How to Configure ERPS on Industrial Managed Switch

How to Configure ERPS on Industrial Managed Switch

Preparation

Switch: SI series Industrial Managed Switch, which supports ERPS function.

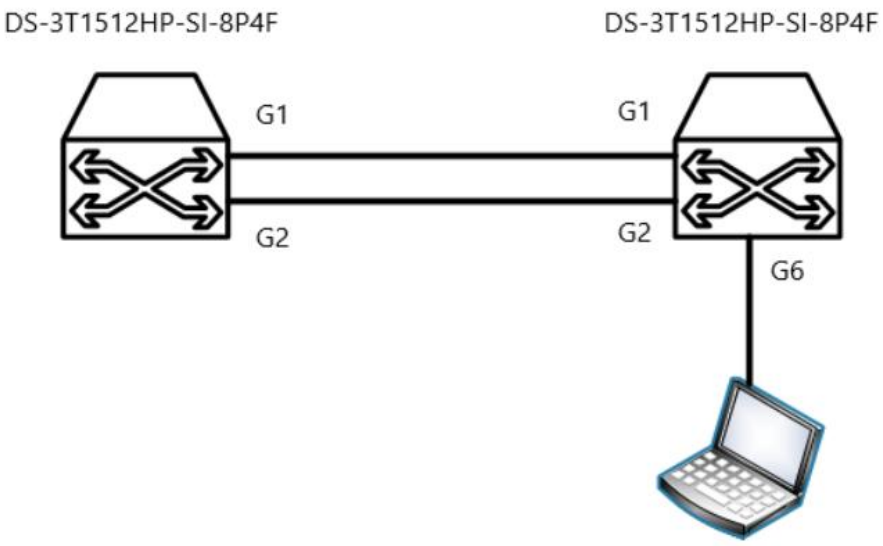
Such as DS-3T1512HP-SI

Principle

Ethernet Ring Protection Switching (ERPS) is a robust link layer protocol that ensures a loop-free topology and implements quick link recovery.

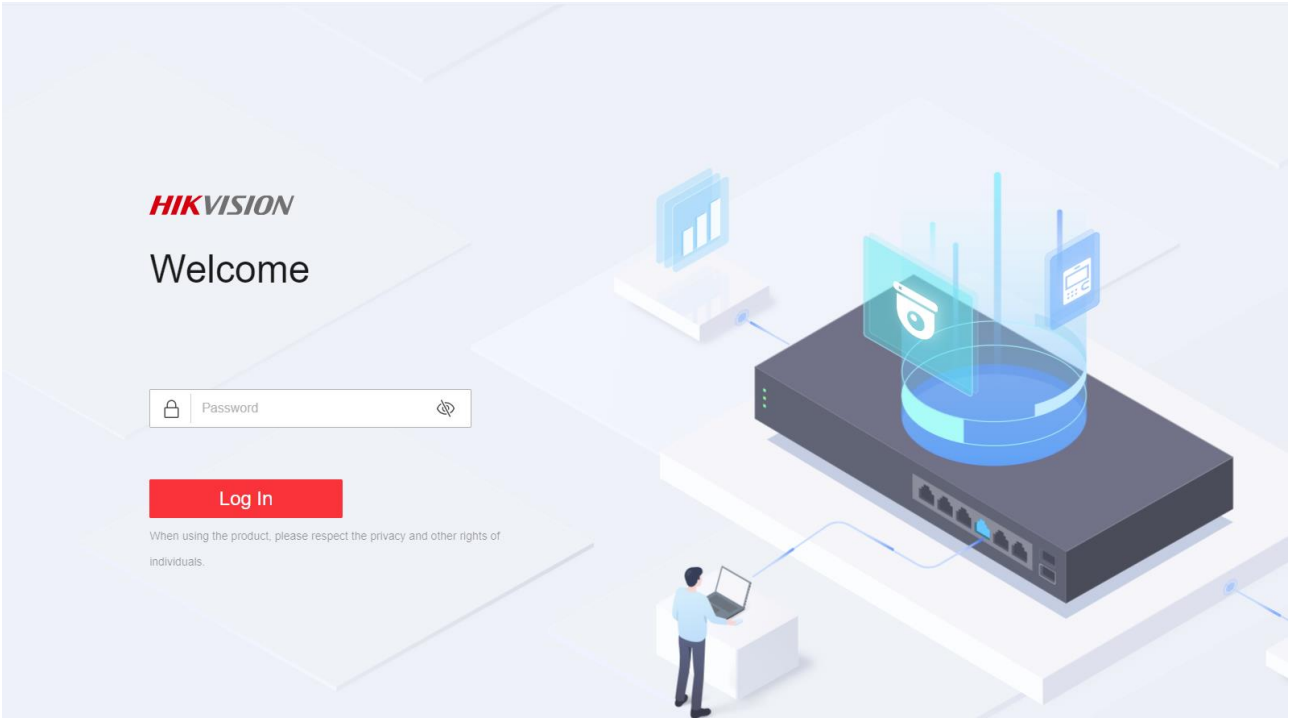
Topology

Two switches connected by two network cables, and without configuring link aggregation, a loop will appear between the two switches. Therefore, it is necessary to configure the ERPS protocol on both switches to eliminate loops.



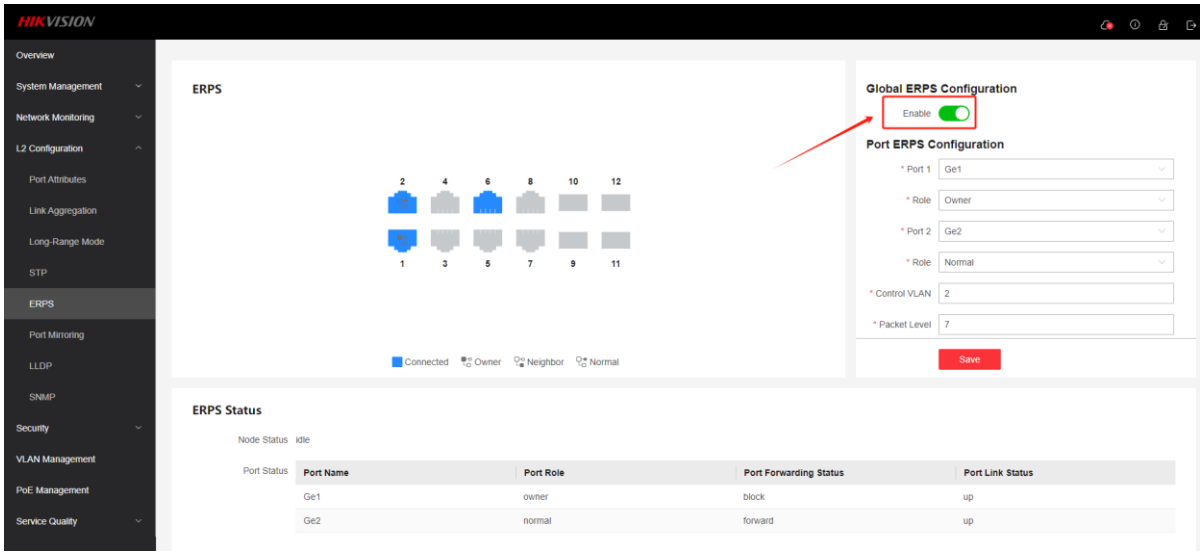
Configuration

Login Webpage



Enable ERPS

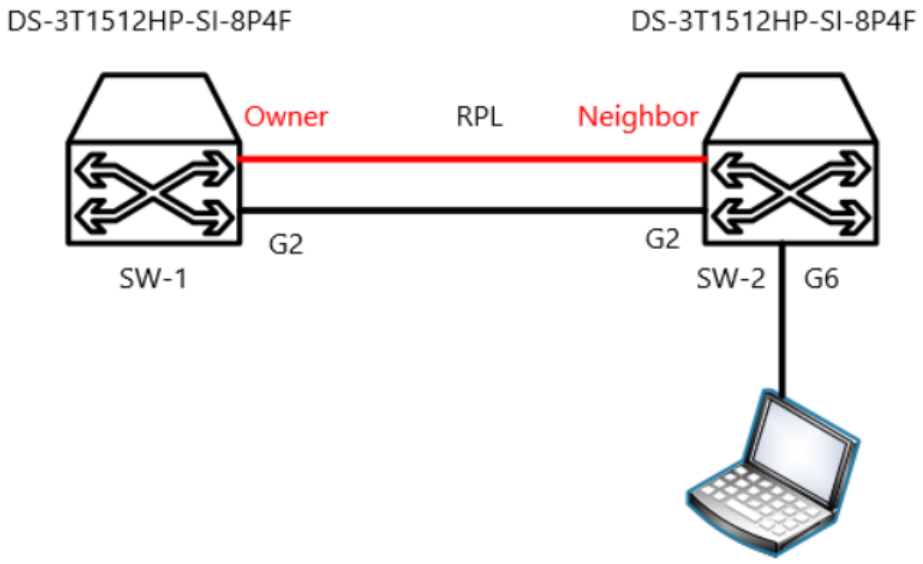
Path: Switch Configuration > L2 Configuration > ERPS > Global ERPS Configuration.
Enable the ERPS function.

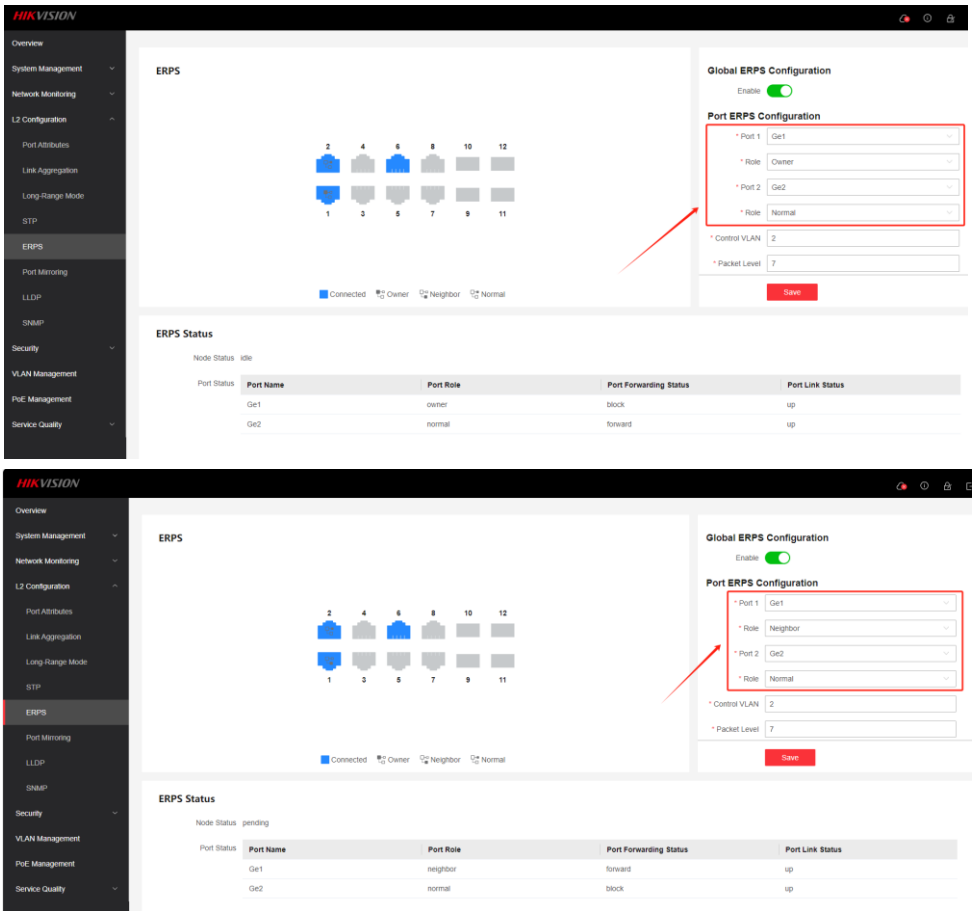


Port Role

ERPS protocol mainly include 3 port roles: RPL owner port, RPL neighbor port, and normal port.
In one ring link, select one physical link as RPL link, owner and neighbor port are in this link. Others ports are normal role.

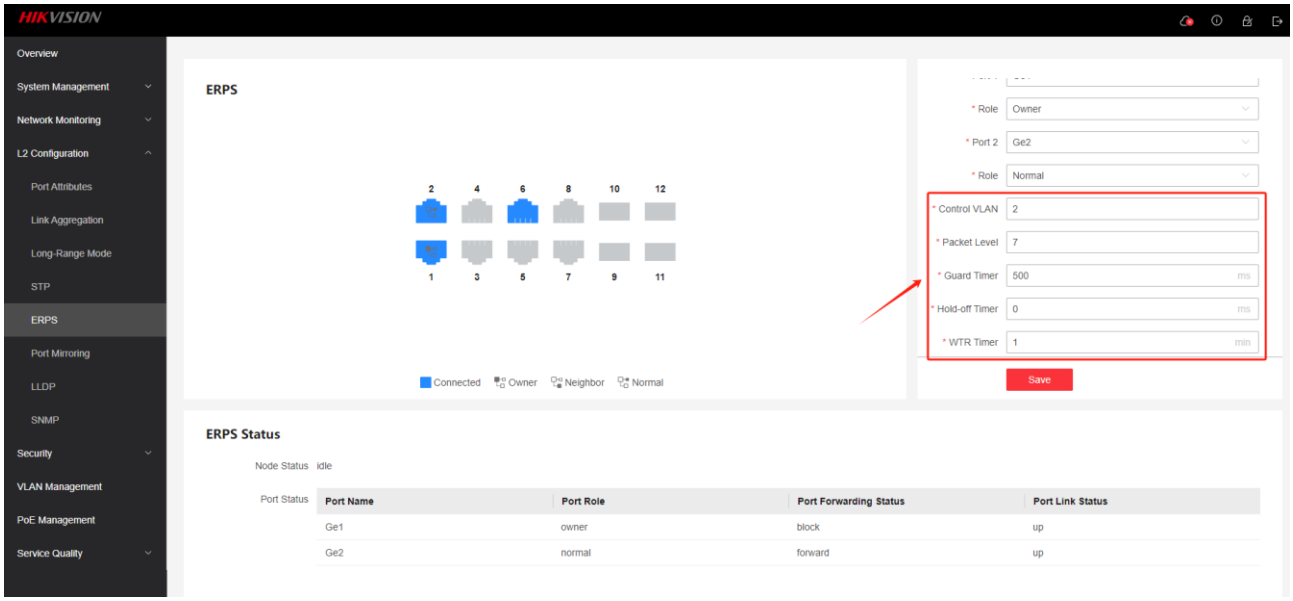
In this topology, we choose SW1 GE1 as Owner port, SW2 GE1 as Neighbor port.





Parameters

- Control VLAN: Used to transmit ERPS protocol packets.
  Each ERPS ring must be configured with a control VLAN. When one port joins an ERPS ring configured, the switch will create this VLAN, and the port will be in trunk mode to allow control VLAN to pass. Each switch must configure same VLAN ID.
- Packet Level: Each switch in the ring must be consistent with same level. The value is from 0 to 7. The default value is 7 and no need to configure.
- Guard Timer: This timer is started when the port detects that the link is recovered. Before the timer expires, the interface no longer processes all R-APS packets. The default value is 500ms and no need to configure.
- Hold - off Timer: This timer starts when a port detects link failure, and it delays the speed of reporting the failure. After link failure occurs, it waits until the hold-off timer times out. If the failure still exists, the failure is then reported. The default value is 0 and no need to configure.
- WTR Timer: This timer starts when the owner switch receives an NR message. It is used to prevent frequent network oscillations caused by intermittent faulty links on the ring network. The default value is 1min and no need to configure.



Port Status Switching

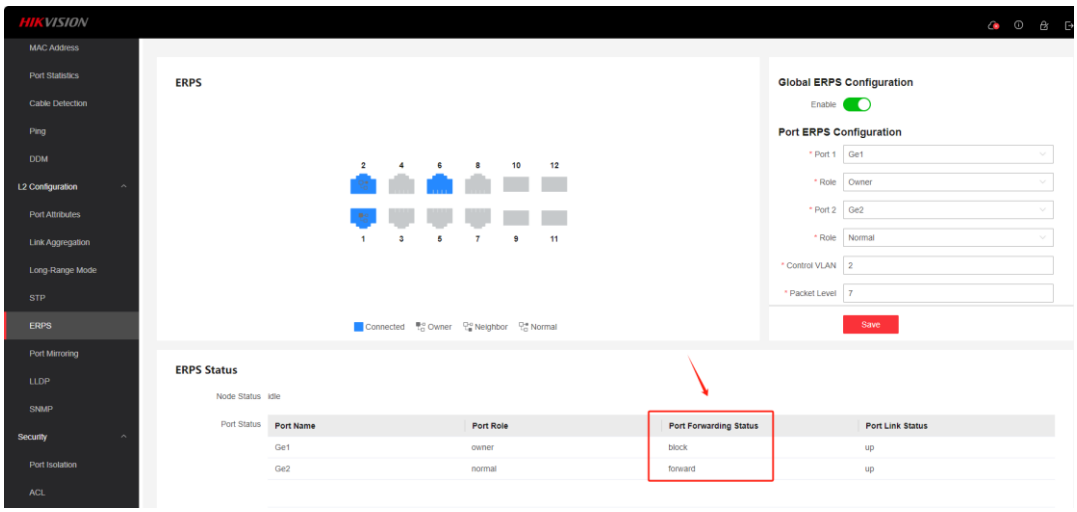
The ERPS port states has two types: Forward and Block.

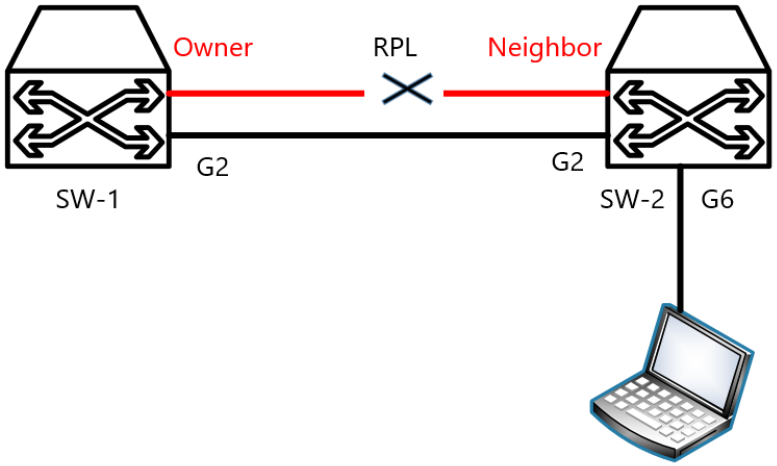
Forward state: In this state, the port forwards data and also receives/sends ERPS protocol packets.

Block state: In this state, the port does not forward data, but can still receives / sends ERPS protocol packets.

Link Normal

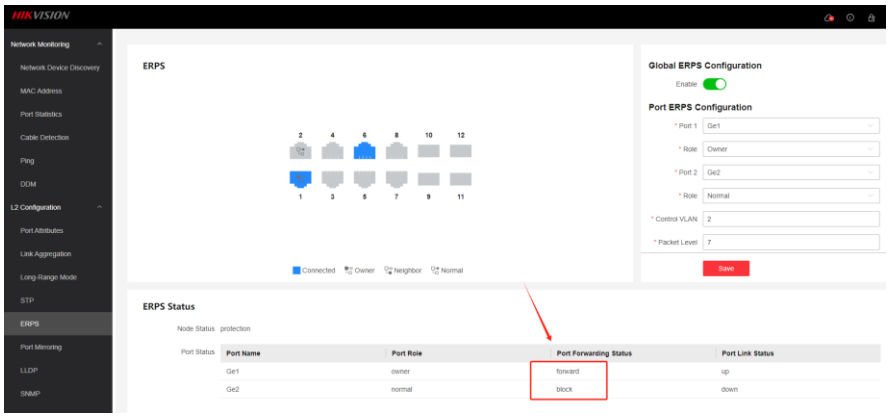
When the loop link is stable. Owner and neighbor ports are in block status, other ports are in forward status.

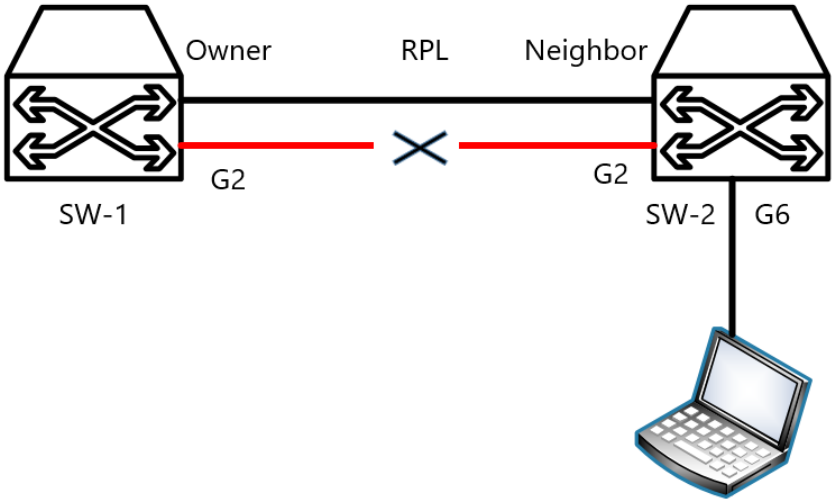




Link Faulty

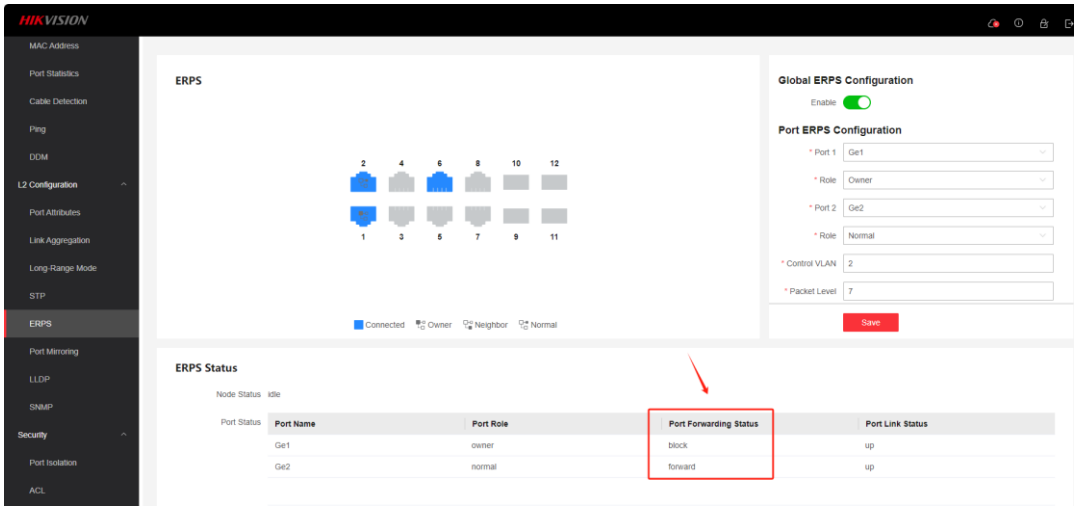
When one normal status port (except owner and neighbor role ports) is down. Owner and neighbor ports will change to normal status immediately, the 2 faulty ports will change to block status.

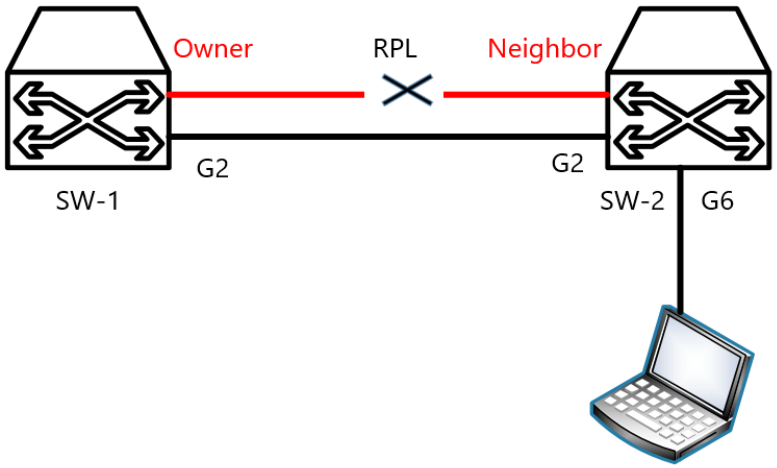




Link Recover

When faulty link recovers and 2 ports are up. After the WTR timer is over, owner and neighbor ports will change to block status, the 2 faulty ports will change back to forward status.




Owner
RPL
Neighbor
G2
G2
SW-1
SW-2
G6