

# Introduction of Interface Rate

Interface rate can be configured in the two modes: force rate (non-auto-negotiation mode) and auto-negotiation mode.

## NOTE:

- Interfaces at both ends of a link SHOULD work in the same auto-negotiation mode. Otherwise, the interfaces may not be able to communicate with each other.
- The 2.5G/5G RJ45 ports don't support to set the force speed by using **set interface gigabit-ethernet** <interface-name> **speed** <speed> command. Users can configure auto-negotiation mode to auto-negotiate the interface rate for these ports, together with the optional **set interface gigabit-ethernet** <interface-name> **auto-speeds** <auto-speed> command to manually specify the auto-negotiation rate range.

## Force Rate (Non-auto-negotiation Mode)

If you want to use a specific interface rate for communication rather than auto-negotiate the interface rate, you can configure the force rate of the interface.

You can configure the force rate of an interface by using the **set interface gigabit-ethernet** <interface-name> **speed** <speed> command.

## NOTE:

When configuring the force rate of an interface, make sure that the interface rates configured on the two ends of the link are the same.

Instructions for the switch interface rate configuration:

1. 1G RJ45 port: The interface rate can be configured to 100M, 10M or auto. By default, the interfaces work in auto-negotiation mode.
2. 10G RJ45 port: The interface rate can be configured to 100M or auto. By default, the interfaces work in auto-negotiation mode.
3. 10G optical port:
  - When a 10G optical module is inserted, the interface rate can be configured to 10G or 1G. When no force rate is configured, the interface recognizes the interface rate of itself as 10G.
  - When a 1G optical module is inserted, the interface rate can be configured to 1G. When no force rate is configured, the interface recognizes the interface rate of itself as 1G.
4. 40G optical port: The interface rate can be configured to 40G. When no force rate is configured, the interface recognizes the interface rate of itself as 40G. If the interface configured interface split, the sub-interface rate can be configured to 10G or 1G.
5. 100G optical port:
  - When a 100G optical module is inserted, the interface rate can be configured to 100G or 40G. When no force rate is configured, the interface recognizes the interface rate of itself as 100G. If the interface configured interface split, the sub-interface rate can be configured to 25G or 10G.
  - When a 40G optical module is inserted, the interface rate can be configured to 40G. When no force rate is configured, the interface recognizes the interface rate of itself as 40G. If the interface configured interface split, the sub-interface rate can be configured to 10G.

## Auto-negotiation Mode

When the ports of the switch in the network support multiple transmission rate, the user can configure auto-negotiation mode to auto-negotiate the interface rate. The devices at both ends of the link exchange interactive messages with the device capability, thus automatically negotiate the optimal interface rate of the interfaces at both ends of the link.

Use the **set interface gigabit-ethernet** <interface-name> **speed auto** command to enable the auto-negotiation mode of the interface.

Only the 10G, 5G/2.5G and 1G RJ45 ports support auto-negotiation mode. By default, these interfaces work in auto-negotiation mode. In auto-negotiation mode the ports negotiate any rate supported by the two devices. To enable non-auto-negotiation mode, you can configure the force rate of the interface by using **set interface gigabit-ethernet** <interface-name> **speed** <speed> command.

If the negotiated interface rate is not the required value, you can use the **set interface gigabit-ethernet** <interface-name> **auto-speeds** command to manually specify the auto-negotiation rate to make the interface negotiate the rate within the specified range. The auto-negotiation rates configured on the interfaces must have an intersection at both ends of the link.

Use **set interface gigabit-ethernet** <interface-name> **auto-speeds** multiple times to set multiple negotiation rates.

### Example 1:

The following commands configure multiple auto-negotiation rates on interface ge-1/1/1 to specify the range of auto-negotiation rate to 1000M, 100M and 10M.

```
admin@Xorplus# set interface gigabit-ethernet ge-1/1/1 auto-speeds 1000
admin@Xorplus# set interface gigabit-ethernet ge-1/1/1 auto-speeds 100
admin@Xorplus# set interface gigabit-ethernet ge-1/1/1 auto-speeds 10
admin@Xorplus# set interface gigabit-ethernet ge-1/1/1 speed auto
```

#### Example 2:

The following commands configure one auto-negotiation rate on interface ge-1/1/1 to specify the range of auto-negotiation rate to 1000M.

```
admin@Xorplus# set interface gigabit-ethernet ge-1/1/1 auto-speeds 1000
admin@Xorplus# set interface gigabit-ethernet ge-1/1/1 speed auto
```

#### NOTE:

- Only the 10G, 5G/2.5G and 1G RJ45 ports support auto-negotiation mode and auto-negotiation rate.
- Run the **set interface gigabit-ethernet**<interface-name>**speed auto** command to configure the Ethernet interface to work in auto-negotiation mode before using the **set interface gigabit-ethernet**<interface-name>**auto-speeds** command to manually specify the auto-negotiation rate.
- In auto-negotiation mode, the device automatically negotiates the duplex mode of the interface while negotiating the interface rate.