Error-disable Recovery And CPU Protection

Ethernet Switch

ZyNOS 4.0

Support Notes

July 2011

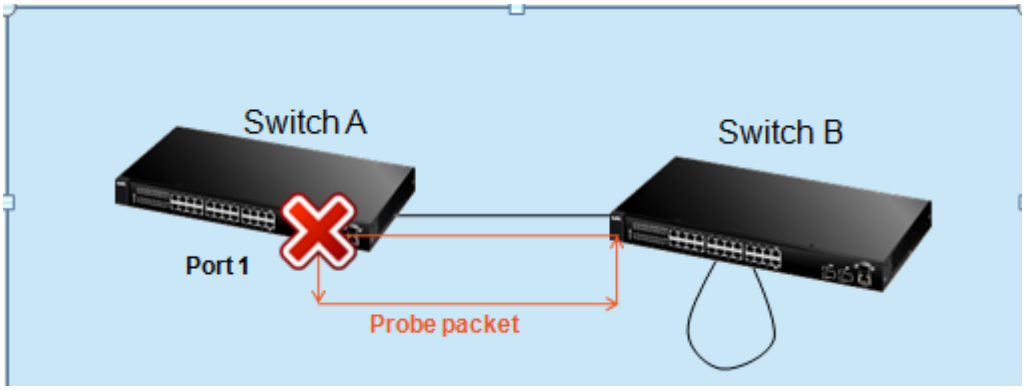
ZyXEL

Unleash Networking Power

Overview of ErrDisable

Error-Disable is a status of a port, which indicates the port had been automatically disabled by the switch because of certain reasons.

One of the common reasons that switch needs to shutdown a port: Loop. It can cause problems on the edge of your network. This can occur when a port is connected to a switch that is in a loop state. It happens when two ports on a switch are connected with the same cable. When a switch in loop state sends out broadcast messages, the messages loop back to the switch and are re-broadcast again and again, causing a broadcast storm.



For example, if Loopguard disables port 1, then port 1 will enter the “Errdisable” status.

Another common reason that switch needs to shut down a port is that the switch is handling too much packet from a port. ZyNOS currently supports ARP, IGMP, and BPDU packet detection. This packet rate-control mechanism for protecting CPU will be introduced in the next section of the document.

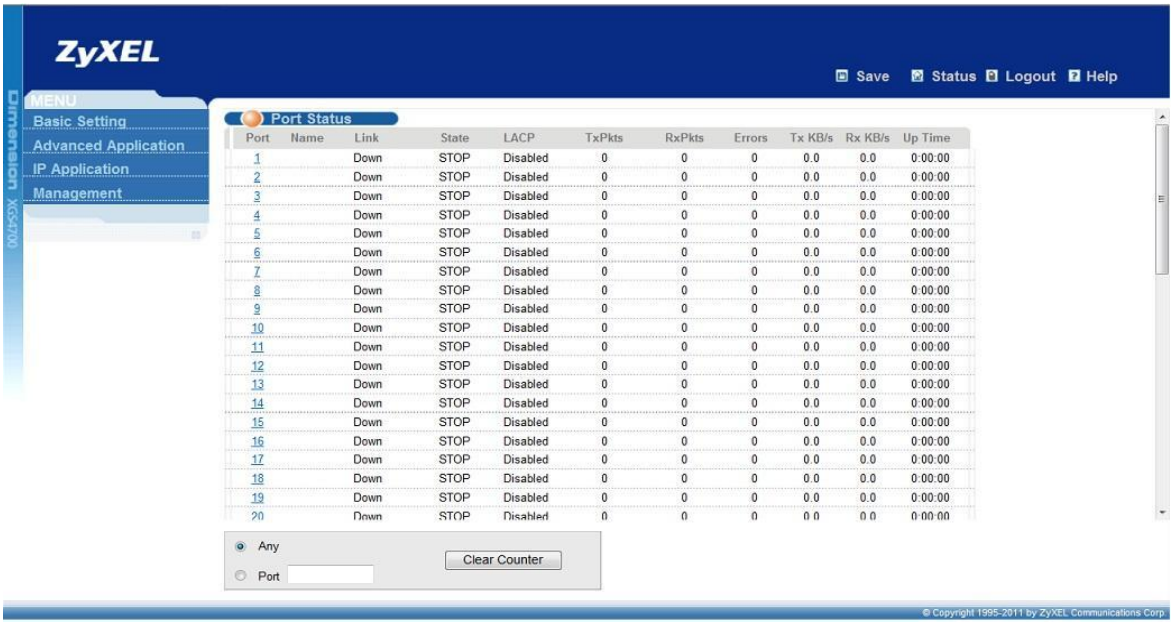
Implementing ErrDisable Recovery

In the previous version of ZyNOS, when a port had been shut down by the switch, it requires manual recovery when the problem is solved in the network.

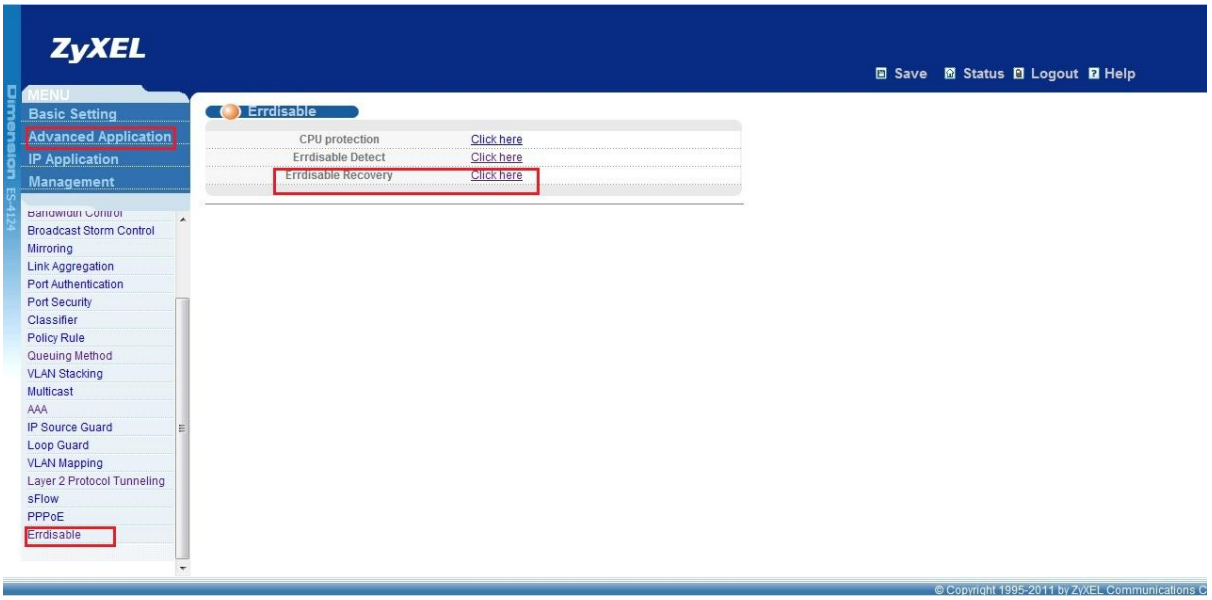
Errdisable Recovery is a feature in ZyNOS 4.00 that will recover a port automatically if the port had been shut down by certain reasons. We can decide which reasons is allowed to automatically recover the port and we can set the timeout value for the reason.

Configuration using the Web GUI

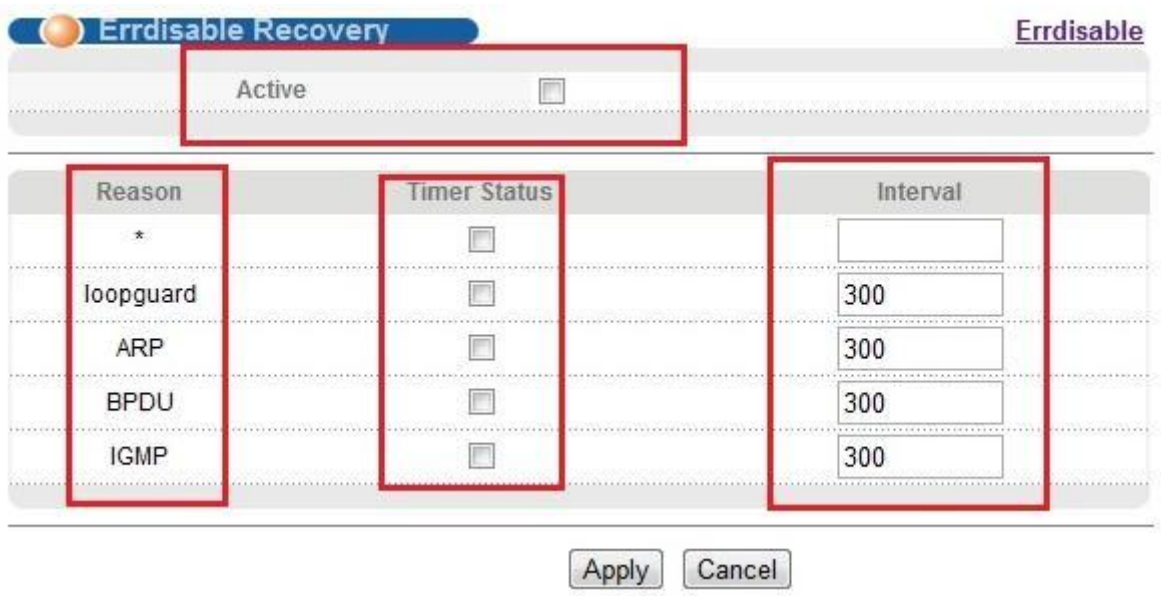
1. Connect the MGMT port to a PC or Notebook with the RJ45 Cable.
2. By default, the MGMT IP address of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter http://192.168.0.1 into the URL field.
5. By default, the username for the administrator is “admin” and the password is 1234
6. After successfully logging in, you will see a screen similar to the one below.



7. Click “**Advanced Application**” → “**Errdisable**”→“**Erridisable Recovery**” for setup page.



8. Select Active to enable Errdisable Recovery on the Switch.



9. Other options:

Reason: This field displays the supported features that allow the Switch to shut down a port or discard packets on a port according to the feature requirements and what action you configure.

Timer Status: Select this option to allow the Switch to wait for the specified time interval to activate a port or allow specific packets on a port, after the error was gone. Deselect this option to turn off this rule.

Interval: Enter the number of seconds (from 30 to 2592000) for the time interval.

Click **Apply** to save your changes

Configuration using the CLI

1. Connect the MGMT port to a PC or Notebook with the RJ45 Cable.
2. By default, the MGMT IP address of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open command line and type: telnet 192.168.0.1
5. By default, the username for the administrator is “admin” and the password is 1234

or connect the CONSOLE port to a PC’s serial port
Use a terminal program with the following setting:
Baud rate: 9600/115200
Data: 8 bit
Parity: none
Stopbits: 1 bit
Flow Control: none

```
vlan 1 name 1
   normal ""
   fixed 1-52
   forbidden ""
   untagged 1-52
   ip address 192.168.1.1 255.255.255.0
exit
interface route-domain 192.168.1.1/24
exit
errdisable recovery
errdisable recovery cause Loopguard
errdisable recovery cause ARP interval 300
errdisable recovery cause BPDU interval 400
errdisable recovery cause IGMP
ip address 192.168.0.1 255.255.255.0
```

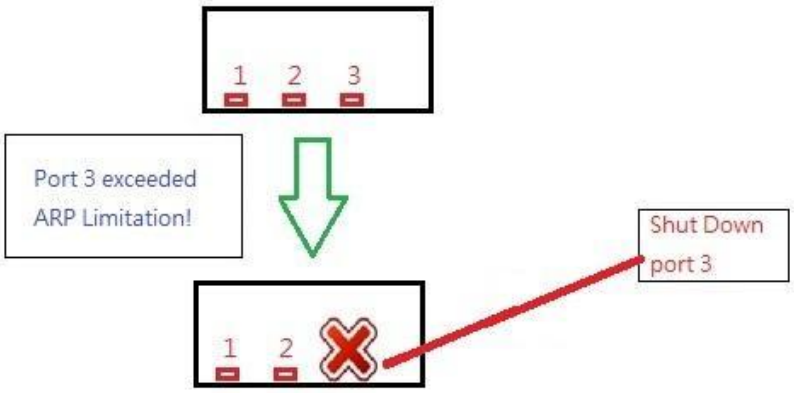
CPU Protection

CPU protection is a feature that allows switch to control the packet rate from some ports up to switch's CPU. It can shut down a port (put the port in Errdisable state) when the port exceed pre-defined Rate Limit.

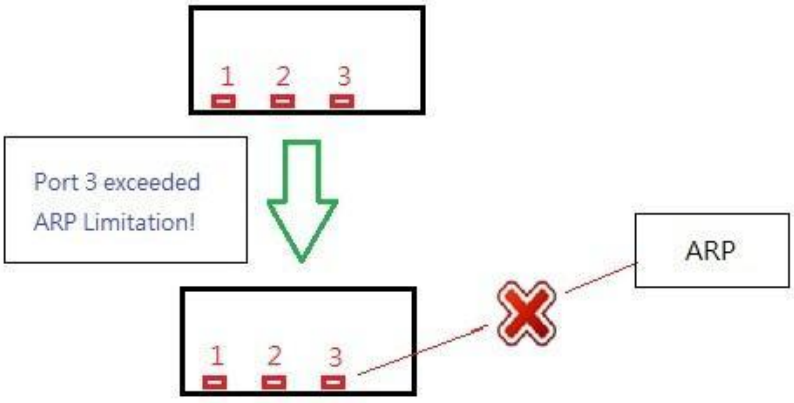
Action that Switch takes against exceeded packet

There are three actions switch can take when a port has exceeded the Rate limit.

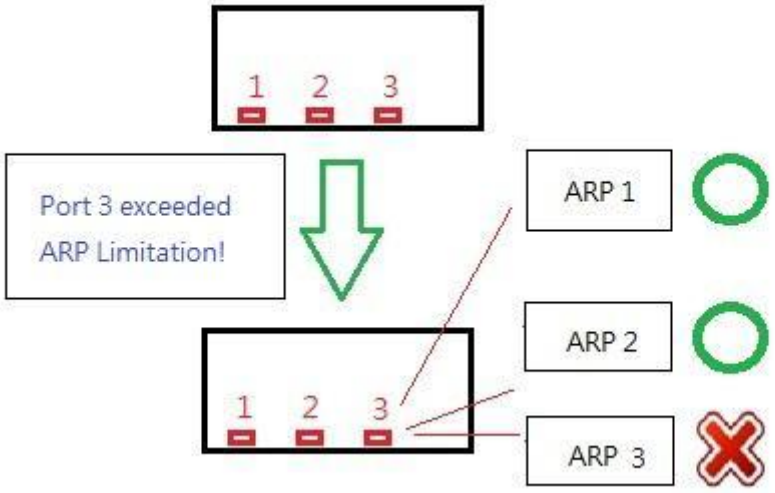
-disable: disable the port. This drops all packet on the port.



-cause: The switch only drops the packet which caused the traffic to exceed (of the port).



-limitation: The switch drops the exceeded rate



This is very useful when combined with Errdisable recovery, because the port put into ErrDisable can be recovered automatically in period of time. So it can protect switch's CPU without completely shutting down a network connection.

Configuration using the Web GUI

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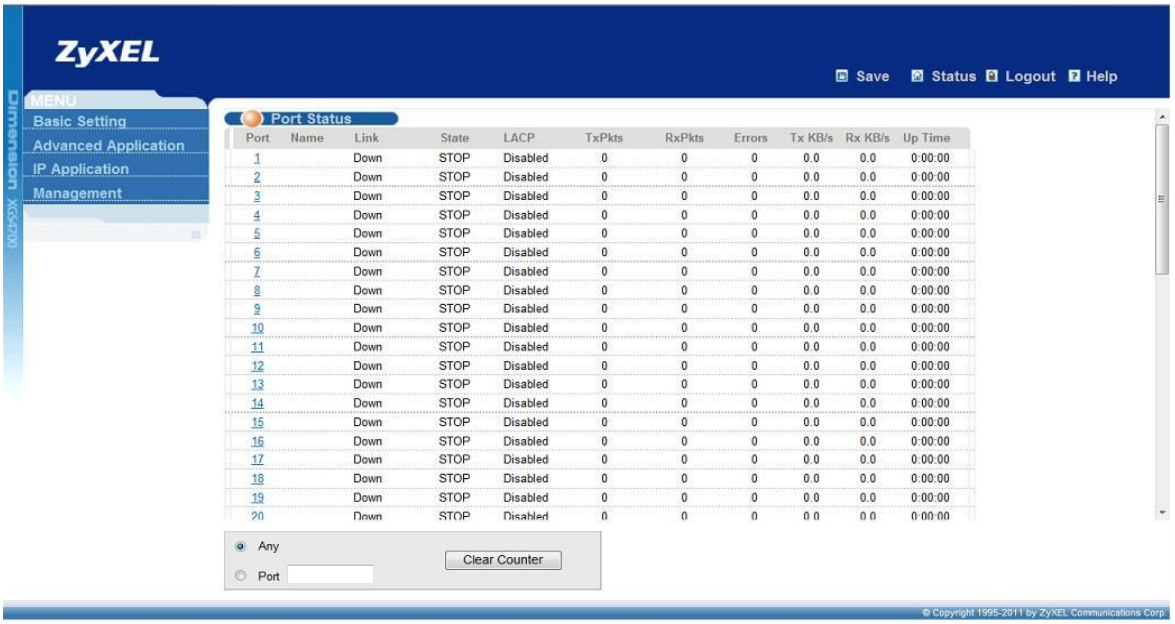
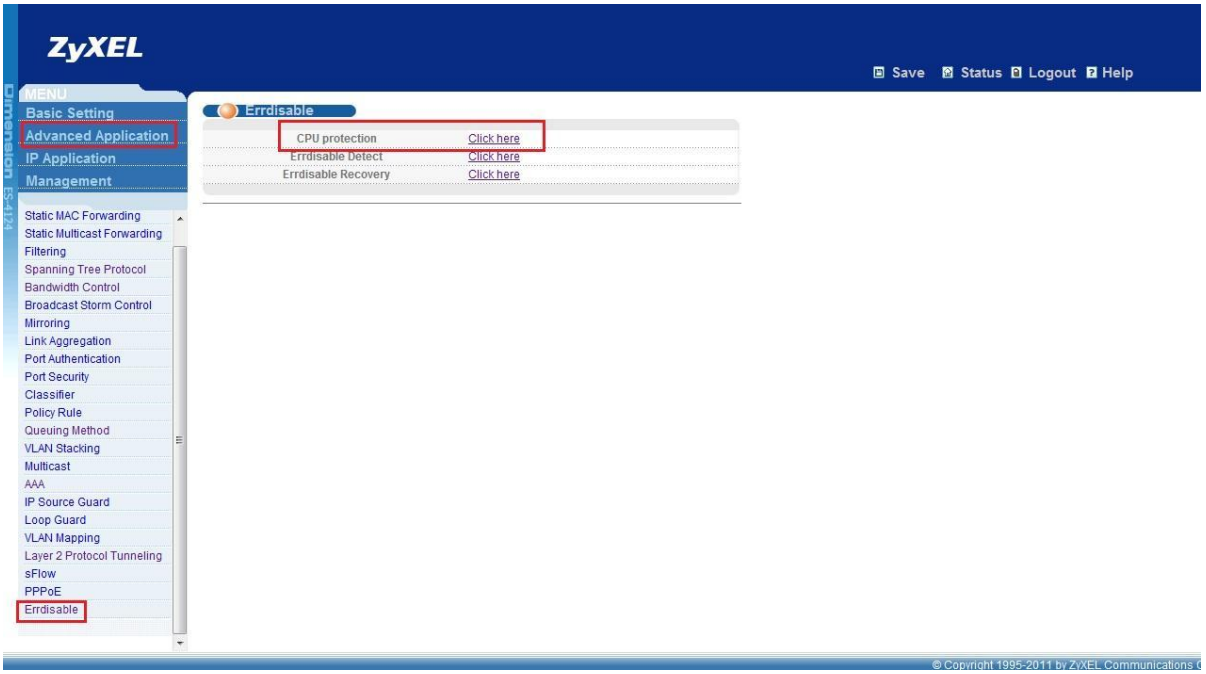
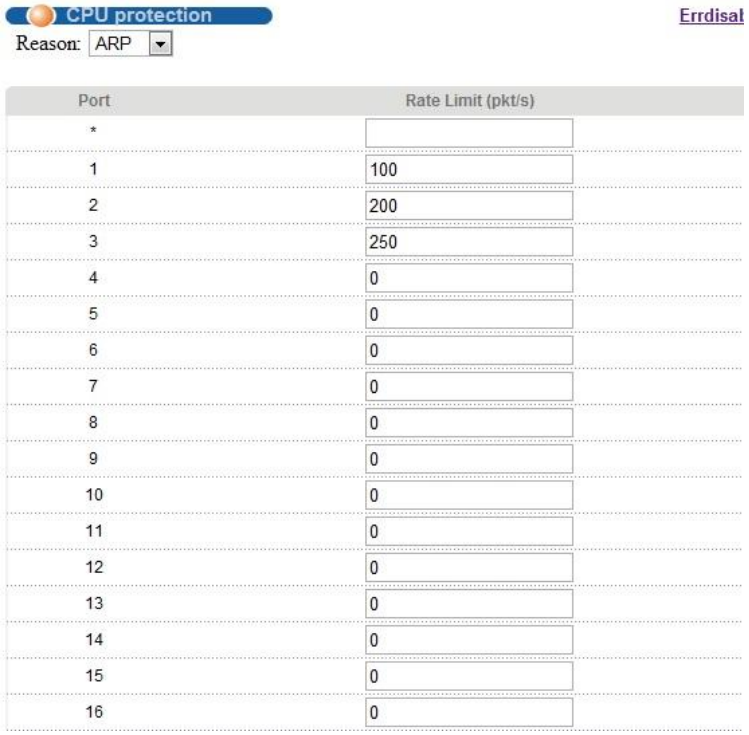


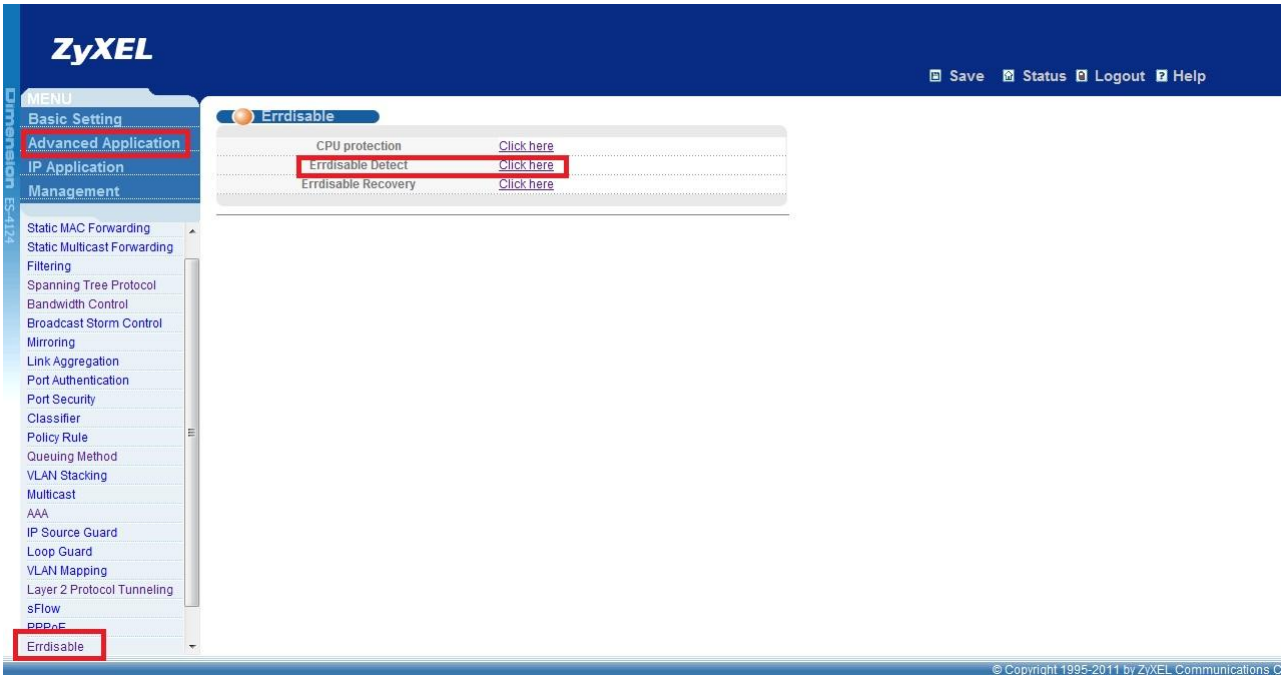
7. Click “**Advanced Application**” → “**Errdisable**”→“**CPU protection**” for setup page.



8. Select Reason and specify the rate limit of a port (**0** means no rate limit.)



9.Next, Click "**Advanced Application**" → "**Errdisable**"→"**Errdisable detect**".



This page indicated what action the switch will take when a port exceed its rate limit

Check **Active** to have the Switch detect if the configured rate limit for a specific control packet is exceeded and take the action selected below.

inactive-port - The Switch disables the port on which the control packets are received.

inactive-reason - The Switch bypasses the processing of the specified control packets (such as ARP or IGMP packets), or drops all the specified control packets (such as BPDU) on the port.

rate-limitation - The Switch drops the additional control packets the port has to handle in every one second.

Click **Apply** to save your changes

Configuration using the CLI

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   normal ""
   fixed 1-52
   forbidden ""
   untagged 1-52
   ip address 192.168.1.1 255.255.255.0
exit
interface route-domain 192.168.1.1/24
exit
interface port-channel 1
   cpu-protection cause ARP rate-limit 100
   cpu-protection cause BPDU rate-limit 100
   cpu-protection cause IGMP rate-limit 50
exit
interface port-channel 2
   cpu-protection cause ARP rate-limit 200
   cpu-protection cause BPDU rate-limit 200
   cpu-protection cause IGMP rate-limit 50
exit
exit
ip address 192.168.0.1 255.255.255.0
```

errdisable detect cause ARP
errdisable detect cause BPDU
errdisable detect cause IGMP
errdisable detect cause BPDU mode inactive-reason
errdisable detect cause IGMP mode rate-limitation