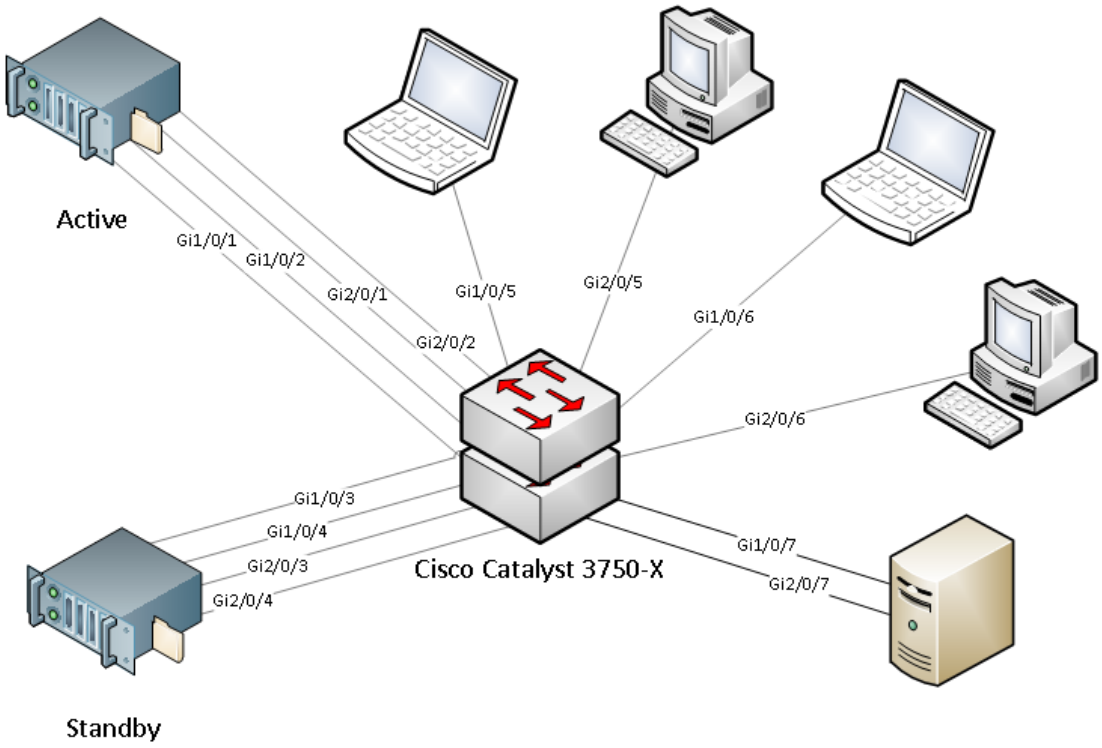
HuaweiSymantec Oceanspace S2600 High Availability

In order to implement a redundancy arrangement of an entire storage in one go, one needs two S2600 and a manageable switch. By all means, all the intelligence of such an arrangement could be easily moved to a server which analyzes switch logs and checks the availability of different services of S2600 by itself. However, we decided not to follow this simple way, but try to accomplish the whole process using several Cisco Catalyst 3750 switches.

Data back-up to S2600 is made using Remote Replication or Snapshots/Periodic Snapshots menu items; an administrator doesn't need to back-up all the data each time. Yet it should be noted that both variants need an extra license. Since HuaweiSymantec Oceanspace has iSCSI Multipath supported, the failure of one of the ports will not lead to the complete unavailability of the system. Moreover, iSCSI Multipath not only provides us with an opportunity to get iSCSI interfaces connected to different physical switches, but also it allows us to route data in many different ways, which comes in quite handy while implementing fault-tolerance and streaming distribution over the net using dynamic routing protocols. Unfortunately, client-based operating systems like Microsoft Windows do not support iSCSI Multipath, which is the main reason why upon connection to the network storage with such system one needs to implement a more difficult redundancy scheme. By way of Cisco Catalyst 3750 switch stack example we will show you the easiest redundancy structure when upon physical failure of just one port, the rest of the network storage ports are being automatically disconnected, while the ports of standby NAS, wired up to the switch stack, are being connected. A more difficult reasoning capability demands having at least the ICMP availability checking procedure of the corresponding interfaces, error counting by port and so on. One must realize that this kind of switching-over will lead to a partial loss of the data altered upon the creation of the last LUN snapshot. An alternative variant where two controllers in S2600 are used will not solve the problem of availability for systems without iSCSI Multipath support.

Thuswise, on/off port switching is made using Cisco EEM (Embedded Event Manager) or any other similar technology. We have already connected the controller A of the main device to Gi1/0/1, Gi1/0/2, Gi2/0/1 and Gi2/0/2 stack ports, meanwhile for the controller A of the backup storage we have used Gi1/0/3, Gi1/0/4, Gi2/0/3 and Gi2/0/4 ports. It should be noted that upon using both one or two controllers, an administrator must interconnect their interfaces with different switches in the stack in order to avoid the complete unavailability of the storage in case of a failure (for an initiator with iSCSI Multipath support).

Our applet will respond to any failure caused by Gi1/0/1 port by disconnecting Gi1/0/1, Gi1/0/2, Gi2/0/1 and Gi2/0/2 ports and connecting Gi1/0/3, Gi1/0/4 and Gi2/0/3 ports.



Let us consider that the Gi2/0/4 port was connected by default and has been used in order to transmit simultaneous LUN snapshots. Users were not permitted to get connected to the storage interfaces wired up to Gi1/0/4 and Gi2/0/4 ports; these are separate interfaces we transmit our snapshots through.

```
event manager applet fox_test
event syslog pattern "Interface GigabitEthernet1/0/1, changed state to down"
action 1.0 cli command "ena"
action 1.1 cli command "conf t"
action 1.2 cli command "int ra Gi1/0/1 - 2 , Gi2/0/1 - 2"
action 1.3 cli command "shu"
action 1.4 cli command " int ra Gi1/0/3 - 4 , Gi2/0/3"
action 1.5 cli command "no shu"
action 1.6 cli command "exi"
action 1.7 cli command "wr"
```

In order to get the list of the applets registered, one should enter *sho ev man po reg* command. It is obvious that in case of the RAID-array failure on an active S2600 this arrangement will not help at all, however one will be able to avoid a black-out of the storage owing to the power supply problems.

Instead of a switch stack one can use something similar to Cisco VSS, which is to be implemented using two switches Cisco Catalyst 6500 series with Virtual Switching Supervisors 720-10GE, although this is completely the other story. A few things have to be mentioned about the 3750 switches themselves. While working with high-load nets an administrator should use only the models with support of StackWise Plus technology, not just StackWise. This opinion is based on the alteration of the switching fabric behaviour, as well as on the increase of available bandwidth of the stack bus. A nice example of a switch with StackWise Plus support is Cisco Catalyst 3750-X. Since Huawei Symantec S2600 doesn't support 10GE connection, there is no need in using the corresponding ports; well, only if one has to connect the switch stack to a network core.