



NETWORK SETUP TIPS

The basic steps for configuring the management and data ports for access to your network are simple and straight-forward. However, each network environment is unique and may require some additional troubleshooting in order to properly connect to the BlackPearl system and utilize the Ethernet interfaces correctly.

Note: The BlackPearl management port is separate from the data ports. The management port and data ports have their own default routes.

Configuration Method

Use the BlackPearl management interface or the command line interface to configure the management and data ports. Do not attempt to access the system directly and use the root console to modify interfaces. The management and command line interfaces are tightly integrated with the base operating system and configure additional features based on network changes.

Supported Network Connectivity

The following configurations are supported for the data path:

Recommended:

- A single logical connection using a network interface card. Use either one physical port, or two ports in link aggregation. For information on supported connection speeds, see [Specifications on page 1](#).

Not Recommended:

- Single gigabit logical connection utilizing one of the on-board motherboard ports and a Category 5e Ethernet cable.

MTU Settings

The BlackPearl system supports MTU values of 1500-9000. If you configure the MTU value to something other than the 1500 default value, make sure that your switch configuration and all the hosts on the network support the larger MTU settings, to avoid an impact on performance.

Link Aggregation

If link aggregation is configured for the BlackPearl system, then network switches must support link aggregation to aggregate or “trunk” the data ports together to provide higher bandwidth to the system.

Network switches must support link aggregation using LACP (Link Aggregation Control Protocol), and hash the destination IP addresses. Typically you must manually configure LACP on the switch ports.

- If you **are** using link aggregation, the switch must be configured to **use** LACP on those ports.
- If you **are not** using link aggregation, the switch must be configured to **not use** LACP on those ports.

Network switches use different methods of routing traffic from hosts to NAS servers. For example, some switches route traffic based on both the MAC address and the IP address.

- Using DHCP link aggregation, the BlackPearl system presents only one MAC address and one IP address.
- Using static link aggregation, the BlackPearl system presents only one MAC address, but can have up to 16 IP addresses aliased to the MAC address.

Link Aggregation Port Utilization

The network switch rotates data transfers among the physical ports on the BlackPearl system in order to achieve the highest throughput possible.

If only a single host is connected to the BlackPearl system through a link aggregation connection, the measured performance is lower than the potential maximum transfer rate because only one physical port of the two port link aggregation is being utilized by the switch.

If a single share is configured with two different IP addresses, when two separate hosts begin data transfers, the resulting throughput is approximately twice that of a single host connection.

Note: You may need to configure more than two IP addresses on the BlackPearl system to force the switch hashing algorithm to utilize all physical ports to maximize performance.

Network Connectivity Tools

Ping

The ping command uses a request-response mechanism to verify connectivity to a remote network node.

For example, to verify the connectivity from the switch to the BlackPearl system at IP address 192.168.2.10, run the command shown below from the switch command line or client:

```
ping 192.168.2.10
```

All ICMP Echo requests should receive replies including information about the round trip time it took to receive the response. If the request times out, see [Cannot Ping the BlackPearl System on the next page](#).

Note: A response of 0 msec means that the time was less than 1 ms.

Traceroute

You can use the traceroute command to not only verify connectivity to a remote network node, but to track the responses from intermediate nodes as well.

For example, for a BlackPearl system at IP address 192.168.2.10, run the command shown below:

```
traceroute 192.168.2.10
```

The output of the command shows a numbered list indicating the number of hops encountered when tracing the packet from the switch to the BlackPearl system. If the command fails to reach the BlackPearl system, see [Cannot Ping the BlackPearl System on the next page](#).

Troubleshooting

No Port Link LED Light

When the management and data ports are configured correctly and attached to the network, the link lights on the network ports should be illuminated on both the BlackPearl system and the network switch. If the port lights are not illuminated:

- Make sure that cables are connected. Verify you are using the correct cable type and connectors. This is especially critical for connections utilizing SFPs.

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- Check the port configuration on the network switch. The BlackPearl system only supports auto-negotiation. Make sure the switch is configured to match speeds on both ends of the connection.
 - Verify that the switch ports are not administratively disabled. Consult the switch *User Guide* for information.

Cannot Ping the BlackPearl System

When the network ports are configured correctly, you should be able to ping the BlackPearl system from your network. If you cannot ping the BlackPearl system:

- Check the LACP settings on the switch.
 - If you **are** using link aggregation, the switch must be configured **to use** LACP on those ports.
 - If you **are not** using link aggregation, the switch must be configured **to not use** LACP on those ports.
- Check the VLAN (Virtual Local Area Network) settings on the switch. Ensure that the ports are assigned to the correct VLAN.