

Router & LAN switch 솔루션 Update

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목 차

Router

- Cisco 12400 Series Update
- Cisco 7600 Series Update
- Cisco 7200/7300/7400 Series Update
- Cisco 1700/2600/3600 Series Update

LAN Switch

- Catalyst 6x00 Series Update
- Catalyst 4000 Series Update
- Catalyst 2950/3550 Series

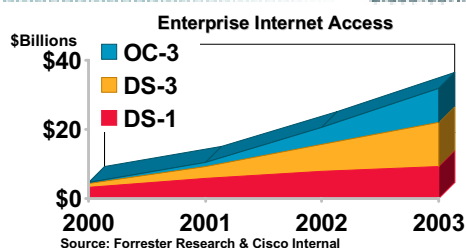
Router Update

Cisco 12400 Series Update
Cisco 7600 Series Update
Cisco 7200/7300/7400 Series Update
Cisco 1700/2600/3600 Series Update

WAN Market 동향

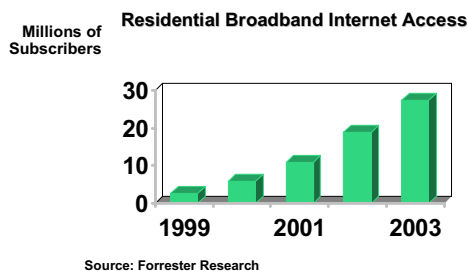
Enterprise Internet Access

- Requirement for High-Speed Access Driven By:
 - » Centralized Corporate Web Applications
 - » E-Commerce (B2B & B2C)
 - » E-Learning
- Trend towards Network and/or Service Outsourcing
 - » Network-based VPN / Firewall
 - » Outsourced Application / Web Hosting
 - » Internet Data Storage



Residential Broadband Internet Access

- Service Application Must Scale
 - » Thousands of Simultaneous Subscribers
- High-Touch Services Enable Revenue Growth
 - » Voice, Video & Data over Broadband
 - » “Gold” Internet Access vs. Best Effort



Networking 서비스의 요구

CISCO.COM

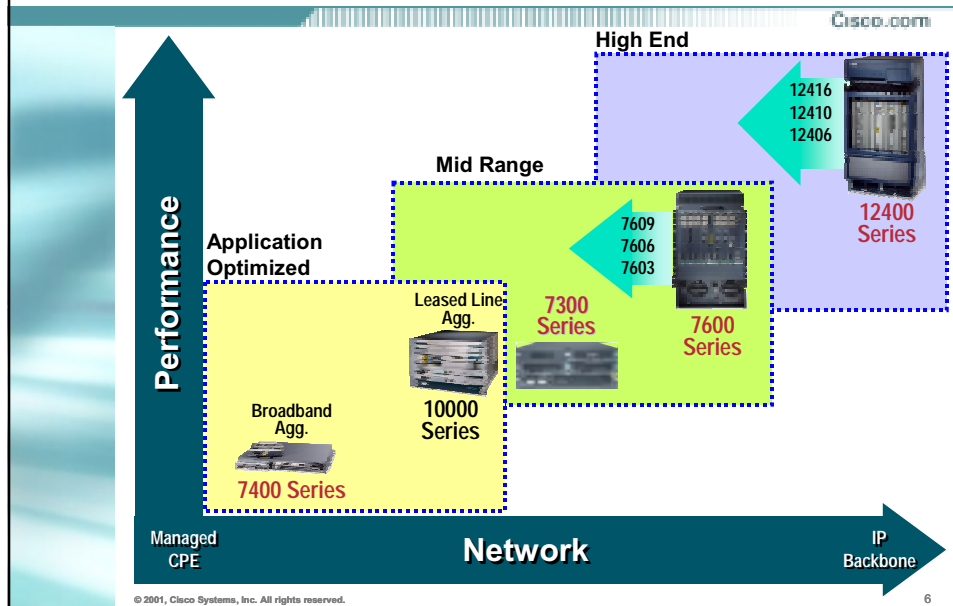
- **Bandwidth Management**
 - Quality of Service and Traffic Management
- **Saving Money**
 - WAN Traffic Management, Multiservice
- **Security**
 - Scalability and Security - VPNs, NAT, ACLs
- **Making Money**
 - Managed Services and SLAs (Netflow)

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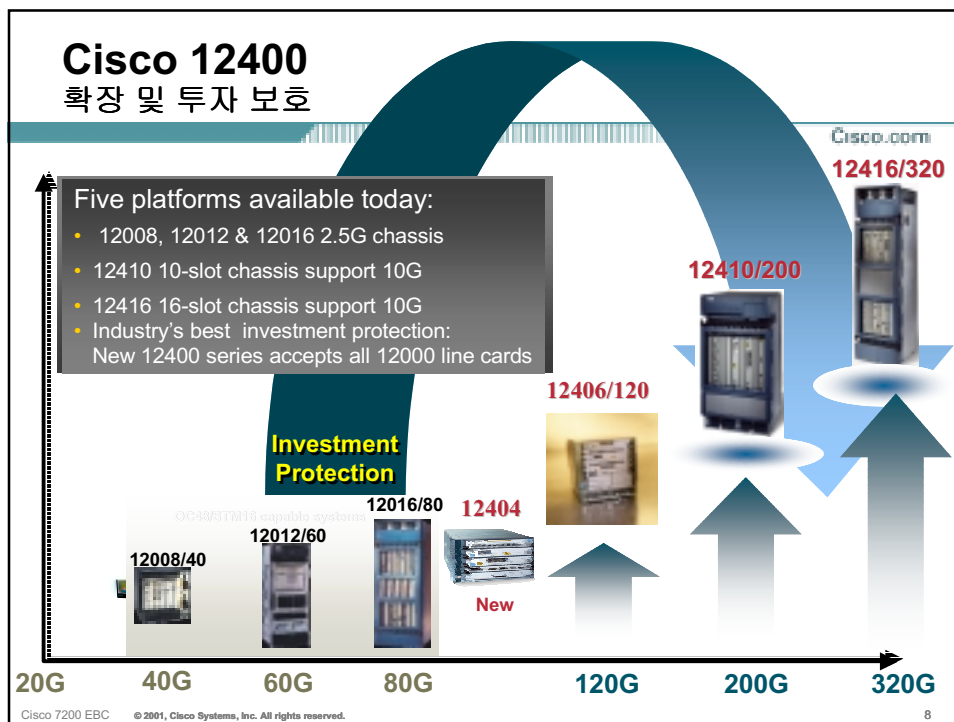
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Cisco Next Generation of Internet Routers

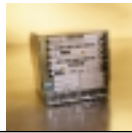
CISCO.COM



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Cisco 12400 Internet Router Series



	Cisco 12406	Cisco 12410	Cisco 12416
Forwarding Capacity	125 Mpps(25Mpps x5)	225 Mpps(25Mpps x 9)	375 Mpps(25Mpps x 15)
Switch Capacity (Gbps)	120 Gbps	200 Gbps	320 Gbps
IO Capacity per Slot	20Gbps	20Gbps	20Gbps
# of Chassis Slots	5+1	8+2	16
# of IO Slots	5	9	15
# of Fabric Slots	3+2	5+2	4+1
# of Systems Per Rack	4	2	1
Height	10 Rack Units	20 Rack Units	40 Rack Units
Size	18.5"H x 17.5"W x 26"D	56"H x 17.5"W x 21"D	72"H x 17.5"W x 21"D
Power	110/220V AC, -48V DC	220V AC, -48V DC	220V AC, -48V DC
Redundancy	RP, Power, Line Card, Mbus, Fabric, Fans	RP, Power, Line Card, Mbus, Fabric, Fans	RP, Power, Line Card, Mbus, Fabric, Fans

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Cisco 12000 Industry Leading Interface

Cisco.com

POS

1-OC192 - NEW

4-OC48 - NEW

1-OC48
4-OC12
4/8/16 OC3
8/16 OC12

DPT

1-OC12 DPT
1-OC48 DPT

Ethernet

8-FE (RJ-45 also)
1/3xGE

10 X GE - NEW

10GE
32-FE

Channelized POS

ChOC12 to DS3
ChOC12 to OC3
ChSTM4 to STM1
2-ChOC12 to DS3
ChOC48 to DS3
4 x ChOC12 to DS3
8/16-CH OC3 to DS3

ATM

4-OC3
1/4-OC12
4-OC12 ATM/TS

Electrical

6/12 port DS3
6/12 port E3 - NEW
6 port CT3 to DS1 - NEW

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새로운 인터페이스 카드

CISCO.COM

- **1-Port OC-192c/STM-64c POS Line Card**

Layer 3 Forwarding

Dedicated 25 Mpps ASIC

Line rate IP+MPLS forwarding at 40 byte packets

Optics Available

1310 nm Short Reach (<2km)

1550 nm Intermediate Reach (<40km)



- **10 port Gigabit Ethernet**

High port density

Cisco 12406 -50 ports per system, 200 ports per rack

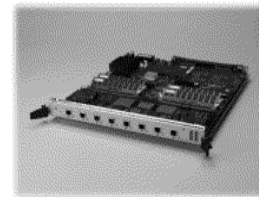
Cisco 12410 -80 ports per system, 160 ports per rack

Cisco 12416 -150 ports per system/rack

Optics Available

1000BASE-SX multimode fiber interface < 550 meters

1000BASE-LH single-mode fiber interface < 10 kilometers



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Cisco 12000 Series IP Services Engine (ISE)

“새로운 IP 서비스의 성능 보장 기술”

CISCO.COM

- The Cisco 12000 IP Services Engine (ISE) revolutionizes the edge market

Brings the power of the Cisco 12000 series' distributed processing *plus* adaptive network processing to the high speed provider edge

- Setting a new agenda for the high speed provider edge:

Only 10G-enabled high speed edge platforms

Only distributed architecture

Unique programmable line rate edge-optimized line cards with integrated forwarding delivers more features at line rate

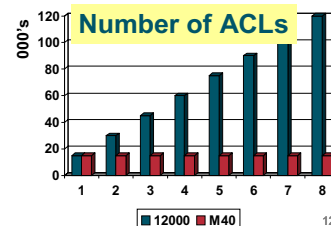
Only per-customer guaranteed priority packet delivery for premium IP services like VoIP, video

Best investment protection

works in *all* 12000 series platforms

Interfaces at FCS:

Clear channel and channelized:
OC-3/12/48 or STM-1/4/16

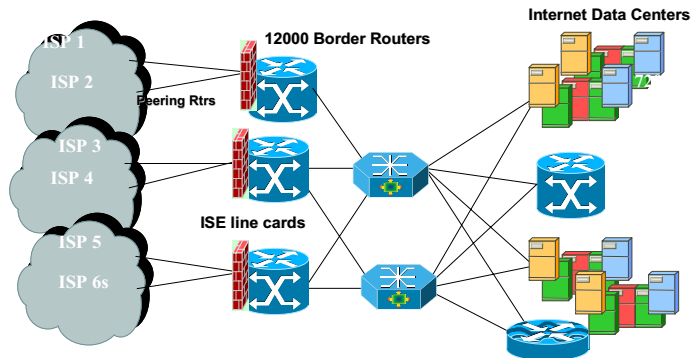


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ISE Applications

Cisco.com



1. Apply Inbound ACL's (thousands) and CAR on peering-facing without performance impact
2. Apply Outbound CAR on customer-facing to avoid flooding and losing data

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Cisco 7600 Series Update

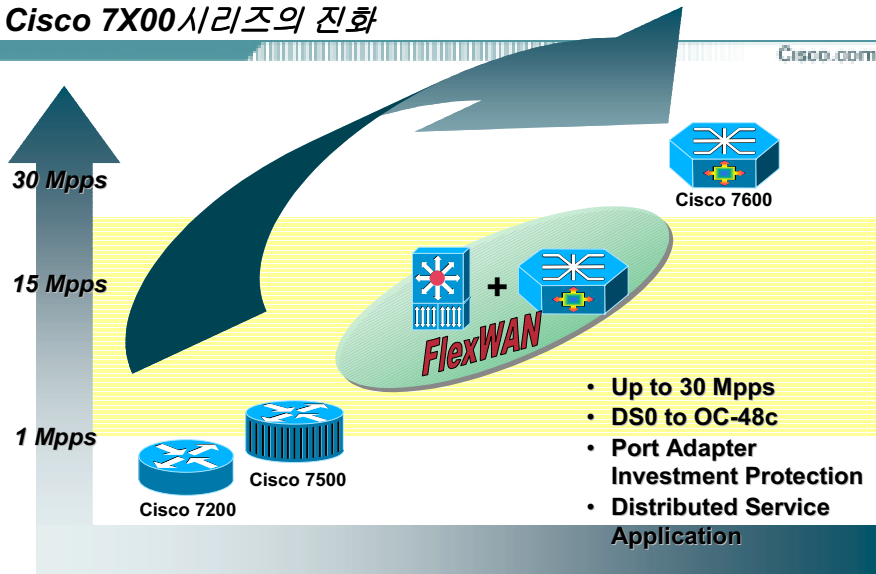
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Cisco 7600

Cisco 7X00 시리즈의 진화



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Cisco 7600 시리즈

The Cisco 7600 Internet Router

- 30 Mpps routing performance
- Up to 256 Gbps bandwidth
- Most scalable high-speed edge router in the industry:
 - Interfaces from DS0 to OC-48/STM-16
 - Ethernet from 10Mbps to 10Gbps
 - Highest port density for T3/E3, OC-3/STM-1 and OC-12/STM-4
 - Up to 6 Mpps per linecard of granular IP services application for security, QoS, MPLS, and Layer 4-7 content recognition & routing
 - Carrier-class element management & provisioning (upcoming)

Designed for Edge IP Service application:

- WAN Edge Aggregation
- Metro Ethernet Aggregation
- Internet Data Center

Cisco 7603



Cisco 7606



Cisco 7609



New!!

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Cisco 7600 Chassis Options

Cisco.com



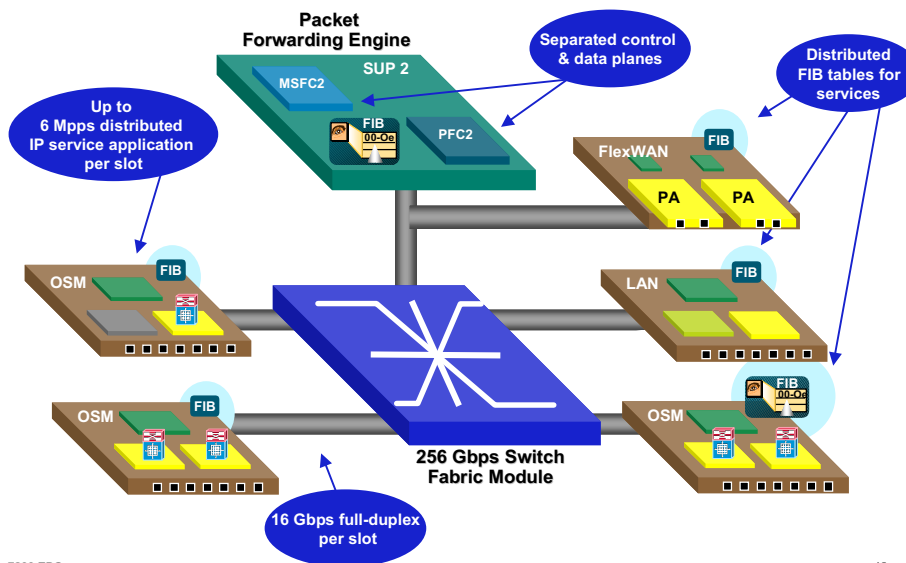
	Cisco 7603	Cisco 7606	Cisco 7609
# of Slots	3 (horizontal)	6 (horizontal)	9 (vertical)
Height	7" (4RU)	12.25" (7 RU)	33.5" (20 RU)
Chassis/rack	11	6	2
Bandwidth	32 Gbps	160 Gbps	256 Gbps
Performance	15 Mpps	30 Mpps	30 Mpps
NEBS compliance	Yes	Yes	Yes

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Cisco 7600 구성 General Overview

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Cisco 7600 인터페이스 모듈 Overview

Existing WAN Connectivity



FlexWAN Port Adapters

T1 / E1
T3 / E3 / HSSI
Channelized Serial T1 or E1
Channelized Serial T3 or E3
OC-3 / STM-1 ATM or POS
Channelized STM-1



New WAN Connectivity



Optical Services Modules

OC-3c / STM-1 POS
OC-12c / STM-4 POS
OC-48c / STM-16 POS
CHOC-12 / CHSTM-4
CHOC-48 / CHSTM-16
Gigabit Ethernet



Powered
by PXF

Diverse LAN Connectivity



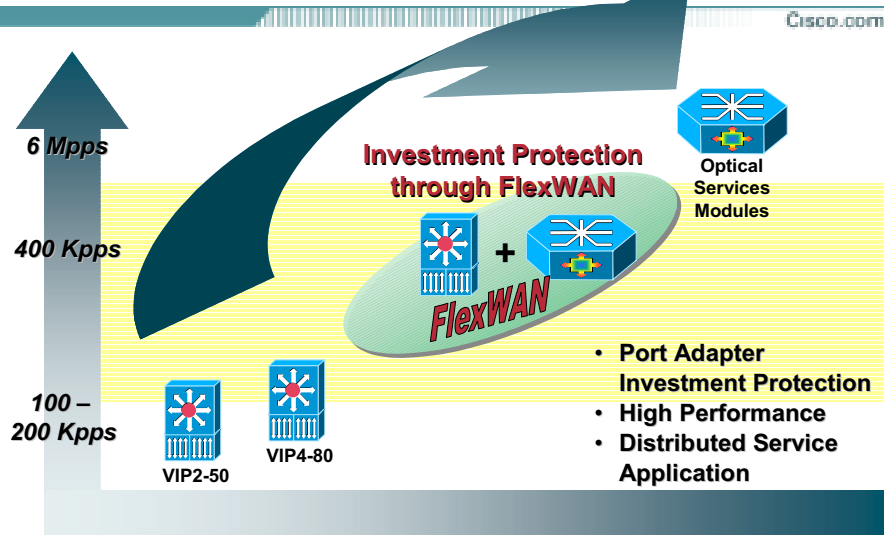
Ethernet LAN Modules

Fabric-Enabled
Distributed Forwarding
Ethernet
Fast Ethernet
Gigabit Ethernet

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Cisco 7600 - WAN 연결 방안 투자 보호 및 성능 향상



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Cisco 7600 - WAN 연결 방안

Cisco 7xxx 시리즈의 투자보호 : Flex Wan + PA

Cisco.com



Port Adapters Supported

- T1/E1 Clear channel
- T1/E1 Channelized
- T3/E3 Clear channel
- HSSI
- T3/E3 Channelized
- ATM T3/E3
- ATM OC-3c/STM-1
- POS OC-3c/STM-1
- STM-1 Channelized

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Flexible Protocol Support

- Frame Relay
- PPP, HDLC
- ATM
- Packet over SONET/SDH

Intelligent Network Services

- Distributed Quality of Service
- Wire-Speed Access Control
- Granular Traffic Control

Wire-speed Forwarding

- 200 Kpps per Port Adapter Slot
- 400 Kpps Total

Distributed Services

- Classification, Marking & Policing (CAR)
- Congestion Avoidance (WRED)
- Queuing (CBWFQ, LLQ) & Traffic Shaping (GTS & FRTS)

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Cisco 7600 WAN 연결 방안

Optical Service Module

Cisco.com

Packet over SONET / SDH



8 or 16-port OC-3c / STM-1 POS
Optic choices: MM, SM-IR or SM-LR



2 or 4-port OC-12c / STM-4 POS
Optic choices: MM, SM-IR or SM-LR



1-port OC-48c / STM-16 POS
Optic choices: SM-SR, SM-IR or SM-ELR

Channelized Optical Aggregation



4 or 8-port CHOC-12/CHSTM-4 to T3/E3
Optic choices: SM-IR



1 or 2-port CHOC-48/CHSTM-16 to T3/E3
Optic choices: SM-SR



Powered by PXF

ATM



2-port OC-12c / STM-4c ATM
Optic choices: MM or SM-IR

Gigabit Ethernet WAN



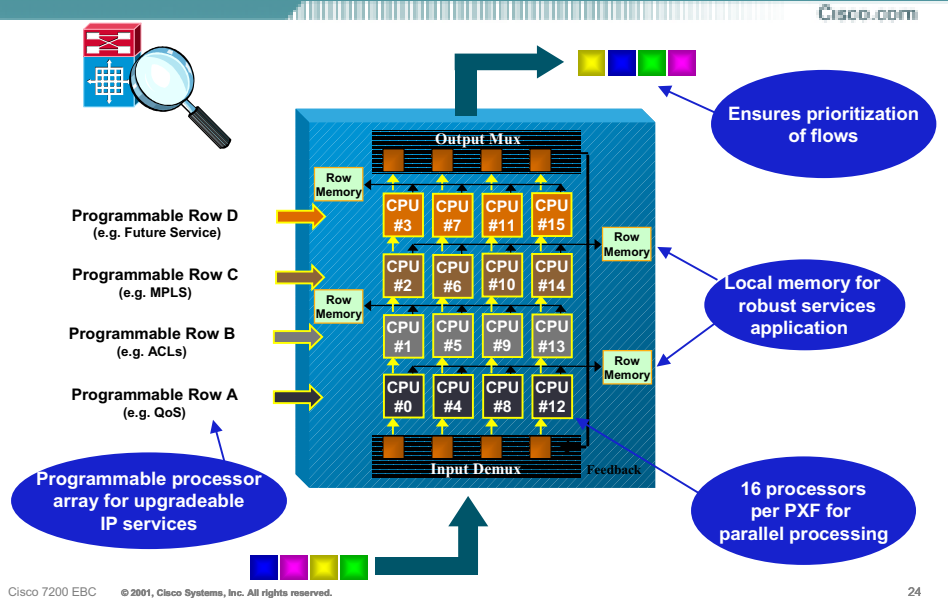
4-port GBIC-based Gigabit Ethernet
Optic Choices: SX, LX/LH or ZX (100 km)

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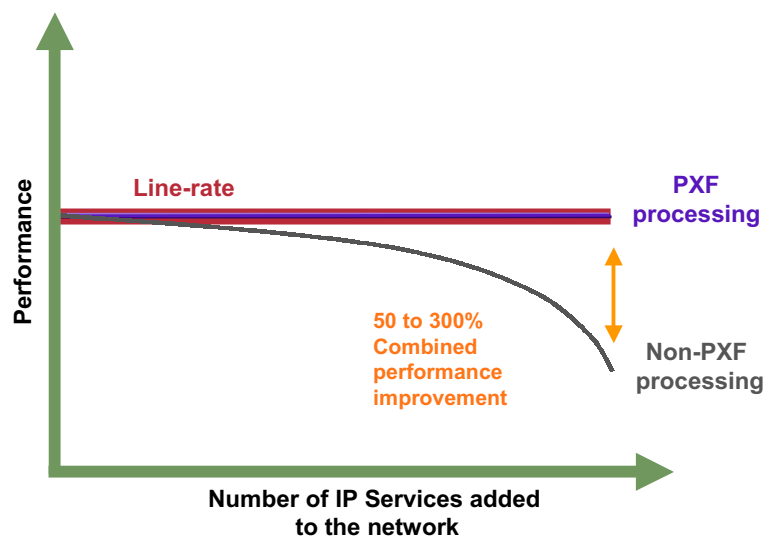
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PXF IP Services Processor

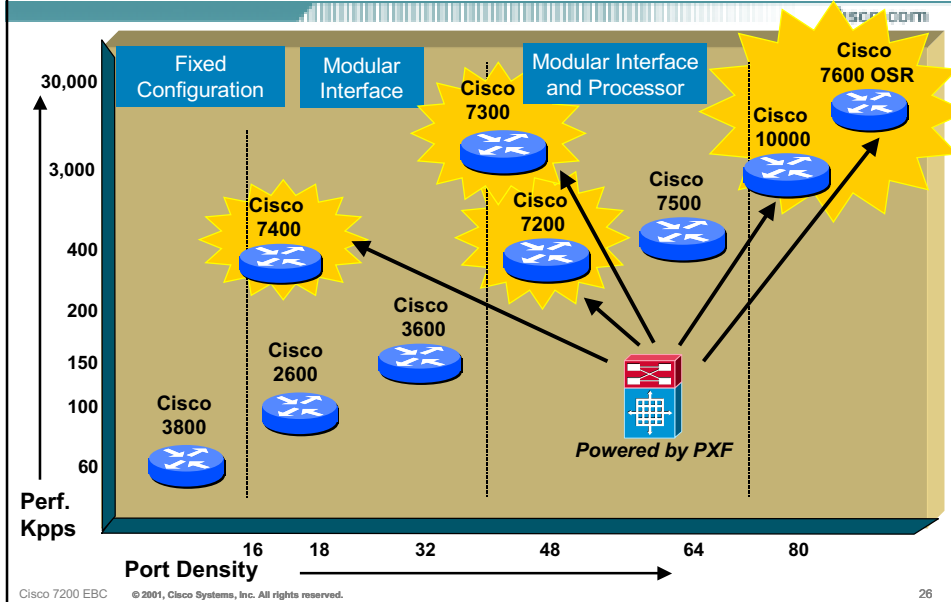
구성 소개



다양하고 강력한 IP 서비스의 성능 보호



Cisco's PXF Edge Router Family



Cisco Adaptive Network Processing Line-Rate Speeds with Software Flexibility

- Adaptive network processing: Parallel architecture delivers consistent performance
- Programmable architecture enables *software upgrades while preserving line rate performance*
- Comprehensive suite of IP features
- Enables multiple features at line rate

2 Different Flavors:

PXF

32 subprocessor complex
Used in 7400, 7600, 10000, 10720

ISE

Integrated forwarding engine and programmable TCAM
Used in 12000 ISE/E3 cards

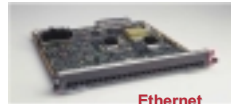
Cisco 7600 LAN 인터페이스 모듈

다양한 LAN Connectivity

Cisco.com

Designed for Customer Aggregation:

A. Classic LAN Cards:



- Ethernet**
- 24-port 10BaseFL



- Fast Ethernet**
- 48-port 10/100BaseTX
 - 24-port 100BaseFX



- Gigabit Ethernet**
- 8/16-port Gigabit Ethernet

B. Distributed LAN Cards:

Distributed ACL and QoS Application

WS-X6816-GBIC

- 16-port GE GBIC
- 24 Mpps Local Forwarding



WS-X6516-GBIC

- 16-port GE GBIC
- Upgradable to 15 Mpps Local Forwarding



WS-X6516-GE-TX

- 16-port 10/100/1000 auto-negotiable
- Upgradable to 15 Mpps Local Forwarding



WS-X6548-RJ

- 16-port 10/100 auto-negotiable
- Upgradable to 15 Mpps Local Forwarding



Cisco 7200 EBC

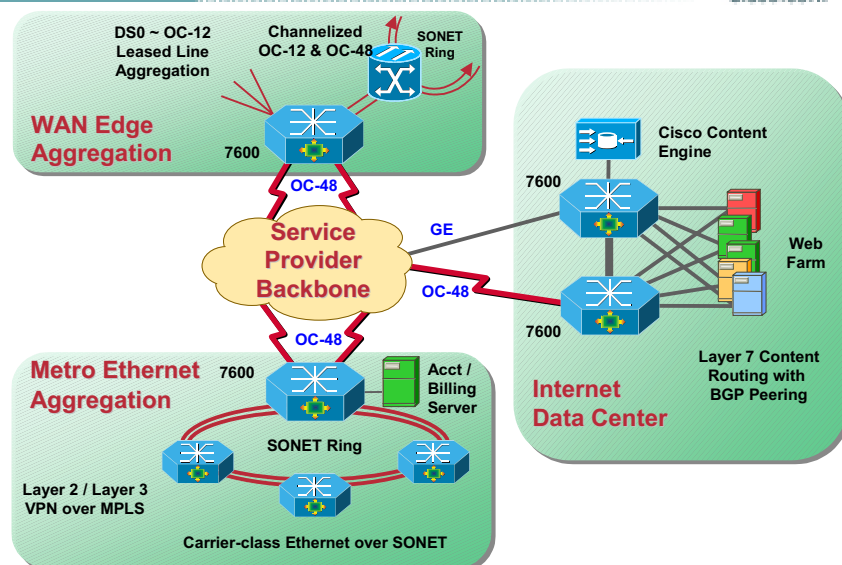
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Cisco 7600

다양한 Applications

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Cisco 7200/7300/7400 Series Update

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Cisco's Mid-Range Routing Family




Cisco 7300
Optical Edge Routing:
Scales to 4 Mpps



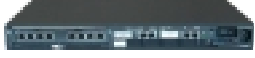
Aggregating Channelized T3 and OC3/STM1 with performance up to OC48

Cisco 7200
The "Gold Standard" in
Mid-Range Routing:
Scales to 1 Mpps



Aggregating serial, T1/E1, ISDN, and Channelized T1/E1 with performance up to GE/OC12

Cisco 7400
Application-Specific Routing:
Scales to 300 Kpps

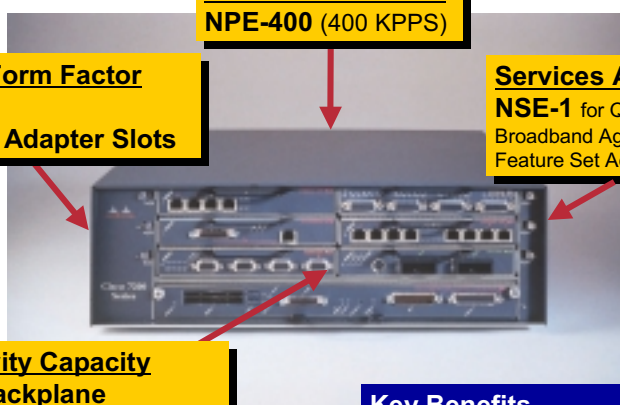


Aggregating Broadband
Aggregation traffic up to 8,000
PPP sessions per chassis

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Cisco 7200

Cisco.com



Modular Processor
NPE-400 (400 KPPS)

Compact Form Factor
3 RU
4 or 6 Port Adapter Slots

Services Accelerator
NSE-1 for QoS and
Broadband Aggregation
Feature Set Acceleration

Connectivity Capacity
1.2 GIG Backplane
MIX bus for Voice Traffic
60+ Port Adapter Options!
HW Encryption
HW Compression

Key Benefits
Unparalleled Feature Support
Modularity/Upgradability
Unmatched Interface Flexibility

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VPN Accelerator Module SA-VAM

Cisco.com

- **60% Increase in Encryption Performance**
- Hardware Accelerated Compression and RSA
- Faster Tunnel Recovery - **45 Tunnels/sec**!**
- Unrestricted license of *Cisco Secure VPN Client 1.1* available at time of order

	ISA	VAM
Mbps	90	145*
Max Tunnels	2000	5000
Tunnels/sec	4	45 (post FCS**)
HW Compression	No	Yes (L3)
HW Accel RSA	No	Yes



* 1400 byte packets
** 10 Tunnels/sec at FCS

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7200RDS

높은 밀집도의 제공

Cisco.com



Cisco 7200 Rack Density System (RDS) enables a seven foot rack to support:

- **9** Cisco 7200 systems
- Over **72,000** PPP sessions
- **180** VoIP PRI terminations
- Front to back Air Flow
- Rack management system

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Cisco 7400 ASR

Cisco.com

Leverages Cisco 7200 Series Infrastructure

NEBS Level 3-compliant Chassis

NSE-1 Processor

Wide range of 7x00 Interfaces

Application specific I.O.S.

350 Kpps CEF-based Internet Routing

Up to 512MB of memory for Internet routing tables

Stackable Form Factor

1 Rack Unit with Front to Back Airflow

Low power consumption - 50 Watts



Service Provider WAN Edge IP Routing

High-performance IP Routing with "Stackable" Bandwidth

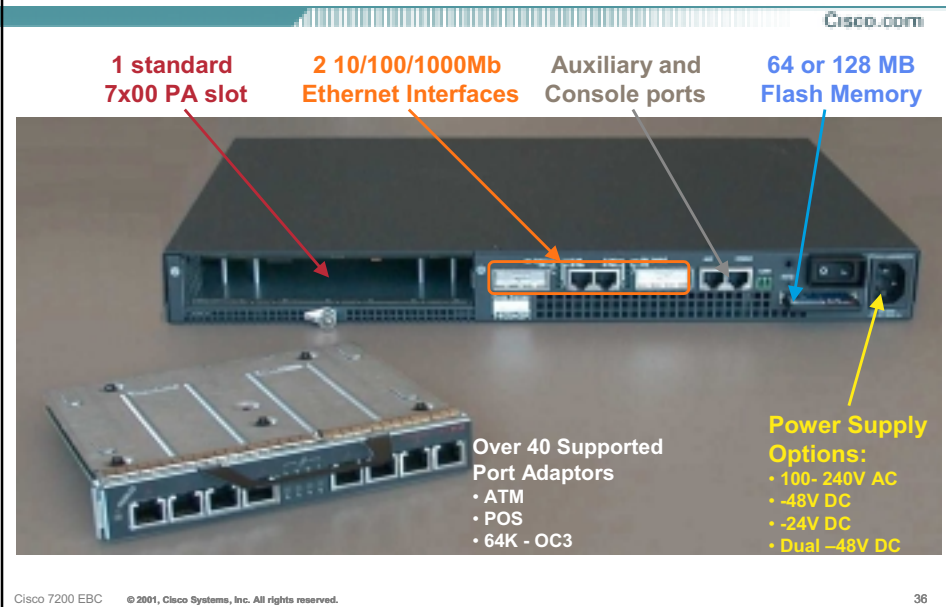
High-touch IP Services

"Adaptive" Network Processing

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Cisco 7400 ASR 장비 구성 요소



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Cisco 7400 ASR 제공되어지는 Interfaces 모듈

Over 40 Port Adaptors to choose from:

- Ethernet, Fast Ethernet, Gigabit Ethernet
- Serial and Multi-channel
- Channelized
- ISDN
- Frame
- ATM
- IP
- POS
- 64K to OC3

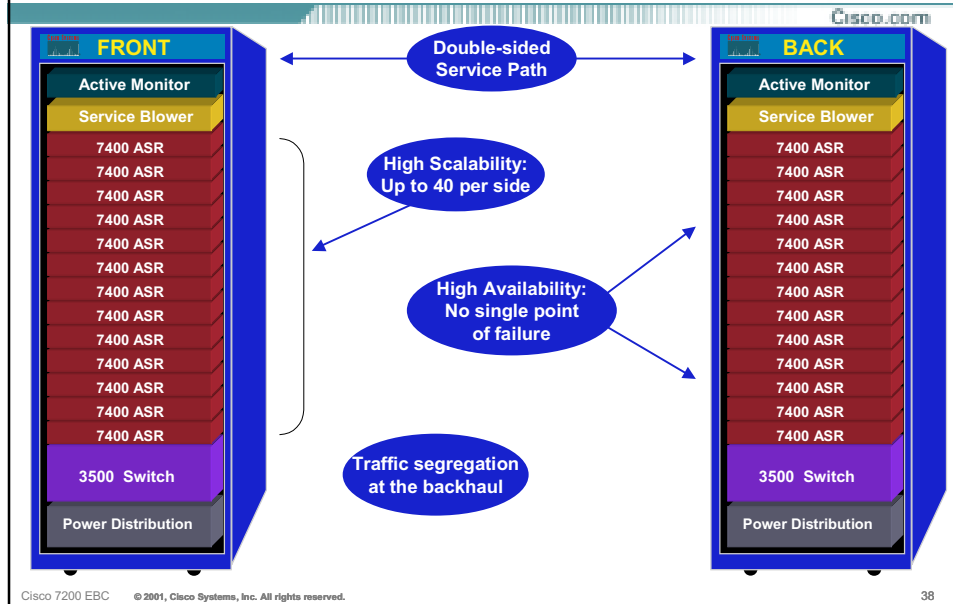


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Cisco 7400 ASR

Stackable 솔루션 : 높은 밀집도와 성능의 제공



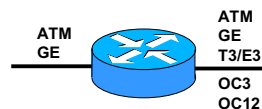
Cisco 7200 and 7400

Broadband Aggregation 서비스의 성능 강화

- Features
- Scalability
- Performance

Feature	Scalability per Chassis
PPP	8,000
RBE	8,000
L2TP Tunnels	4,000
IPSec 3DES tunnels	5,000
ATM VCs	4,096 per PA

* estimated with NSE-1 with Phase 3 PXF



Partnered with the Cisco 7400 for Features, Feature Performance & Scalability

Many more features! Visit www.cisco.com/ent/isbu/soln/net-broadbandagg.shtml

Cisco 7300 Internet Router

Cisco.com

- **The Cisco 7300 Internet Router:
Optimized for the Optical Edge**

- Scalable bandwidth:
 - » Delivers 4 Gbps of point-to-point bandwidth to each interface bay
- High-performance routing:
 - » General-purpose R7K CPU for software-based IOS features
 - » PXF IP Services Processor for hardware-accelerated edge features
- Wide range of edge features:
 - » Multiprotocol routing
 - » QoS, security, accounting, MPLS, etc.
- Wide range of high-speed interfaces:
 - » Scales from T3 to OC-48



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Cisco 7300 Internet Router

Cisco.com

- **Hardware Features:**
 - 4-slot chassis with modular interface bays
 - Optional redundant route processor
 - Optional redundant AC or DC power
 - 4 RU tall (7") with front-to-back airflow
- **Software Features:**
 - Best-in-breed routing protocols:
 - » BGP4, IS-IS, OSPF, EIGRP, RIP, etc.
 - Multiprotocol Routing:
 - » IP, IPX, Appletalk, DLSw, etc.
 - PXF-accelerated QoS for VoIP and Application Recognition / Prioritization:
 - » IP ToS packet classification and marking
 - » Low-Latency Queuing (LLQ)
 - PXF-accelerated Security
 - » Turbo ACLs – standard and extended ACLs
 - PXF-accelerated Netflow v5 and v8



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Cisco 7300 Modules

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4-port OC-3c/STM-1 POS Module



1-port OC-48c/STM-16 POS Module



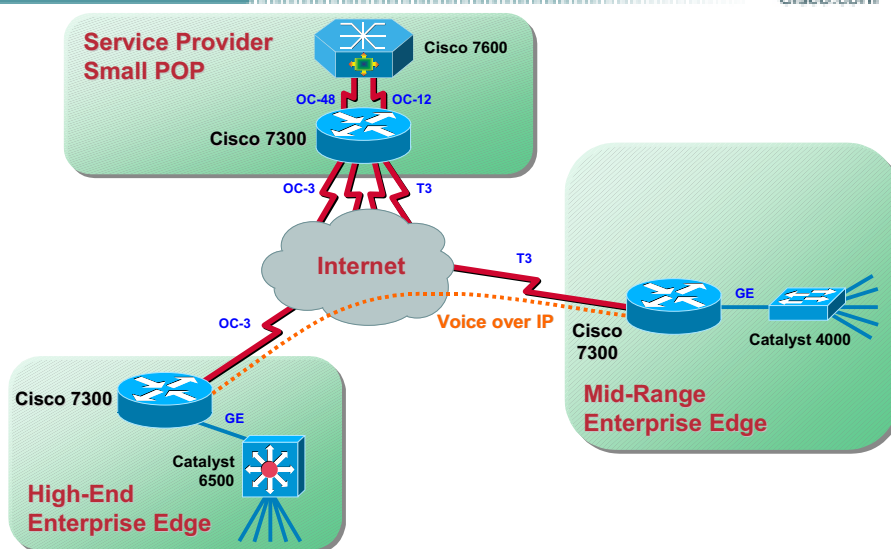
NSE-100 Centralized Route Processor

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Cisco 7300 Service-enabling the Optical Edge

Cisco.com



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Cisco 1700/2600/3600 Series Update

Cisco 1700 시리즈

1710

- Security Access Router
- Dual Ethernet Support
- Stateful Inspection Firewall
- Intrusion Detection
- Wire-speed VPN
- All-in-one Solution

1751

- Multi-Service Ready
- 3 slots: 2 VIC/WIC, 1 VIC
- VLAN Support
- Default Memory:
16/32 MB Flash/DRAM
(16/96 MB MAX.)

1720

- Data Only
- 2 WIC Slots
- Default Memory:
8/32 MB Flash/DRAM
(16/48 MB MAX.)

1751-V

- Multi-Service Configured
1 DSP: 2 Voice ports
- 3 slots: 2 VIC/WIC, 1 VIC
- VLAN Support
- Default Memory:
32/64 MB Flash/DRAM
(32/128 MB MAX.)

Cisco 1700 + Ethernet WIC

CISCO.COM



- 1-Port 10BASE-T Ethernet Interface Card
- Full- and Half-Duplex
- PPP over Ethernet (PPPoE)
- Supports Broadband Modem or DMZ LAN Applications
- LEDs—Link and Full-Duplex (Activity LED on Front Panel)

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Cisco ADSL WAN Interface Card (WIC)

CISCO.COM

ADSL WIC for Cisco 1720, 175x, 2600 and 3600

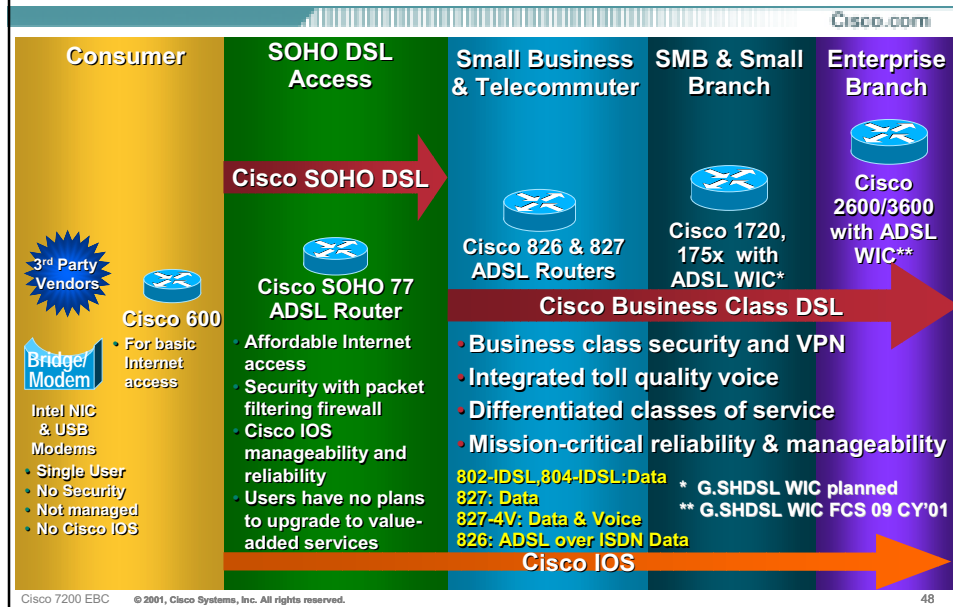
- Award winning modular access routers for SMBs and Enterprise branch offices
- Support for new world services including:
 - Broadband—ADSL**
 - Integrated voice
 - VPNs with software and hardware-based encryption
 - Stateful Firewall
- Flexible configurations with support for multiple WAN links including ADSL, ISDN, T1/E1, Frame Relay, ATM (Cisco 2600 and 3600), OC-3 (Cisco 3600)



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Cisco DSL CPE Product 라인



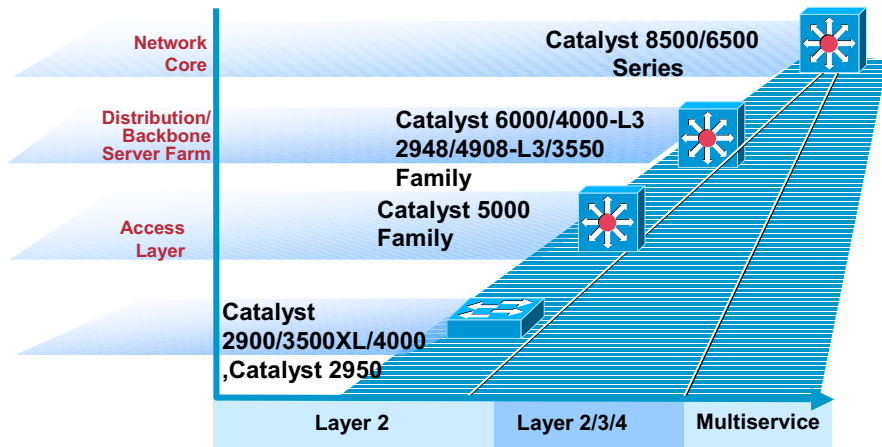
LAN switch Update

Catalyst 6x00 series update
 Catalyst 4000 series update
 Catalyst 2950/3550 series update

Catalyst Switch 제품군

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Cisco Network Services



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Catalyst 6x00 Series Update

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Catalyst 6500/6000 시리즈

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New

- **Catalyst 6500 series:**
6-, 9-, and 13-slot chassis
High-bandwidth solution scalable to 256 Gbps for server farms and campus backbones
- **Catalyst 6509-NEB series:**
9-slot NEBS-compliant chassis
Vertical slot, front-to-back airflow for Service Provider Central Offices and POPs
- **Catalyst 6000 series:**
6- and 9-slot chassis
Cost-effective solution scalable to 32 Gbps for wiring closets



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Catalyst 6500 시리즈 소개

CISCO.COM

- Line-rate, multilayer switching scalable to 256 Gbps
- Scalable IP forwarding performance to over 210 Mpps
- Multiple routing protocols
RIP, OSPF, IGRP, BGP, EIGRP, IS-IS
- Intelligent network services
QoS, security, multicast
- Integrated LAN/MAN/WAN solution



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Catalyst 6513 & SFM2

- **Catalyst 6513**

- 13 Slots
- Optional SFM2 or Linecard support in slot 7/8
- Dual Fabric-Enabled Linecards in slots 9-13
- Up to 576 10/100 Ports
 - Up to 1152 10/100 Ports Per 7' Rack
- Up to 194 GE Ports
 - Up to 388 GE Ports Per 7' Rack
- Power Supply Options: 2500W & **4000W**

**Industry's highest performance!
210Mpps!**



- **Switch Fabric Module2**

- Enables 256Gb Crossbar in 6513
- Compatible in 6506, 6509, 6509-NEB



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Catalyst 6X00 Port



Supervisor II

- Scalable Multi-Layer Switching
- Two Gigabit Ethernet Uplink Modules (GBIC)
- GE Channel

8 & 16 Port Gigabit Ethernet Module

- (GBIC or 1000BaseT)

24 Port 100 Base FX

- 48 Port 10/100
- 24 Port 10FL
- ATM OC-12 Module

Port Density	10/100	GIGE	100 Base FX	10 Base FL	ATM-OC12 Uplinks
C6006 C6506	240	42/82	120	120	5
C6009 C6509	384	66/130	192	192	8
New C6513	576	194	288	288	12

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Catalyst 6500/6000 Series Supervisor Engines

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Supervisor Engine 1A

Flow-Based architecture providing 15Mpps of central forwarding

Cost-effective Wiring Closet

- L2 switching @ 15Mpps
- Multicast, IGMP, protocol filtering
- Enhanced QoS, ACLs, admission control via PFC

Small Enterprise Distribution/Core

- L2/L3 forwarding at 15 Mpps via MSFC

Small Enterprise Server Farm

- Intelligent Services such as SLB, Security, PVLAN

Supervisor Engine 2

- Support for both bus and fabric
- CEF based architecture providing 30 Mpps of central forwarding
- dCEF enabled via DFC on linecards, scaling total system performance up to 210 Mpps

Large Enterprise Backbone, WAN, and E-commerce Applications

- L2/L3 forwarding via MSFC
- Scalable control plane
- Distributed Intelligent services

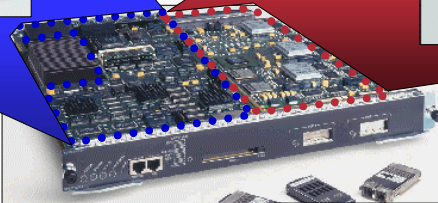
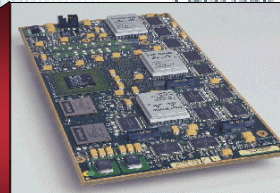
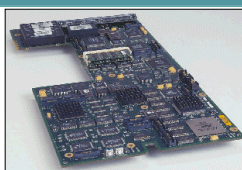
High End Wiring Closet Solution

- Scalability
- Enhanced QoS, ACLs, admission control via PFC

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Catalyst 6500 Supervisor 모듈 구성



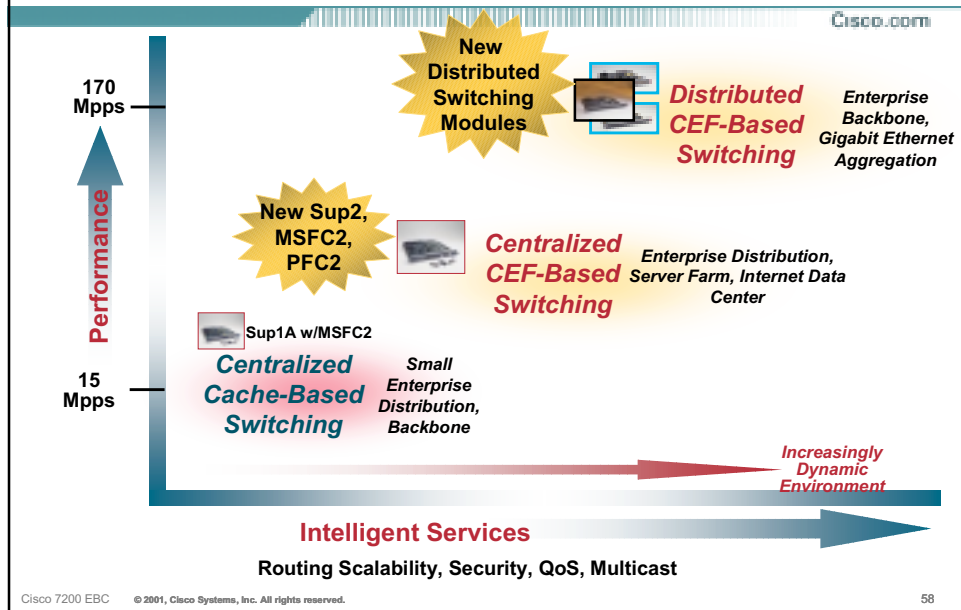
MSFC (Multilayer Switch Feature Card)
L3 Routing Engine
Runs IOS

PFC (Policy Feature Card)
L2/L3/L4 Hardware Accelerator Engine
Supports wire rate
QoS, ACL, L2/3/4 Forwarding

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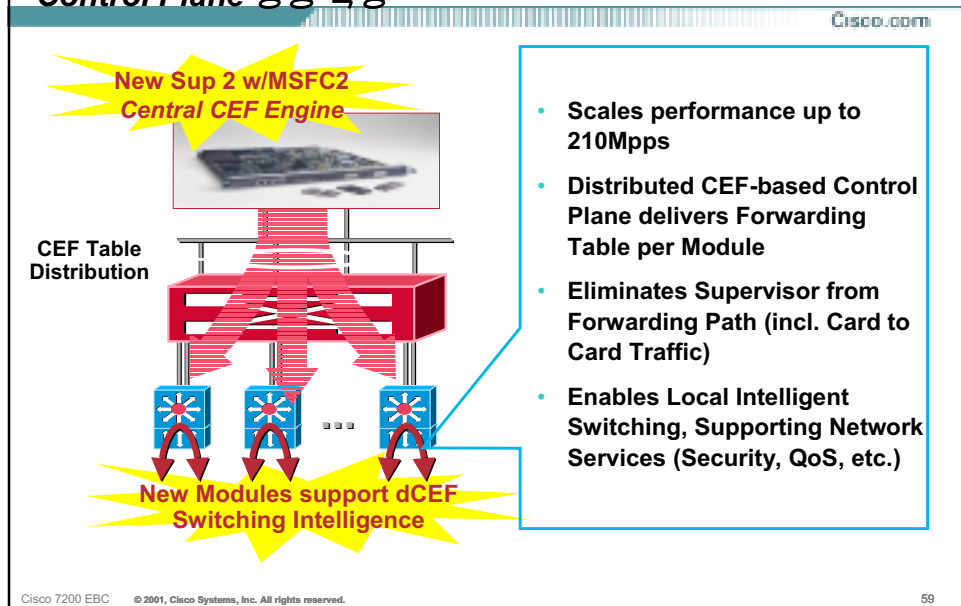
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성능 확장 : 3가지 구성 방안



Distributed CEF (dCEF)

Control Plane 성능 확장



Switch Fabric Module

CISCO.COM

- Allows existing Catalyst 6500 series chassis to be upgraded to 256 Gb/s!
- 16 Gb/s of BW per slot
- Optional Redundancy
- Crossbar Architecture w/ Enhanced Multi-Destination Handling
- SFM2 support 6500 series. SFM support only 6506,6509
- 2 x 20 LCD Front Panel LCD Display
 - System Health
 - System Performance
 - Serial Numbers
 - Software Revisions etc ..
 - User Configurable Parameters



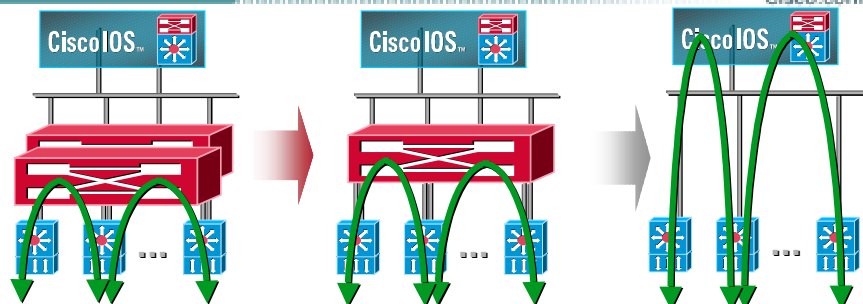
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Catalyst 6500 Series

다단계 Backplane Redundancy

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- Each Module I/Fs Both 256 Fabrics (Active)
- Modules also I/F 32 Gbps Passive Bus

- If Primary Fabric Fails, Modules Defer to Redundant Fabric
- Modular Fabric Design Allows Upgrade of Failed Fabric
- Can Configure Modules back to Using Upgraded Fabric

- If Both Fabrics Fail, Modules Defer to Passive 32 Gbps Bus
- Connectivity is not lost

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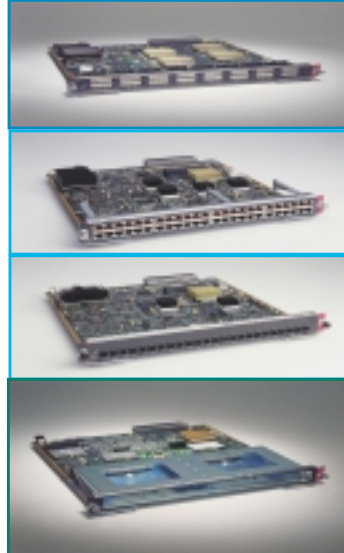
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Catalyst 6500/6000 Series

제공 Interfaces 요약

Cisco.com

- **Ethernet**
 - 24-port 10BaseFL
- **Fast Ethernet**
 - 48-port 10/100 (RJ-45 or RJ-21)
 - 24-port 100FX (MM or SM Fiber)
- **Gigabit Ethernet**
 - 8-port Gigabit Ethernet (GBIC)
 - 16-port Gigabit Ethernet
 - RJ-45 (Category 5 UTP)
 - GBIC (MM or SM Fiber, SC)
 - MT-RJ (Multimode Fiber)
- **ATM**
 - 1-port ATM OC-12 (Dual-PHY, MM or SM)
- **WAN**
 - FlexWAN (Takes 2 Cisco 7200/7500 PAs)
 - Optical Services Modules



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New CEF/dCEF Modules 10/100/1000 **NEW** GigE over Copper

Cisco.com



- 16 ports
- IEEE standard 1000BASE-T
- Auto-negotiating 10/100/1000 Mbps
- Crossbar interface with bus connectivity for resiliency
- Optional Distributed Forwarding Card provides 15Mpps local switching
- Proven interoperability with Intel and Compaq 1000BASE-T server adapters
- Same great price as 1000BASE-T



WS-X6516-GE-TX

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10 Gigabit Ethernet

Cisco.com



WS-X6501-10GEX4

10GBASE-EX4 10 Gigabit Ethernet Module

- 1550nm WWDM transceiver + 10Gbps Ethernet MAC
- Cisco-only optical interface exceeds IEEE distance goal by 25%
- Supports metro connections of service providers and enterprises: 50 km on SMF
- Enables new applications: storage interconnect, E-learning, imaging/3D modeling, TLS, 10GbE inter-POP connections
- Lower cost of ownership: 1/8 fiber cost compared to using Gigabit EtherChannel on eight links

Features and Benefits

- Converged services: Supports all L2/L3/L4-7 intelligent services on Catalyst 6500
- Maximum resiliency and future proof scalability: Supports multi-port 10 Gigabit EtherChannel
- Scalable bandwidth: Supports distributed forwarding

Compatible with Cisco 7600 Internet Router

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FlexWAN Module

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Existing WAN Connectivity

Aggregation of DS0 to OC-3

Investment Protection

Support for 7x00 WAN Port Adapters

Flexible protocol support

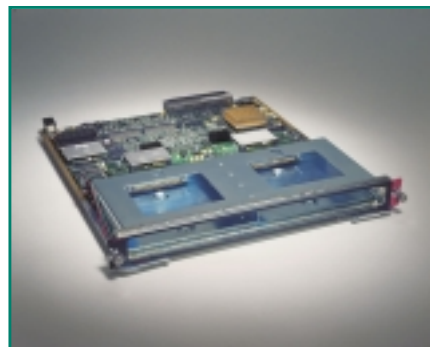
Including: FR, ATM, PPP, HDLC, and POS

High Touch Service Delivery

Distributed quality of service

Line-rate packet filtering

Granular traffic control



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Voice Module

8 Port Digital Trunk
E1/T1 to PBX
E1/T1 to PSTN
Shared resource for network users
DSP Farm

24 port FXS Module
Connect analog phones to IP World

Inline Power Card
Provide inline power over ethernet cable to IP Phone (-48v)
Provide same price

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Specialized Services Modules



CSM Module



IDS Module



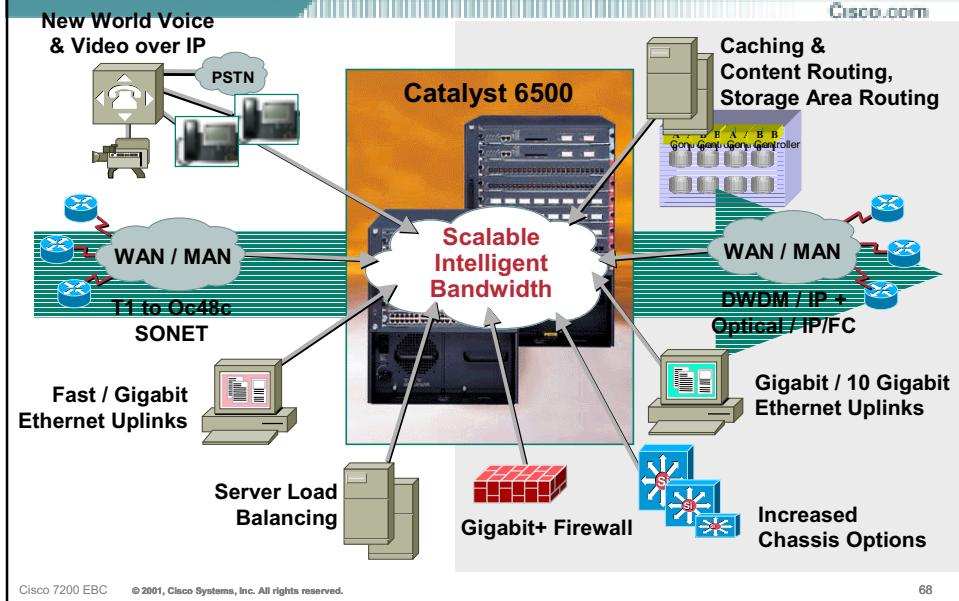
NAM Module

- **Content Switching Module**
 - H/W based Layer 4-7 Feature Set
 - True URL and Cookie Switching
 - 1 million concurrent connections
 - 4-Gbps line-rate Network Address Translation (NAT)
- **Intrusion Detection Module**
 - Integrated Intrusion Detection Services
 - Real-time detection of DOS attack
- **Network Analysis Module**
 - Integrated full RMON functions

Trend Analysis and capacity management

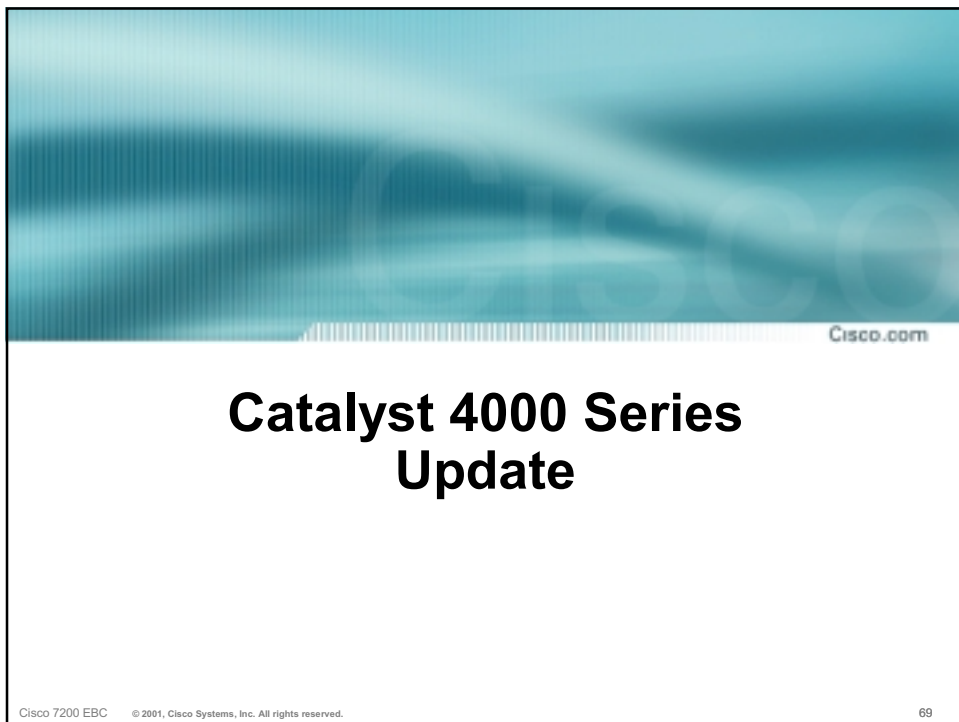
Catalyst 6500 Series

Future-Proof Scalability



Catalyst 4000 Series

Update



Modular Catalyst 4000 Family

CISCO.COM



Catalyst 4003

- Small-Medium Wiring Closet
- 24 Gbps Switching Engine
- 24 Gbps backplane
- 24-96 Fast Ethernet Ports
- 2-36 Gigabit Ethernet Ports
- Supports Layer 2/3/4

Catalyst 4006

- Medium-Large Wiring Closet
- 24 Gbps Switching Engine
- 60 Gbps backplane
- 24-240 Fast Ethernet Ports
- 2 Gigabit Ethernet Ports built-in on SUP II
- Supports Layer 2/3/4

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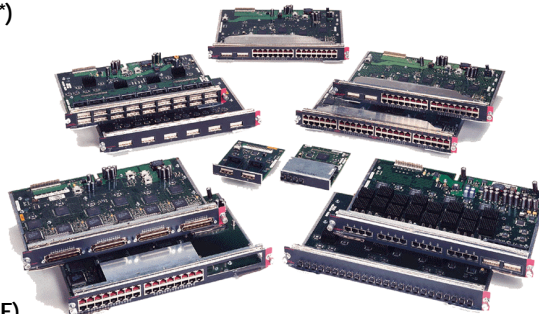
Catalyst 4006 Line cards

다양한 인터페이스 모듈

CISCO.COM

Line Cards

- 48 x 10/100 (RJ45)
- 32 x 10/100 + 2 x GE (GBIC)
- 32 x 10/100 (supports modular uplinks**)
- 4 x 100FX uplink (**)
- 6 x GE (GBIC-based)
- 18 x GE (GBIC-based)
- 48 x 10/100 (Quad Telco)
- 24 x 100FX (MTRJ)
- 48 x 100FX (MMF)
- 12 x 1000BaseT + 2 x GE (GBIC)
- 24 x 1000BaseT
- Layer 3 System Option (32 10/100 + 2 GE),
10/100/1000 QoS/Router Engine



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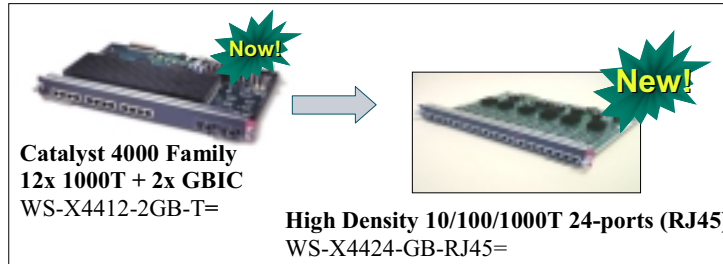
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Catalyst 4000 10/100/1000 Base-T

Cisco.com

IEEE 802.3ab
Standard Compliant!

WC Investment Protection
Desktop Migration from 100Mb to 1,000Mb without touching WC Access ports



Industry Leadership:

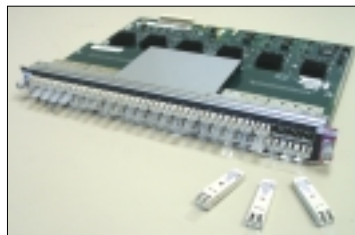
- **Density:** Highest 10/100/1000 line card & system
- **Flexibility:** ONLY modular *TRIPLE*-speed gigabit solution

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48-port 1000BASE-LX SFP Line Card

Cisco.com



WS-X4448-GB-LX

- Subscriber aggregation for <10 km with SMF
- Highest density and leading price performance
- Compatible with Catalyst 4006 (**up to 240 ports**)
- Modularity and serviceability of SFP based technology
- Orderable and shipping with Cisco SW release 6.3(1)

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High Density 100-FX Module

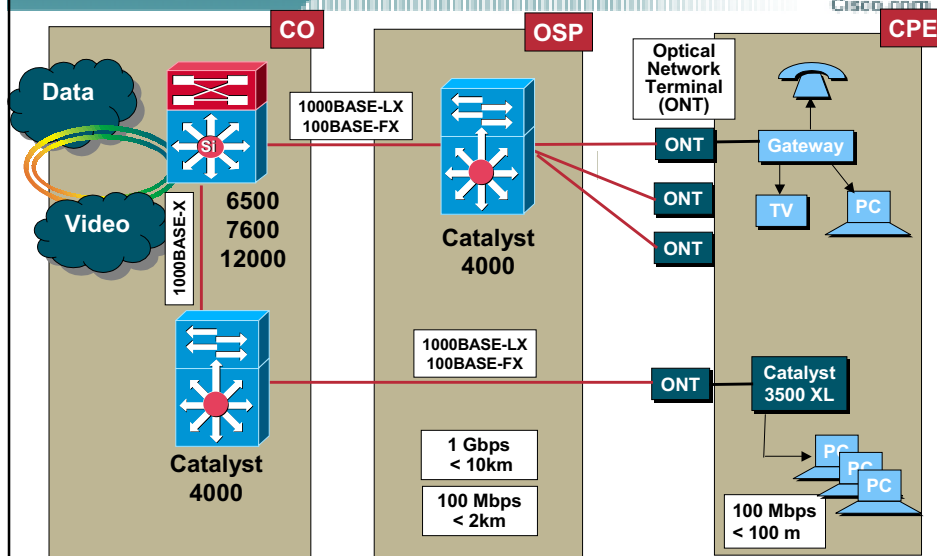


UP TO 240
PORTS/SYSTEM!

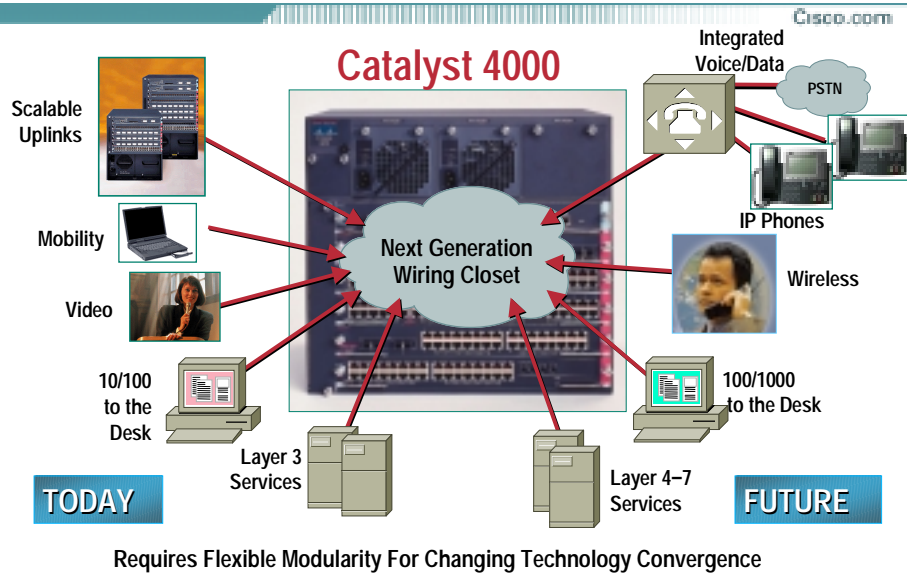
- 48-port 100-FX MMF Line Card for Fiber to the Desktop
- Fiber Optic Cable Plant Security and Resiliency
- Compatible with Catalyst 4003 (up to 96-ports) or Catalyst 4006 (up to 240-ports)
- Based on Catalyst SW 6.2(1)
- Orderable and Shipping Immediately

Ethernet in the first mile -- Metro Ethernet

Pt-Pt 구성 : Residential and Business



미래의 기술요구의 수용



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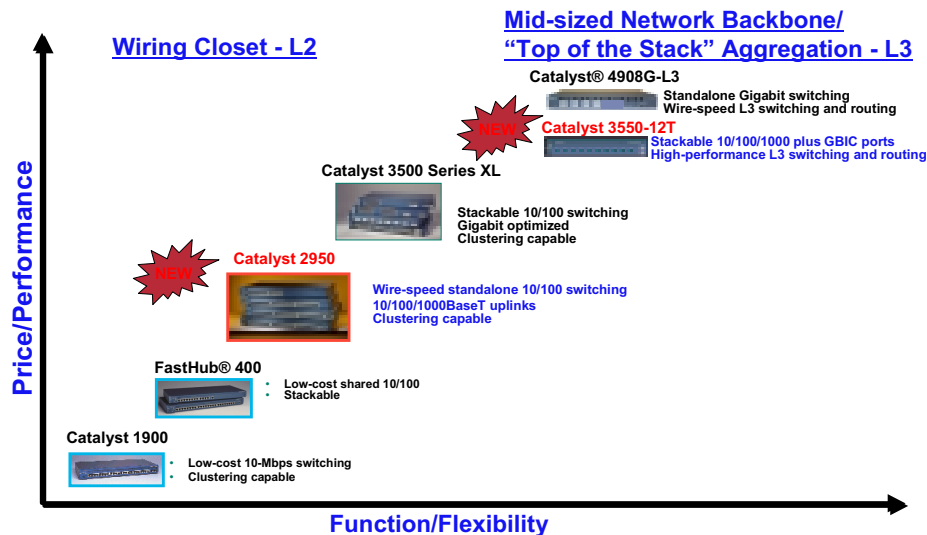
Catalyst 2950/3550 Series Update

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완벽한 LAN Products 시리즈 라인 구성

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Catalyst 2950 Series positioning

NEW

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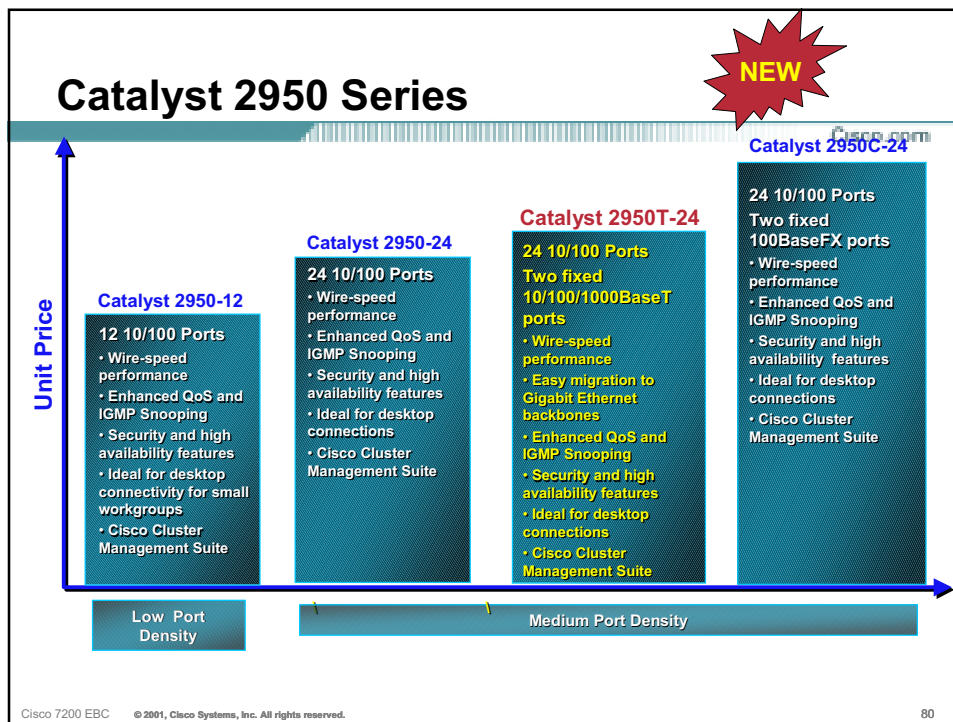
- Best in class wire-speed performance**
Unmatched 8.8 Gbps switching fabric, 6.6 Mpps maximum forwarding rate
- Powerful upgrade path to Gigabit speed networks over copper infrastructure**
Dual, integrated 10/100/1000BaseT uplinks support redundancy and facilitate easy migration from Fast Ethernet
- Enhanced and powerful Cisco IOS Services**
Enhanced LAN Edge QoS & Multicast Management
High availability and security features
- Embedded management using award winning Cisco Cluster Management Suite (CMS)**
Manage a cluster of up to 16 Catalyst 3500XL, 2900XL, Catalyst 1900 Switches



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Catalyst 2950 Series

Catalyst 2900XL/3500XL과의 비교



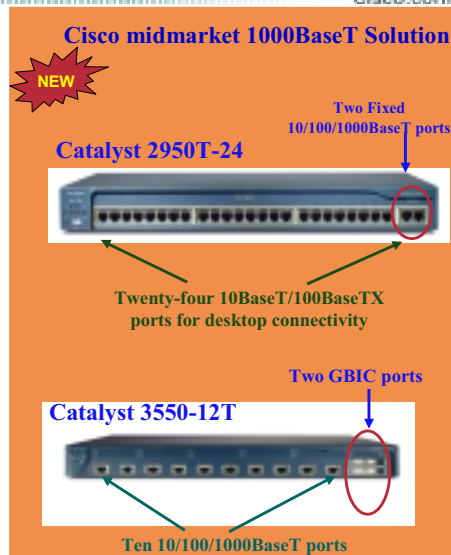


	Catalyst 2950	Catalyst 2900XL	Catalyst 3500XL
Application	Standalone, desktop connectivity	Standalone, desktop connectivity	Premium, stackable desktop connectivity
Performance	Wire speed, 8.8Gbps fabric, max forwarding of 6.6 million pps	3.2 Gbps, max forwarding rate of 3 million pps	Wire speed (except 3548XL), 10.8Gbps, max forwarding of 8 Mpps
Configurations	Fixed	Fixed and Modular	Modular, GBIC based uplinks
On board memory	16MB DRAM, 8MB Flash, 8MB packet buffer	8MB DRAM, 4MB Flash, 4MB packet buffer	16MB DRAM, 4MB Flash, 4MB packet buffer
Gigabit uplink connectivity	Fixed 10/100/1000BASE-T [Catalyst 2950T-24]	None on Fixed 2900XL	1000BASE-T, SX, LX & ZX GBICs
Quality of Service	Enhanced Layer 2 QoS 802.1p and port priority based, classify/reclassify CoS, WRR, Strict Priority Scheduling, FOUR egress queues	Basic LAYER 2 QoS 802.1p based, TWO egress queues	Full LAYER 2 QoS 802.1p and port priority based, classify/reclassify CoS
Multicast	IGMP Snooping	CGMP	CGMP

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Catalyst 2950T-24

- Fixed 10/100/1000BaseT ports on Catalyst 2950T-24
 - Low price per port premium for 2950T-24 over 2950-24
 - Two Gigabit Ethernet uplink ports provide redundancy
- Auto sensing, auto negotiation on 10/100/1000BaseT ports facilitates easy migration to Gigabit Ethernet
- Leverages existing Catalyst 5 cabling infrastructure
- Catalyst 3550-12T and Catalyst 2950T-24 provide a complete 1000BaseT solution to midmarket for the first time



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Catalyst 3550-12T

- Catalyst 3550-12T**
 - 10 10/100/1000BaseT ports with two GBIC ports
- Offers 17 Mpps forwarding rate performance at Layer 2 and Layer 3
- Layer 3 capable hardware preinstaller
- Focus on key services
 - Security and QoS via ACLs
 - Multicast management at L2 and L3
 - Inter-VLAN routing
- Limited lifetime warranty
- Full Cisco GBIC support
 - All existing GBICs (GigaStack™ GBIC, SX, LX, and ZX)



GBIC-Based or 1000BaseT Gigabit Ethernet Ports

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Catalyst 3550-12T 중요 기능

Cisco.com

- **Control**
 - Top-of-the-stack routing for deterministic traffic control
 - Layer 2 & 3 QoS extends end-to-end trust boundary
 - Strong granular traffic rate limiting
- **Simplicity**
 - Switch clustering extends ease of use to Cisco IOS® Intelligent Network Services
 - Fewer Spanning Tree instances and trunked VLANs
 - Common IOS CLI
- **Security**
 - Access control lists for data plane security
 - Support for 802.1x
 - TACACS+ for management access
- **Availability**
 - HSRP for router redundancy
 - Redundant routed uplinks
 - Faster network convergence
- **Scalability**
 - Scalable Layer 3 routing protocols
 - Multicast routing scalability
 - Broadcast domain segmentation

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Switch Clustering

Cisco.com

Award-Winning Cisco Cluster Management Suite

- Uses any supported physical media and transport technologies: copper, fiber, Fast Ethernet, Gigabit Ethernet
- Up to 16 interconnected, geographically dispersed switches can be managed by a single IP address
- Fully backward compatible with all Catalyst 2900 Series XL, 3500 Series XL, 1900 or 2820, or new Catalyst 2950 products
- Web-based interface for easy configuration and management of all clustered switches

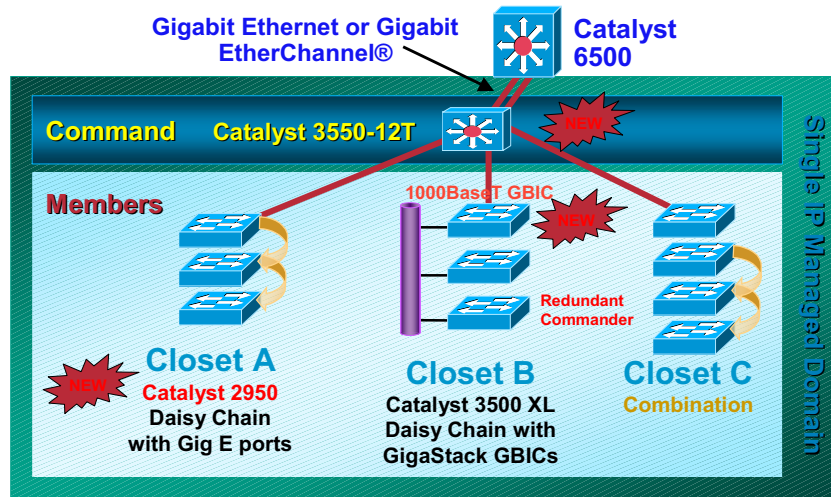
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Switch Clustering

투자 보호 및 손쉬운 Gigabit 스위칭 Migration

Cisco.com

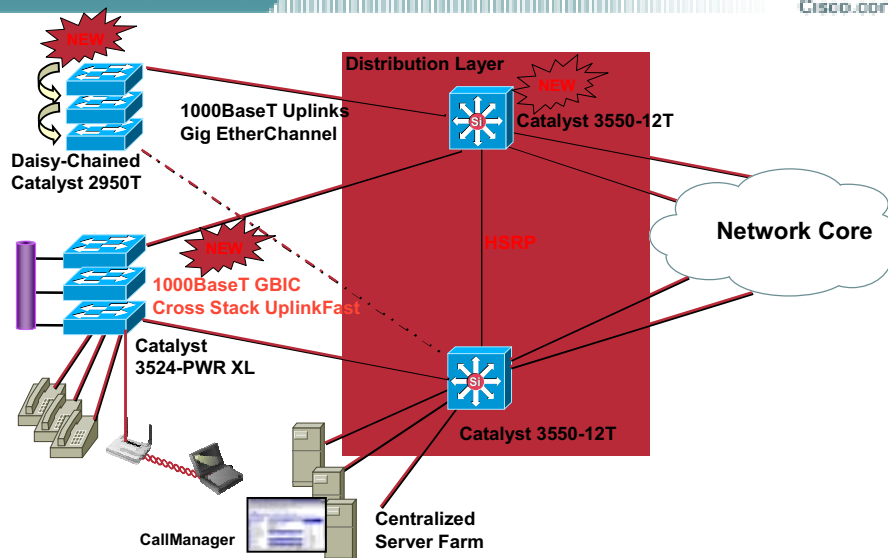


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Distribution Layer Wiring Closet Aggregation

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