Status and whether the Post Results are anything other than FF, and the Port Aggregator has been powered on for at least 2 minutes. Then refer to "Solving Problems" in the *Port Aggregator Module Installation Guide*.
  - To recover from the POST Error, it may be useful to Power Cycle the Port Aggregator using the **I/O Module Tasks > Admin/Power/Restart** screen on the management module Web interface.

If the actions listed above do not resolve the POST Error, contact IBM support.

- Verify that the management module's External Network Interface (eth0) and Internal Network Interface (eth1) IP configuration are on the same IP subnet as the Port Aggregator, using the **Control > Network Interfaces** screen on the management module's Web interface. If they are not all on the same subnet, you cannot reach the Port Aggregator.
- Verify that the current IP configuration is correct, using the **I/O Module Tasks > Configuration > Bay x** screen in the management module's Web interface. If the configuration is correct, attempt to re-initialize the IP information by pressing the **Save** button.
- Verify that a ping from the management module to the Port Aggregator is received, using the **I/O Module Tasks > Configuration > Bay x > Advanced Management > Send Ping Requests** screen in the management module's Web interface. If the ping is successful, then there is probably a routing issue between the Port Aggregator and the workstation. Verify that the Default Gateway is correct on the workstation and Port Aggregator. Also attempt to use the **tracert** command on your workstation.
- After completing the tasks listed above, if you still cannot ping the Port Aggregator, establish a serial connection and perform the following steps using the Port Aggregator CLI. The serial connection is made using a terminal emulator similar to Windows Hyper Terminal (Speed = 9600 bps, Data Bits = 8, Parity = none, Stop Bits = 1).

- Verify that your IP information initialized by the management module is correct using the command `/info/l3/ip`. Check that the IP address and Network Mask for IP interface 128 are the values that you expect and that the interface is up.
- If the interface is down, enter the command `/info/link`, and validate that the appropriate MGT1 or MGT2 port displays as link up and has a 100 Mbps/full duplex connection. If not, reset the Port Aggregator (`/boot/reset`) and reset the management module (***MM Control >Restart MM***). If both links do not come up, contact IBM Support for additional assistance.
- Verify that the Default Gateway is functioning properly. Use the command `/info/l3/ip` and check the Default Gateway section of the output. Verify that the gateway is the address that you expect, and correct it on the management module, if necessary. If the gateway is down, verify that the gateway is on the same IP subnet as your management IP address. You also can attempt to ping the gateway address.
- Use the Port Aggregator command ***tracert*** to trace each hop from the Port Aggregator to the device that originally displayed the connection issues. By checking each hop through the network, you can pinpoint the link at which the information is stopping.

### 2. Cannot connect to the Port Aggregator management interface using telnet

This condition often is caused either by a bad IP configuration, or by disabled telnet support on the Port Aggregator.

- Verify that the workstation has a working connection to the Port Aggregator, using the ***ping*** command. If not, refer to issue 1 for additional troubleshooting steps.
- Use a serial connection to log into the Port Aggregator CLI. Use the command `/cfg/sys/access/cur` and verify that telnet is enabled. Also note which port telnet is configured to use— if it is not port 23, then configure your telnet client to use a different port number. If telnet is disabled, enable it (`/cfg/sys/access/tnet ena`). Apply and save the configuration. Note that the telnet port is controlled using the command `/cfg/sys/access/tnport`.  
**Note:** To initiate a telnet connection over the management module interface, you must use port 23.
- Verify that you can telnet to the management module. If this does not work, verify that there are no filters or firewalls blocking telnet traffic between the Port Aggregator and your workstation.
- Attempt to reset the switch, using the CLI (`/boot/reset`), the BBI (***Configure >System >Config/Image Control >REBOOT!***), or by power cycling the switch using the management module Web interface.

If the above steps do not resolve the issue, contact IBM Support for additional assistance.

### 3. Cannot connect to the Port Aggregator management interface using the Web

This condition is usually caused either by a bad IP configuration or by disabled BBI support on the switch.

- Verify that the workstation has a working connection with the Port Aggregator, using the **ping** command. If not, refer to issue 1 for additional troubleshooting steps.
- Use a serial connection to log into the Port Aggregator CLI. Use the command `/cfg/sys/access/cur` and verify that HTTP (and possibly HTTPS) is enabled. Also note which port HTTP is configured to use—if it is not port 80, configure your browser to use a different port number. If HTTP is disabled, enable it (`/cfg/sys/access/http ena`). Apply and save the configuration. Note that the HTTP port is controlled, using the command `/cfg/sys/access/wport`.  
**Note:** To initiate a HTTP connection over the management module interface, you must use port 80.
- Verify that your browser can access the management module Web interface. If you cannot, verify that there are no filters or firewalls blocking web traffic between the Port Aggregator and your workstation.
- Attempt to reset the switch, using the CLI (`/boot/reset`), the BBI (**Configure > System > Config/Image Control > REBOOT!**), or by power cycling the switch using the management module Web interface.

If the above steps do not resolve the issue, contact IBM Support for additional assistance.

### 4. No link on external ports

This condition is usually caused by the management module disabling external interfaces, by the Port Aggregator configuration, or by a bad cable.

- Verify the Port Aggregator configuration. Use the CLI command `/info/link` and check that the port is not disabled. You can use the BBI Dashboard's **Switch Ports** screen to check that ports' Operational Status are not offline. If the ports' status is disabled or offline, continue to the following actions.
- Verify that the management module has the external ports enabled, by viewing the **I/O Module Tasks > Admin/Power/Restart**. Under **I/O Module Advanced Setup**, select the correct I/O module, and verify that the **External Ports** field is enabled. If not, enable and save the configuration.

- Verify that the Port Aggregator does not have the external ports disabled by the Configuration menu or the Operations menu. Use the CLI command `/cfg/port x/cur` (x = ext1 - ext6) and check that the port is enabled. If the port is disabled, enable it with the command `/cfg/port x ena`. If the port is operationally disabled, enable it using the command `/oper/port x/ena`.
- Replace the Ethernet cable connecting the external port that does not get a link.

If the above steps do not resolve the issue, contact IBM Support for additional assistance.

### 5. Cannot ping a server blade

This condition often is caused either by a server blade using a tagged VLAN which causes traffic to be dropped, or by bad IP information on the server blade.

- View the port statistics for the port in question. From the CLI, use the command `/stat/port INTx/brg` (where x is the blade that you cannot ping) and observe the **dot1PortInDiscards** value. From the BBI, view *Statistics > Switch Ports* and select the Internal Port (INT) for the blade in question and observe the “Bridging (dot1) Statistics” InDiscards value. If the value is incrementing, then the blade probably is configured to transmit 802.1Q tagged frames that the Port Aggregator is discarding. The Port Aggregator can only process frames that are not 802.1Q tagged. Correct the server blade configuration before proceeding.
- If the blade (INTx) port does not display any frame discards, observe the discard counters on each of the external ports that are connected. If the discards are incrementing on the external ports, validate that the upstream switch is not configured to transmit 802.1Q frames. For a Cisco Switch, this means that the port cannot be configured as a trunk port.
- If the actions listed above do not resolve the issue, validate the link aggregation as described in issue 6.

### 6. Cannot transmit and/or receive to/from all addresses on the network

This condition often is caused by the upstream switch not properly configuring the Static Link Aggregation Group (Ether Channel), or by a bad cable connecting the Port Aggregator to the upstream switch.

- Verify that all of the external links are connected, and have the same port characteristics. From the CLI, use the command `/info/link`. From the BBI, view *Dashboard > Switch Ports*. Each of the ports’ speed, duplex and flow control settings must match those on the upstream switch. If these characteristics are not the same for all of the ports on the Port Aggregator and do not match the upstream port to which it is connected, statically configure the settings and do not use auto negotiation.

- Check the upstream switch configuration to verify that all ports attached the Port Aggregator are configured as members of the same static link aggregation group (etherChannel).
- Perform the steps identified in issue 5 to determine if external or internal ports are receiving 802.1Q tagged frames.
- Check the Port Aggregator port statistics to determine if there are any error frames. From the CLI, use the command `/stat/port EXTx/if` and check the In/Out Errors. From the BBI, view the *Statistics > Port Statistics* Total Errors field. Excessive errors may indicate a bad cable connected to an upstream switch. If a large number of errors are observed, connect a new Ethernet cable to the upstream switch.

If the above steps do not resolve the problem, contact IBM Support.

### 7. Bad response time for large data transfers

This condition often is caused by duplex mismatching or bad cables on the uplink ports.

Verify that all of the external links are connected, and have the same port characteristics. From the CLI, use the command `/info/link`. From the BBI, view *Dashboard > Switch Ports*. Each of the ports' speed, duplex and flow control settings must match those on the upstream switch. If these characteristics are not the same for all of the ports on the Port Aggregator and do not match the upstream port that it is connected to, statically configure the settings and do not use auto negotiation.

Check the Port Aggregator port statistics to determine if there are any error frames. From the CLI, use the command `/stat/port EXTx/if` and check the In/Out Errors. From the BBI, view the *Statistics > Port Statistics* Total Errors field. Excessive errors may indicate a bad cable connected to an upstream switch. If a large number of errors are observed, connect a new Ethernet cable to the upstream switch.

### 8. Amber “!” LED is lit after POST is complete

The Amber “!” LED indicates that an error condition exists on the Port Aggregator. This is usually a condition that may require immediate attention, such as a Power On Self Test (POST) failure or a Temperature Warning. Perform the following actions to determine the cause of this condition:

- Use the management module interface POST results to check the System Status. If the POST results are not equal to 0xFF, then a POST error has occurred. Contact IBM Support.
- If a Syslog Server is configured, check the server for messages from the Port Aggregator.
- If you can ping the Port Aggregator's Management IP Address, check the most recent messages, using the command `/info/sys/log`.

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