

? ????????? Cisco Nexus 5000 ??? 10Gb switch.????? 5 ???? CCNA ???? Cisco Switch / Router ???!!?????????????  
????????? Cisco Nexus 5000 ??????.????????????? Cisco Nexus 5000 ??????????????.

- **High-performance 10 Gigabit Ethernet**  
???????? 10G ? switch ,?????????????!!
- **Data Center Ethernet (I/O Consolidation)**  
?????? switch ?????? Fiber SAN ? switch.
- **Fibre Channel over Ethernet(FCoE)**  
Fiber Channel ??????? Ethernet ??????.
- **Virtual-machine-optimized networking**  
??????????? VMware ? virtual switch ??????????????????????????(Virtual Switch).

**High-performance 10 Gigabit Ethernet**

?? Cisco Nexus 5000 ?????????? 1-RU Nexus 5010 ? 2-RU Nexus 5020 ,Nexus 5020 ??? Nexus 5010 ??????.??????  
??2???,Nexus 5020 ?????? 40 ?, Expansion Module ? 2 ?,???? Expansion Module ???.

- An Ethernet module that provides 6 ports of 10 Gigabit Ethernet.
- A Fibre Channel plus Ethernet module that provides 4 ports of 10 Gigabit Ethernet, and 4 ports of 1/2/4 Gbps native Fibre Channel.
- A Fibre Channel module that provides 8 ports of 1/2/4 Gbps native Fibre Channel.

?? 2 ???? Native Fiber Channel ?????????? 1/2/4 Gbps native Fibre Channel ? SAN ??..??? SAN Fibre ???????????  
? Expansion Module.

**Data Center Ethernet (I/O Consolidation)** ?????????????!????????? Fiber Channel Storage(SAN) ??????.??????  
?????? "Cisco Nexus 5000 " ???? FCoE ? Fibre Channel Switching ???.

### FCoE and Fibre Channel Switching

Cisco Nexus 5000 Series switches support data center I/O consolidation (IOC) by providing FCoE interfaces (to the servers) and native Fibre Channel interfaces (to the SAN).

???? "Cisco Nexus 5000" ????????? FCoE ? Fibre Channel Switching ??????????????!

### Physical Fibre Channel Interfaces

Cisco Nexus 5000 Series switches provide up to eight physical Fibre Channel uplinks. The Fibre Channel interfaces are supported on optional expansion modules. The Fibre Channel plus Ethernet expansion module contains four Fibre Channel interfaces.

???????????????? "physical Fibre Channel",???????????? "expansion modules".???? expansion modules !!!!!  
?????.

The Nexus 5020 switch has two slots for optional expansion modules. The following expansion modules are available:

- N5K-M1404 provides four 10-Gigabit Ethernet ports, and four 1/2/4 Gb Fibre Channel ports.
- N5K-M1600 provides six 10-Gigabit Ethernet ports.

????????? " N5K-M1404 " ,???? Cisco Nexus 5020" ??? Fibre Channel Switching ??..?? Fibre Channel over Ethernet (FCoE).

### Fibre Channel over Ethernet

Fibre Channel over Ethernet (FCoE) provides a method of encapsulating Fibre Channel traffic over a physical Ethernet link. Cisco Nexus 5000 Series switches use FCoE to carry Fibre Channel and Ethernet traffic on the same physical Ethernet connection between the switch and the server.

**"Cisco Nexus 5000" ?????? 10Gb Ethernet Ports ???????? FCoE,????? "auto".**

?:: ??? SAN Storage ?????? "Cisco Nexus 5020" ??????.????? N5K-M1404 expansion modules.

??????? SAN + Network ??? SAN ?? Network ?????????????????,??????????????? Server?(Fiber Channel HBA + NIC)? Switch ??? 2 ?,????????????,?????

?? Cisco Nexus ?????? DCE(Data Center Ethernet,?? Cisco ?????? DCE ????????????? CEE(Convergence Enhanced Ethernet),????? DCE / CEE ??????),??????? SAN ????????????????? FCoE ?????????????????,??????????????

1.????????????? SAN ?????,????? Cisco Nexus 5000 ??? Expansion Module ?? Native Fiber Channel ????? Nexus 5000 ??.

2.????????? FC HBA(?:Qlogic , Emulex) ????? Cisco Nexus 5000 ??? Expansion Module ?? Native Fiber Channel

????? Nexus 5000 ?? ?????? SAN ??????. ?????? F.C Switch ??????!  
3. ?????? Server ?? 10G NIC ?? NIC ??????????????, ?????????? SAN ?????????! ????? FCoE ?????? SAN ?????, ?????  
????????? FC ?????????? 1.???? CNA(Converged Network Adapter) 2.??? Linux ?? open-FCoE , ????????? FC  
Frame ??? NIC ?? Frame ?????? Enternet Frame ?,??? Cisco Nexus 5000 ???.

**Fibre Channel over Ethernet(FCoE)**

FCoE ?????????????? Fiber Channel ?????? Enternet ???(frames).

??? iSCSI ??? iSCSI ?? TCP / IP ???, FCoE ?????? Enternet ???(frames)???, ???????? Routing ?.

???? switch ???????????? fiber channel ???????? IP ?????? (??? iSCSI ?????? Fiber Channel ???, ?? Dell EqualLogic ?  
??? iSCSI ??? ).?? FCoE ?? Fiber Channel ??? Enternet ? frame ?,?? iSCSI ?????????? TCP / IP ??? ?????????? IP  
routed ???????.

??? FC Switch ???????? SAN ??????, ?????????????? Fiber Storage(SAN), ?????? Server ?????? FC HBA ???, ??????????  
SAN ?????? SAN Switch. ???????????????????????.

?? Fiber Channel ?????? 1G/2G/4G ,??? 10/100/1Gbit Ethernet ??,???? eherent ?????????? 10Gbits, ??????????????  
?????????.? FCoE ????? 10Gbit ?????????? switch ??? Fiber SAN ?????????, ?????????????? Switch(Ethernet, Fiber) ?????????  
????? Siwtch ??.

????????? iSCSI , FCoE ?????????????????????????, ?????? Intel, ?????? Intel ?????? Ethernet ????

FCoE SW Target

[http://www.open-fcoe.org/openfc/wiki/index.php/FCoE\\_SW\\_Target\\_Quickstart](http://www.open-fcoe.org/openfc/wiki/index.php/FCoE_SW_Target_Quickstart)

FCoE Initiator

[http://www.open-fcoe.org/openfc/wiki/index.php/FCoE\\_Initiator\\_Quickstart](http://www.open-fcoe.org/openfc/wiki/index.php/FCoE_Initiator_Quickstart)

????????? CNA - converged network adapter ?? ?????????????? Enternet + Fiber Channel ???????????.

???SAN + Network ??????.

**Virtual-machine-optimized networking**

?? VMware ?????? VMware ?? Virtual Switch ??? Cisco Nexus ????????????