Ring Coupling for a Turbo Ring

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This Tech Note applies to the following Moxa switches:

- EDS-400A series
- EDS-500A series (includes the EDS-G509 and EDS-P510 series)
- EDS-600 series
- EDS-700 series
- EDS-800 series
- IKS-6524/6526 Series
- IKS-6726 Series
- PT-7828 Series
- PT-7700 Series
- PT-G7509 Series
- TN-5500 Series

What is Ring Coupling for Turbo Ring?

For some systems, it may not be convenient to connect all devices in the system to create one big redundant ring, since some devices could be located in a remote area. For these systems, "Ring Coupling" can be used to separate the devices into different smaller redundant rings, but in such a way that they can still communicate with each other.

To configure the Ring Coupling function for a "Turbo Ring" ring, select two EDS units (e.g., Switch A and B in the below figure) in the ring, and another two EDS units in the adjacent ring (e.g., Switch C and D).

Decide which two ports in each switch are appropriate to be used as coupling ports, and then link them together. Next, assign one switch (e.g., Switch B) to be the "coupler," and connect the coupler's coupling control port with Switch A (for this example).

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About Moxa

Moxa manufactures one of the world's leading brands of device networking solutions. Products include serial boards, USB-to-serial hubs, media converters, device servers, embedded computers, Ethernet I/O servers, terminal servers, Modbus gateways, industrial switches, and Ethernet-to-fiber converters. Our products are key components of many networking applications, including industrial automation, manufacturing, POS, and medical treatment facilities.

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The coupler switch (i.e., Switch B) will monitor switch A through the **coupling control port** to determine whether or not the coupling port's backup path should be recovered.
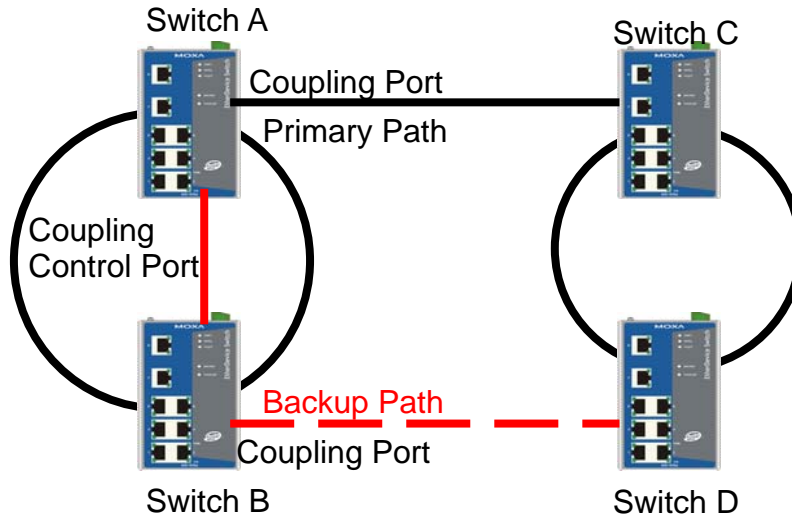
Enabling Ring Coupling

Method I

### Enabling Ring Coupling with DIP switches for the EDS-400A, 500A, and 600 series

Before performing the following steps, restore the Moxa switch default settings via web console.

1. Make sure that all DIP switches are set to OFF and then power on the Moxa switch.

2. Make sure that the Moxa switch and the host PC are properly connected to the network.

3. Adjust the Moxa switch's IP settings as necessary so that it is on the same network as your PC. You may also need to modify the host PC's IP configuration. Make sure you can ping the Moxa switch from your host PC.

   Note: The IP addresses of the Moxa switch and the PC must be on the same subnet. If one IP address is modified, you may need to modify the other IP address.

4. Enable the Turbo Ring DIP switches to configure the EDS switches for a "Turbo Ring" ring. It can be found through the web console as follows: **Turbo Ring DIP Switches→Set DIP switch as Turbo Ring.**

5. Enable "Turbo Ring" by setting "4.Turbo Ring" DIP switch to the ON position on switch A, C and D, separately.

6. Enable "Turbo Ring" and "Ring coupling" by setting the "3.Coupler" and "4.Turbo Ring" DIP switches to the ON position on switch B.
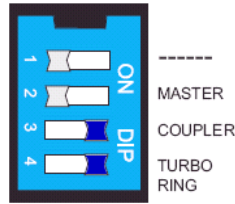
7. The following table shows the default Turbo Ring Ports and Ring Coupling Port(s) when using DIP switches to configure the EDS for "Turbo Ring" and "Ring coupling"

Model name	Default Turbo Ring Port(s)	Default Ring Coupling Port(s)
EDS-405A series	1st Port：4 2nd Port：5	Coupling Port：2 Coupling Control Port：3
EDS-408A series	1st Port：7 2nd Port：8	Coupling Port：5 Coupling Control Port：6
EDS-505A series	1st Port：4 2nd Port：5	Coupling Port：2 Coupling Control Port：3
EDS-508A series	1st Port：7 2nd Port：8	Coupling Port：5 Coupling Control Port：6
EDS-510A series	1st Port：G2 2nd Port：G3	Coupling Port：G1 Coupling Control Port：7
EDS-P510series	1st Port：G2 2nd Port：G3	Coupling Port：G1 Coupling Control Port：7
EDS-G509 series	1st Port：G8 2nd Port：G9	Coupling Port：G7 Coupling Control Port：G6

8. Connect the coupling control ports of both switch A and B.

9. Finally, please connect the coupling ports of both switch A and B to the adjacent ring (e.g., Switch C and D).

Method II

Enabling Ring coupling by web console for the EDS-400A/500A/600/700/800 series, IKS-6524/6526 Series, IKS-6726 Series, PT-7828 Series, PT-G7509 Series, PT-7700 Series and TN-5500 Series

Before performing the following steps, restore the Moxa switch default settings via web console.

1. Make sure that all DIP switches are set to OFF and then turn the Moxa switch on.

2. Make sure that the Moxa switch and the host PC are properly connected to the network.

3. Adjust the Moxa switch's IP settings as necessary so that it is on the same network as your PC. You may also need to modify the host PC's IP configuration. Make sure you can ping the Moxa switch from your host PC. *Note: The IP addresses of the Moxa switch and the PC must be on the same subnet. If one IP address is modified, you may need to modify the other IP address.*

4. Prepare 4 Turbo Ring devices (i.e., Switch A, B, C and D) to form 2 Turbo Rings.

5. Enable Ring Coupling on Switch B via web console. It can be found through the web console as follows:

   Communication Redundancy→Turbo Ring→ Enable Ring Coupling

6. Decide which ports in switch B to use as the "1st Redundant Port", "2nd Redundant Port", "Coupling Port" and "Coupling Control Port".

7. Enable Turbo Ring on Switch A, C and D via web console, separately. It can be found through the web console as follows:

   Communication Redundancy→Turbo Ring

8. Decide which ports in switch A, C and D to use as the "1st Redundant Port," "2nd Redundant Port," "Coupling Port," and "Coupling Control Port."

9. Connect the Turbo Ring ports, Coupling Ports, and Coupling Control Ports of switch A, B, C, and D.

Testing Ring coupling function
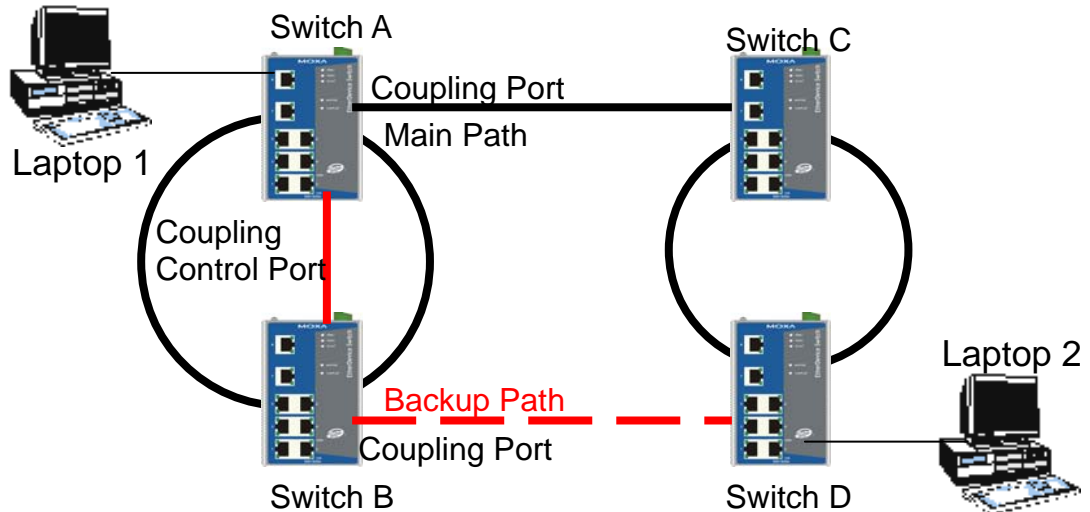
1. Configure Laptop 1 and 2 to be located in the same subnet.

2. Connect Laptop 1 and 2 to switch A and D, separately.

3. Run a **Ping** x.x.x.x command from Laptop 1. (x.x.x.x is Laptop 2's IP address)

4. Unplug the main path cable of switch A and make sure the ping session recovers immediately.

5. Monitor the status of the Coupling Ports on Switch A, B, C, and D.

6. Plug in the main path cable of switch A and make sure the ping session recovers immediately.

7. Monitor the status of the Coupling Ports on Switch A, B, C, and D.