



Catalyst 6500 és egyéb újdonságok HBONE tábor Mátrafüred 2005

Zeisel Tamás
Rendszermérnök
Cisco Magyarország

Session Number
Presentation ID

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Miről lesz szó?

Cat6500/7600 Supervisor
Switch Modul Architektúra
IPV4Csomagtovábbítás Hardware CEF
Új WAN modulok (SPA és SIP)
Moduláris IOS Cat6500/7600 platformon

ISR Router újdonságok
Új LAN switchek

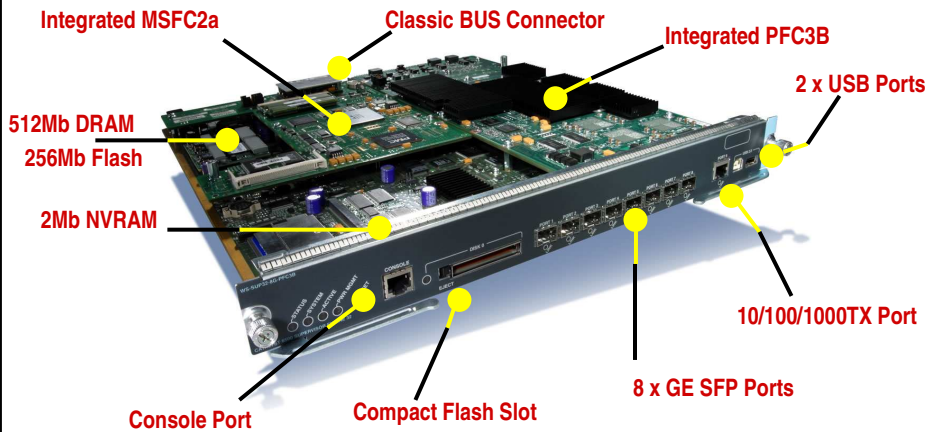
Cat6500 Update
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Catalyst 6500 Supervisor újdonság Supervisor 32

Supervisor 32 felépítése...

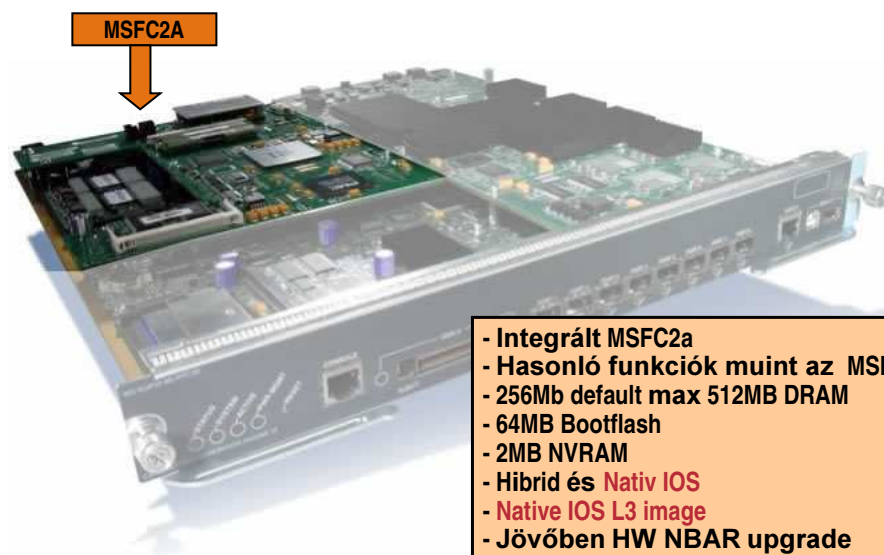


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Catalyst 6500 Supervisor újdonság Supervisor 32 Integrált MSFC2A

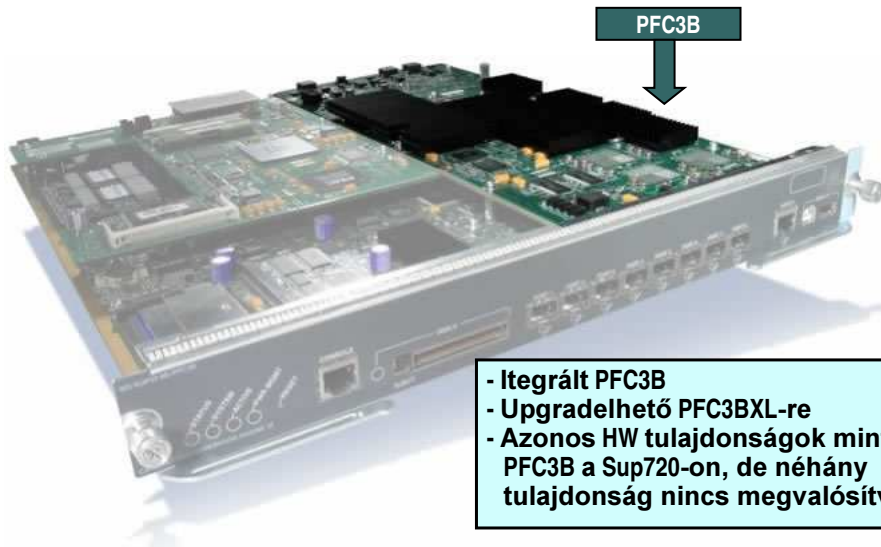


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Catalyst 6500 Supervisor újonság Supervisor 32 Integrált PFC3B



- Integrált PFC3B
- Upgradelhető PFC3BXL-re
- Azonos HW tulajdonságok mint a PFC3B a Sup720-on, de néhány tulajdonság nincs megvalósítva

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Catalyst 6500 Supervisor újonság Supervisor 32 Integrált PFC3B



PFC3B Hardware jellemzők a Supervisor 32-ön

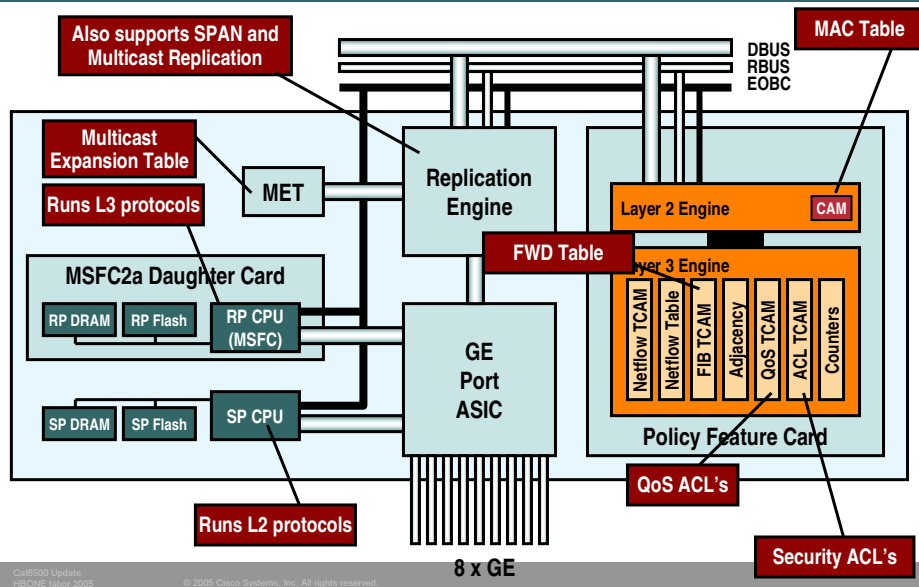
User Based Rate Limiting H/W Based Classification Multi-Path URPF Bi-Directional PIM	GRE and IP in IP Tunneling Supports 256K IPV4 routes Supports 128K IPV6 routes Ingress/Egress Policing	IPV4 and IPV6 CEF IPV6 Tunneling IPV4 NAT/PAT in H/W MPLS P/PE, VPN and TE
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Catalyst 6500 Supervisor újdonság Supervisor 32 Architektúra

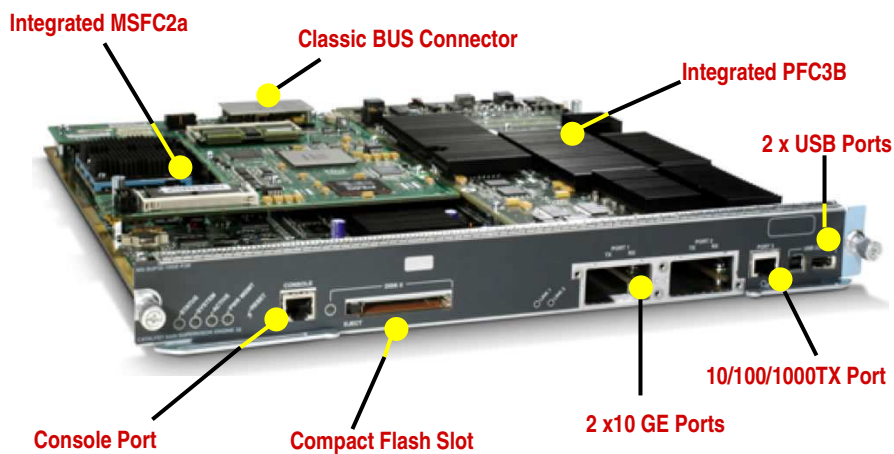


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Catalyst 6500 Supervisor újdonság Supervisor 32-10GE

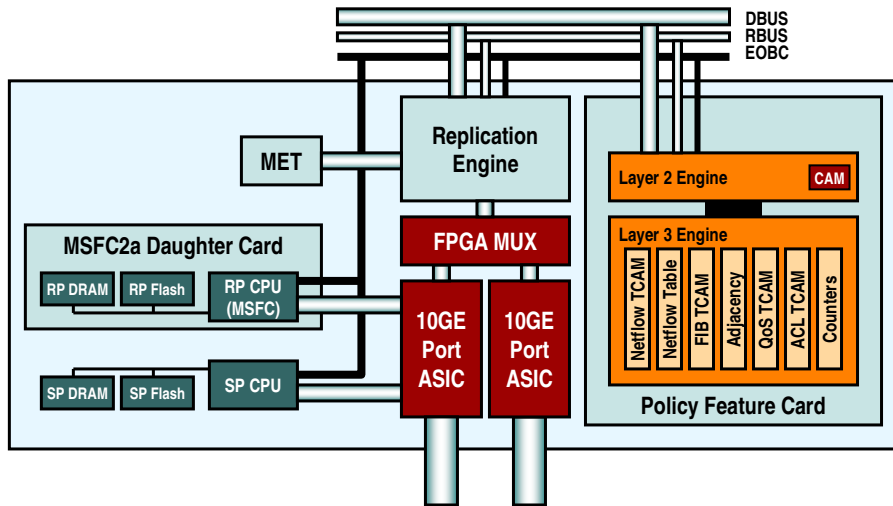
Supervisor 32 10GE változatának felépítése...



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Catalyst 6500 Supervisors Supervisor 32-10GE Architektúra



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Supervisor 32 Linecard Compatibilitás

Sup32 az alábbi modulokat támogatja...

Architecture	Supported?
Classic	YES
CEF256	YES
dCEF256	NO
CEF720	NO
dCEF720	NO
SFM/SFM2	NO
Services Modules	YES
Any DFC	NO
OSM	YES
FlexWAN	YES



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Catalyst 6500 Supervisor

Supervisor 32 összehasonlítás a régi Supervisorokhoz

Feature	Supervisor 1A	Supervisor 2	Supervisor 32
Backplane	32Gbps BUS	32Gbps BUS w/256Gb SFM	32Gbps BUS
Default SP DRAM	128MB	128MB recently upgraded to 256MB Default	256MB
SP DRAM Upgrade	N/A	256MB/512MB	512MB
SP NVRAM	512KB	512KB	2MB
SP Bootflash	16MB	32MB	256MB
Removable Storage	PCMCIA	PCMCIA	Compact Flash
USB Ports	None	None	Yes
Uplink Ports	2 x GBIC	2 x GBIC	8 x SFP + 1 x 10/100/1000TX

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Catalyst 6500 Supervisor

Supervisor 720 Policy Feature Card (PFC)



PFC3x Hardware Jellemzők

IPV4 és IPV6 CEF Switching
IPV6 Tunneling
IPV4 NAT/PAT Hardware-ben
GRE és IP in IP Tunnel (HW)
WCCP V2

256K-1M IPV4 Route
Ingress/Egress Policing
User Based Rate Limiting
Hardware alapú Classification
Bi-Directional PIM

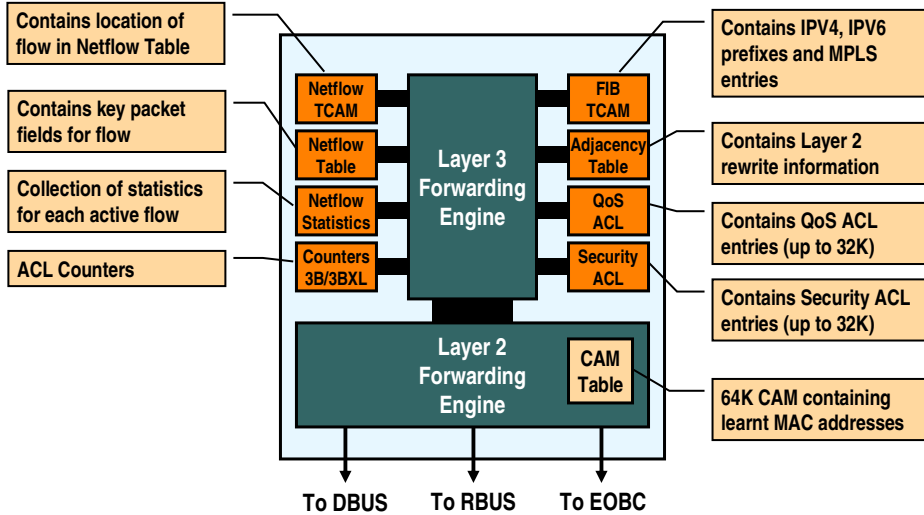
128K-500K IPV6 Route
Port Access Control Lists
Multi-path URPF
4K ACL Label (3B/3BXL only)
ACL számlálók (3B/3BXL only)

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Catalyst 6500 Supervisors Policy Feature Card (PFC) Architektúra

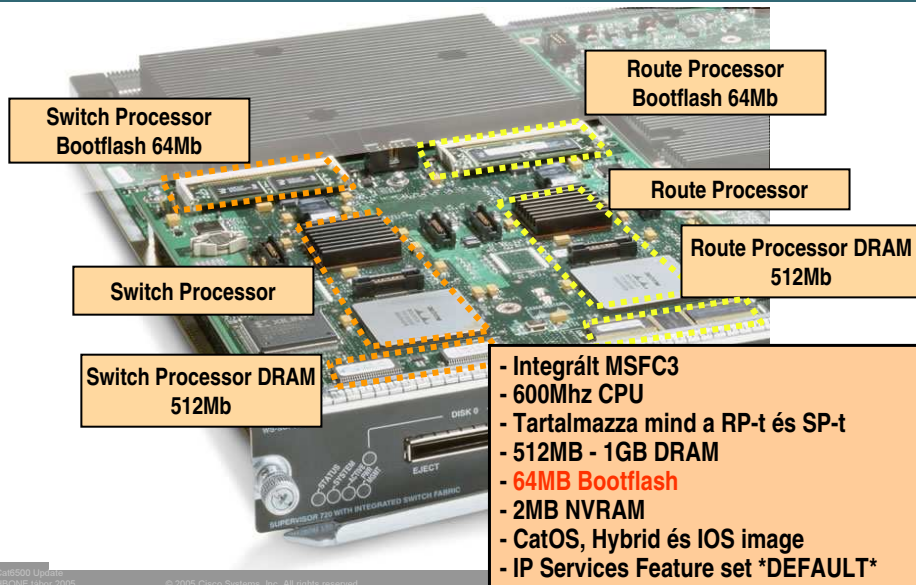


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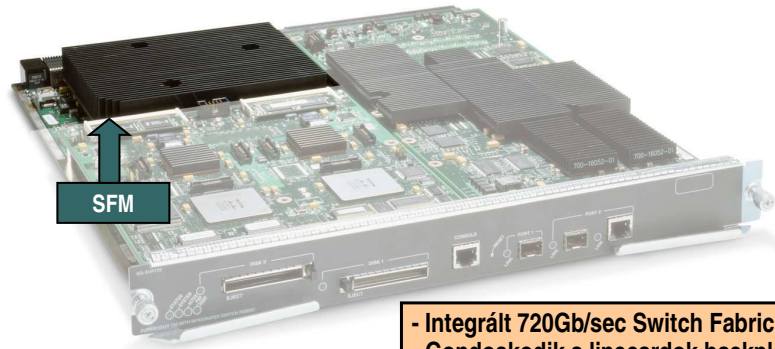
Catalyst 6500 Supervisor Supervisor 720 Multilayer Switch Feature Card (MSFC)



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Catalyst 6500 Supervisor Supervisor 720 Integrált Switch Fabric



SFM

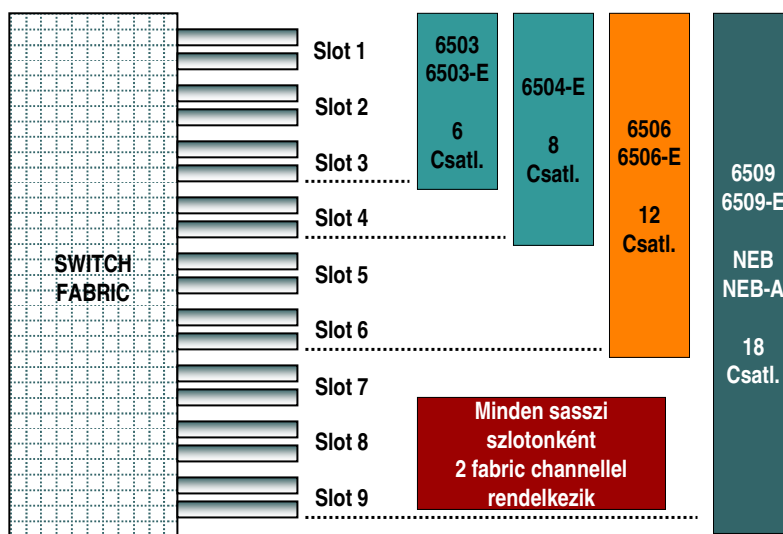
- Integrált 720Gb/sec Switch Fabric
- Gondoskodik a linecardok backplane kapcsolatáról
- **18 Fabric csatlakozással** rendelkezik a kártyahelyek között elosztva
- Minden Fabric csatlakozást 8Gb/sec vagy 20Gb/sec

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Catalyst 6500 Supervisor Supervisor 720 Integrált Switch Fabric

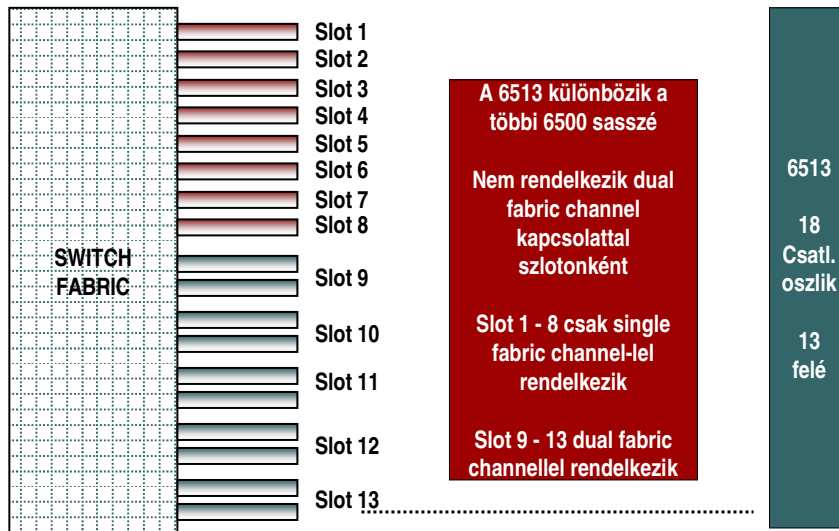


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Catalyst 6500 Supervisor Supervisor 720 Integrált Switch Fabric

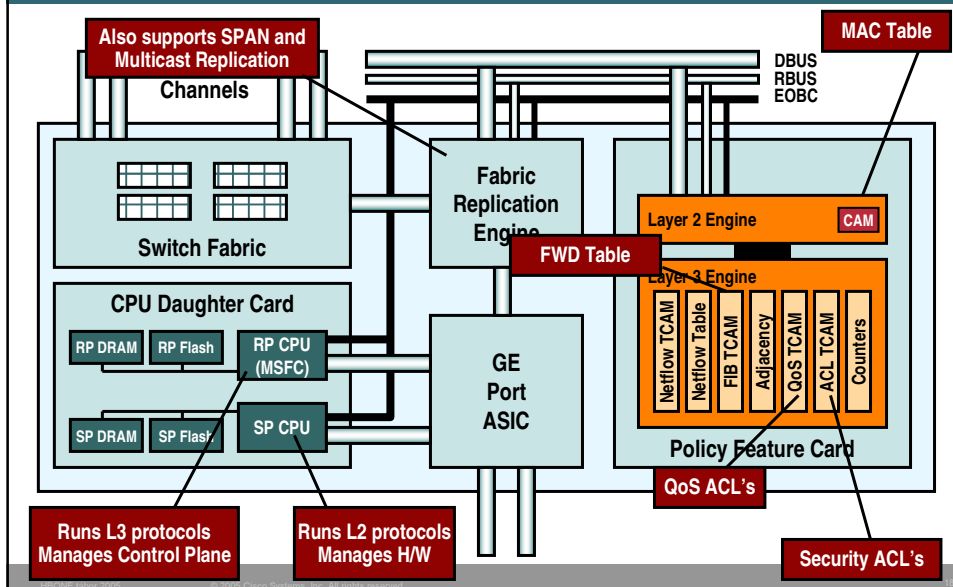


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RISQNF March 2005

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Catalyst 6500 Supervisor Supervisor 720 Architektúra



RISQNF March 2005

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Catalyst 6500 Supervisors PFC jellemzők összehasonlítása

Feature	PFC2	PFC3A	PFC3B	PFC3BXL
FIB TCAM	256K	256K	256K	1M
Adjacency Table	256K	1M	1M	1M
NetFlow Table	128K (32K)	128K (64K)	128K (115K)	256K (230K)
MAC Table	128K (32K)	64K (32K)	64K (32K)	64K (32K)
IPv6	Software	128K	128K	500K
Bidir PIM	Software	Hardware	Hardware	Hardware
Native MPLS	No	No	Yes	Yes
EoMPLS	No	No	Yes	Yes
VRF Lite	No	Yes	Yes	Yes
Tunnels	Software	Hardware	Hardware + QoS Policies	Hardware + QoS Policies
NAT	Software	Hardware	Hardware + UDP	Hardware + UDP

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Catalyst 6500 Supervisors PFC jellemzők összehasonlítása

Feature	PFC2	PFC3A	PFC3B	PFC3BXL
ACL TCAM	32K/4K	32K/4K	32K/4K	32K/4K
PACLs	No	Yes	Yes	Yes
ACE Counters	No	No	Yes	Yes
QoS TCAM	32K/4K	32K/4K	32K/4K	32K/4K
ACL Labels	512	512	512	4K
ACL LOUs	32	32	64	64
User-Based Policing	No	Yes	Yes	Yes
Egress Policing	No	Yes	Yes	Yes
Unique MAC/Interface	No	Yes	Yes	Yes
uRPF Check	Yes - Singlepath	Yes (Multipath)	Yes (Multipath)	Yes (Multipath)

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SWITCH MODUL ARCHITEKTÚRA

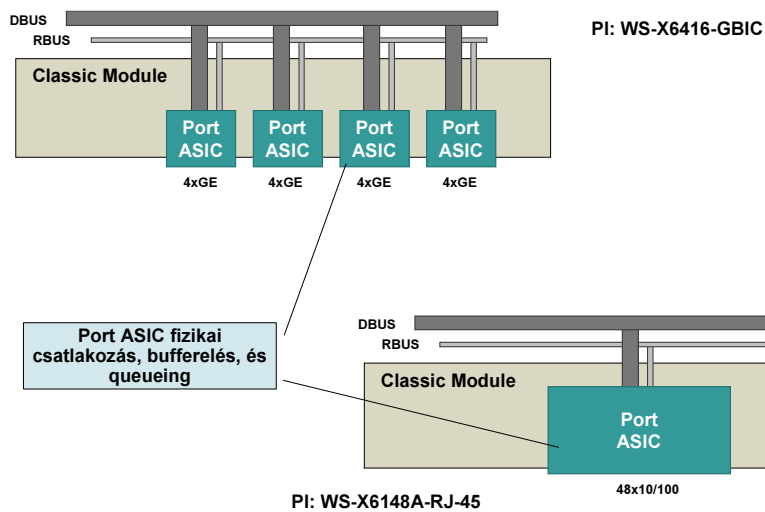


PPT-1581
1. 2005. május 12.
1. 2005. május 12.

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Classic Modul Architektúra



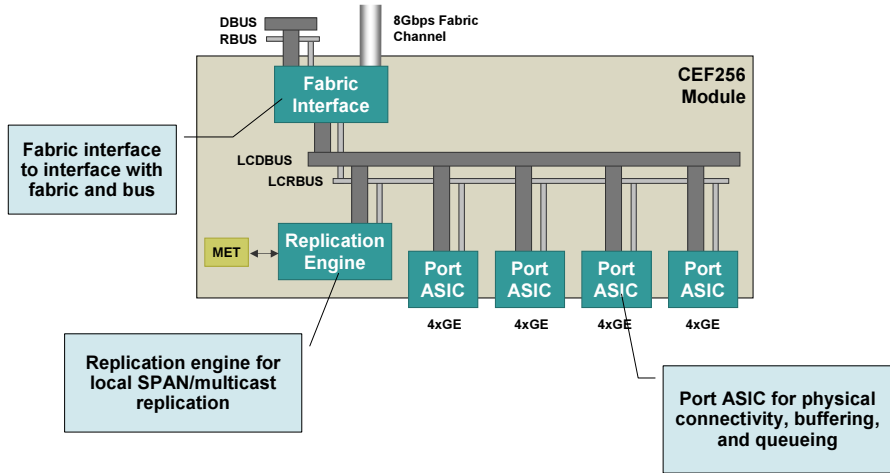
Cat9500 Update
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CEF256 Modul Architektúra

PI: WS-X6516-GBIC



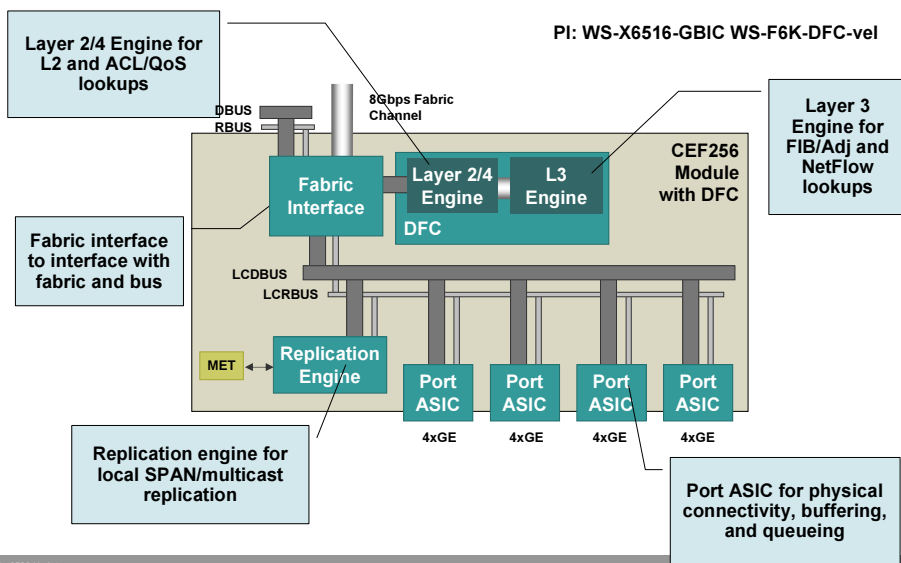
Cat5500 Update
H3CNE labor 2005

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CEF256 Modul Architektúra-DFC-vel

PI: WS-X6516-GBIC WS-F6K-DFC-vel



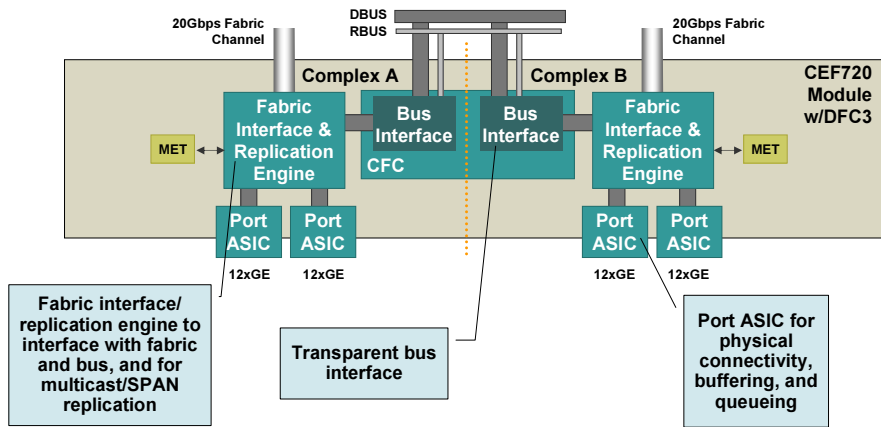
Cat5500 Update
H3CNE labor 2005

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CEF720 Modul Architektúra

PI: WS-X6748-SFP



Bus interface kizárólag vezérlő adatokra!!

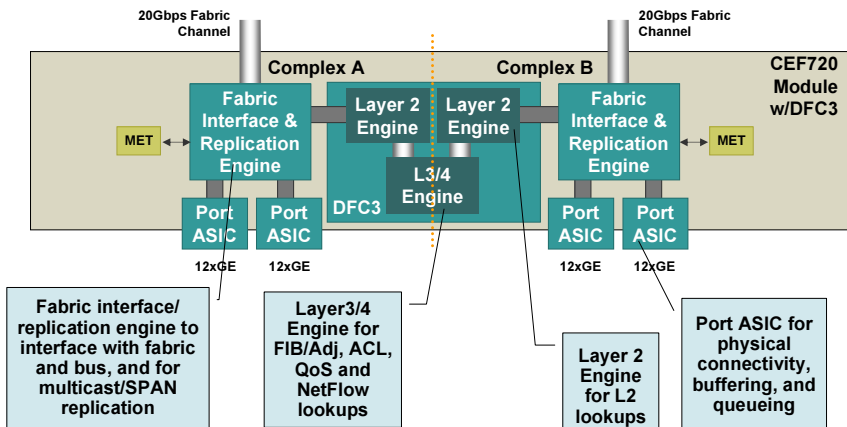
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CEF720 Modul Architektúra -DFC3-mal

PI: WS-X6748-SFP WS-F6700-DFC3B-vel



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IPv4 CSOMAG TOVÁBBÍTÁS (HARDWARE CEF)



DST-1581
1. Cisco Express Forwarding v2
1. Hardware Forwarding

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Hardware alapú CEF Forwarding

- Catalyst 6500 a software alapú **Cisco Express Forwarding (CEF)** modelt valósítja meg
- Supervisor 2/PFC2, Supervisor 32/PFC3, Supervisor 720/ PFC3 a CEF hardware-ben valósítja meg
- Cisco Express Forwarding (CEF):
 - Struktúrálja és tömöríti routing táblát = FIB table
 - Boil down the ARP table = adjacency table
- FIB tábla tartalmazza az IP prefixeket
- Adjacency tábla tartalmazza a next-hop információt

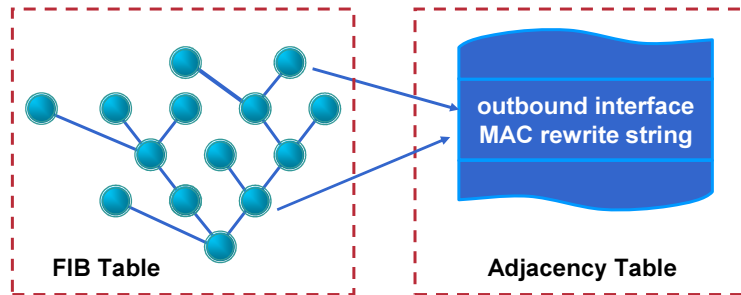


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CEF - FIB és Adjacency tábla



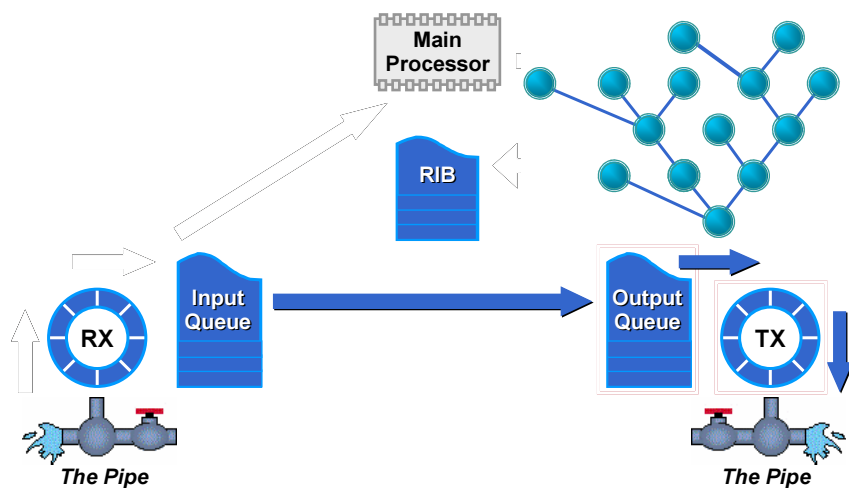
Multiway Trie

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FIB tábla felépítése



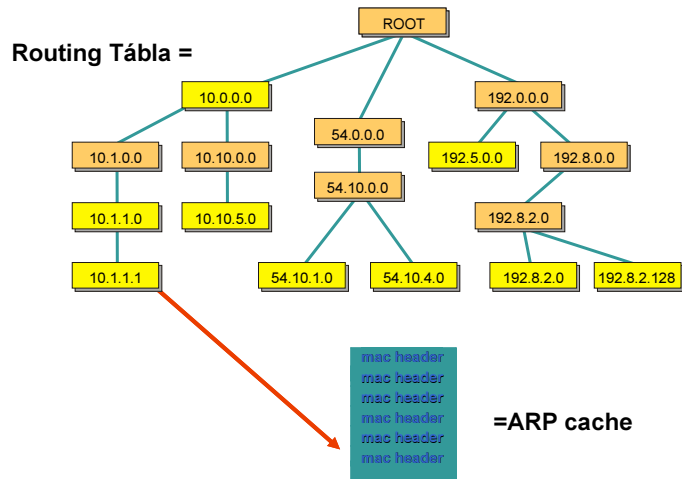
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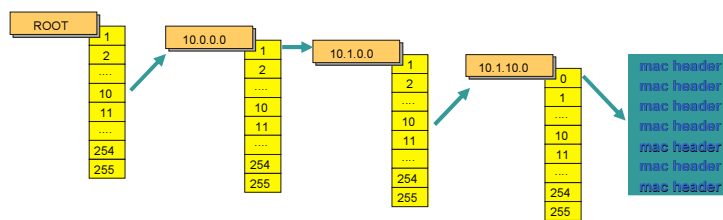
CEF Működése

CEF Lényege az adatstruktúra



CEF Működése

CEF Keresés

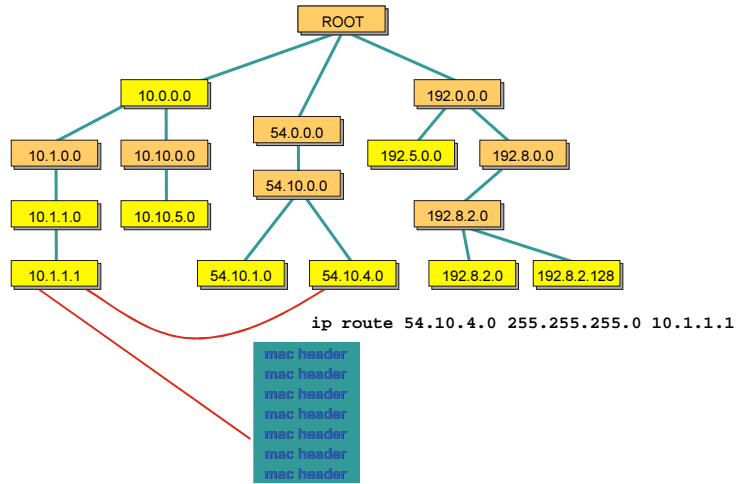


• **Fontos megjegyzés:**

Az adatstruktúra elemét (keresés célját) képező MAC header a struktúrán kívül helyezkedik el – ezért hívjuk m-trie (retrieve) és nem mtree –nek a struktúrát (M-tree a keresés eredményét is a fa struktúra részeként kezelik)

CEF Működése

CEF FIB tábla keresés



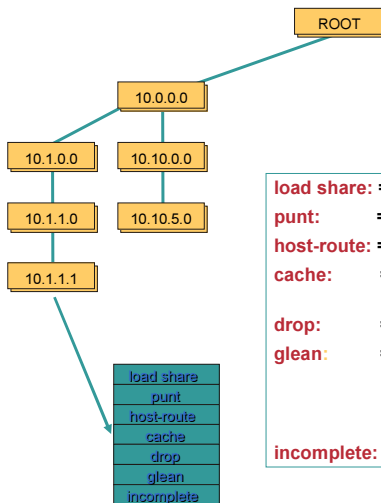
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Topology Generated Switching CEF

CEF Theory—Adjacency Types



As we are storing the adjacency separately from the Forwarding details, the adjacency table is not limited to simple L2 encapsulation data. We can include other types of adjacencies.

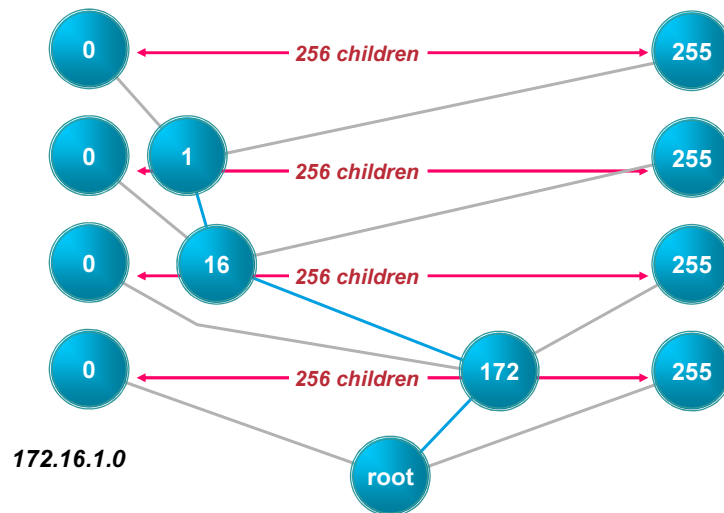
- load share:** = This is for load sharing between parallel paths.
- punt:** = Packets to this destination cannot be CEF switched.
- host-route:** = The destination is on a directly connected network.
- cache:** = Contains the mac header for the next hop towards this destination.
- drop:** = This destination is a null interface - drop this packet.
- glean:** = This is a directly connected destination where no ARP cache entry exist.
Drop this packet and start the process of completing the fib entry for this destination.
- incomplete:** = There is a link error on the interface.

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FIB

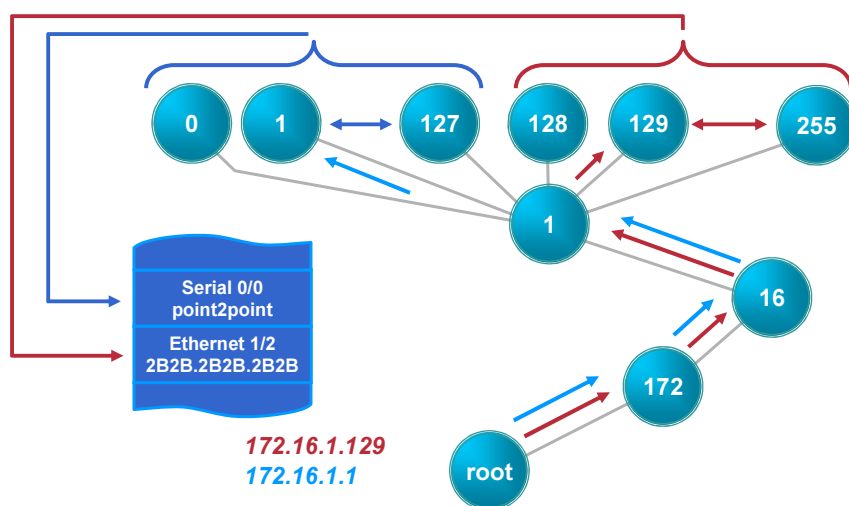


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Átlapolt Prefixek a FIB táblában



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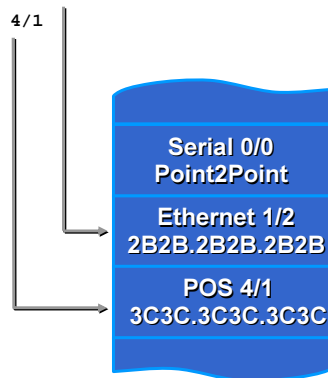
The Adjacency Table

```
router#show arp
```

Address	Hardware Addr	Type	Interface
192.168.1.4	2B2B.2B2B.2B2B	ARPA	Ethernet 1/2
10.1.1.1	3C3C.3C3C.3C3C	ARPA	POS 4/1

The ARP Cache and the Adjacency Table are Directly Related

- The adjacency table doesn't contain any information about networks; it only contains information about next hops

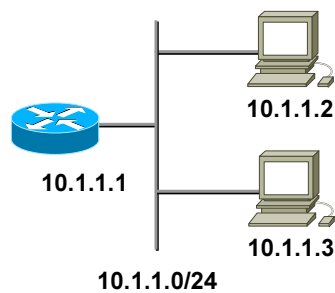


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Default Adjacencies and FIB Entries



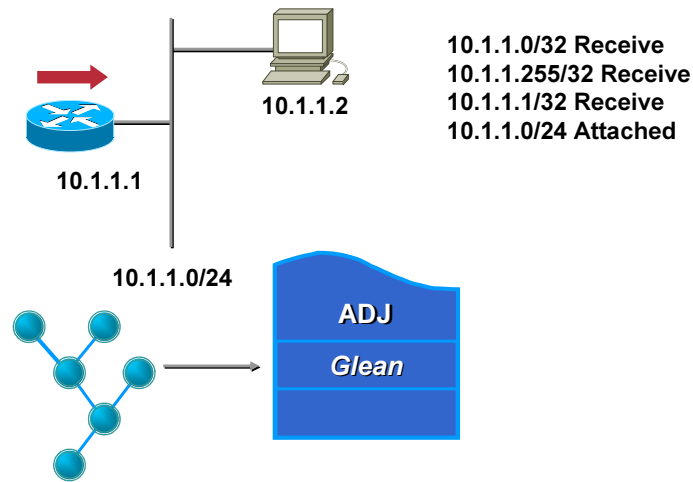
10.1.1.0/32 Receive
 10.1.1.255/32 Receive
 10.1.1.1/32 Receive
 10.1.1.0/24 (Glean)
 255.255.255.255/32 Receive
 0.0.0.0/32 Receive
 224.0.0.0/4 Drop
 224.0.0.0/24 Receive

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Glean Adjacencies

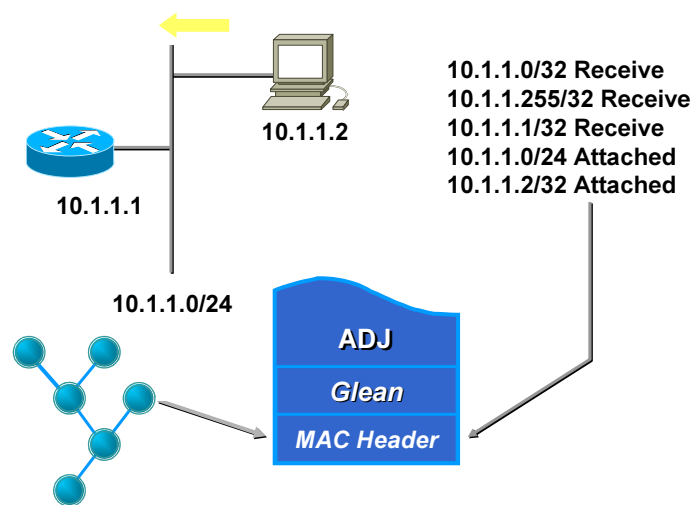


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Glean Adjacencies



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Hardware alapú CEF Forwarding

- **Control plane és data plane szétválasztás**

Forwarding tábla a control plane-en épül fel

Tábla letöltődik a hardware-re data plane továbbításhoz

- **Hardware CEF:**

FIB lookup destination prefix (longest-match) alapon

FIB "hit" visszadja az adjacency-t, ami tartalmazza a next-hop információt

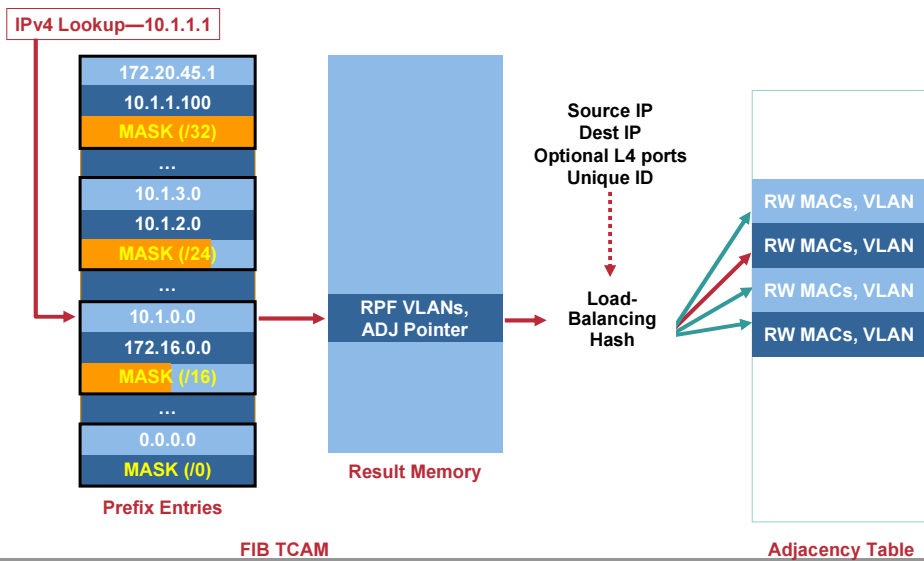
ACL, QoS, és NetFlow lookup párhuzamosan történik és együtt adják a végső eredményt

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Hardware IPv4 Unicast Entries



FIB TCAM és Adjacency-k

- **A teljes FIB TCAM megoszlik**
 - IPv4 unicast
 - IPv4 multicast
 - IPv6 unicast
 - MPLS
- **Hardware adjacency tábla szintén osztott**
- **Az aktuális adjacency tábla bejegyzés viszont már egyedi**

IPv4 Forwarding Summary Információ

- **Cisco IOS:**

```
show mls cef summary
show mls cef statistics
show mls statistics
show mls cef hardware
```

- **Catalyst OS:**

```
show mls cef
show mls
```

```
6509-neb#show mls cef summary
```

Total routes:	8309
IPv4 unicast routes:	5948
IPv4 Multicast routes:	2359
MPLS routes:	0
IPv6 unicast routes:	0
IPv6 multicast routes:	0
EoM routes:	0

```
6509-neb#
```



Hardware IPv4 Prefix bejegyzések

6509-neb#show mls cef

Codes: decap - Decapsulation, + - Push Label

Index	Prefix	Adjacency	
64	127.0.0.51/32	receive	
65	127.0.0.0/32	receive	
66	127.255.255.255/32	receive	
67	0.0.0.0/32	receive	
68	255.255.255.255/32	receive	
75	10.10.1.1/32	receive	
76	10.10.1.0/32	receive	
77	10.10.1.255/32	receive	
78	10.10.1.2/32	Gi1/1,	0000.0000.0013
3200	224.0.0.0/24	receive	
3201	10.10.1.0/24	glean	
3202	10.100.0.0/24	Gi1/1,	0000.0000.0013
3203	10.100.1.0/24	Gi1/1,	0000.0000.0013
3204	10.100.2.0/24	Gi1/1,	0000.0000.0013
3205	10.100.3.0/24	Gi1/1,	0000.0000.0013

- Cisco IOS:

show mls cef

- Catalyst OS:

show mls entry cef ip

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Részletes Hardware IPv4 Prefix és Adjacency bejegyzések

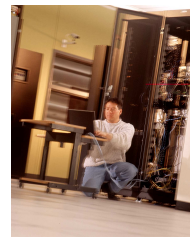
- Cisco IOS:

show mls cef <prefix> [detail]

show mls cef adjacency [entry <entry> [detail]]

- Catalyst OS:

show mls entry cef ip <prefix/mask> [adjacency]



6509-neb#show mls cef 10.100.20.0 detail

<...>

```
M(3222 ) : E | 1 FFF 0 0 0 0 255.255.255.0
V(3222 ) : 8 | 1 0 0 0 0 0 10.100.20.0 (A:98304
,P:1,D:0,m:0 ,B:0 )
```

6509-neb#show mls cef adjacency entry 98304

```
Index: 98304 smac: 000f.2340.5dc0, dmac: 0000.0000.0013
mtu: 1518, vlan: 1019, dindex: 0x0, l3rw_vld: 1
packets: 4203, bytes: 268992
```

6509-neb#

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Longest-Match Hardware Prefix bejegyzés keresése

- **Cisco IOS:** `show mls cef lookup <ip_address> [detail]`

```
6509-neb#show mls cef 10.101.1.0
```

```
Codes: decap - Decapsulation, + - Push Label
```

```
Index Prefix Adjacency
```

```
6509-neb#show mls cef lookup 10.101.1.0
```

```
Codes: decap - Decapsulation, + - Push Label
```

```
Index Prefix Adjacency
```

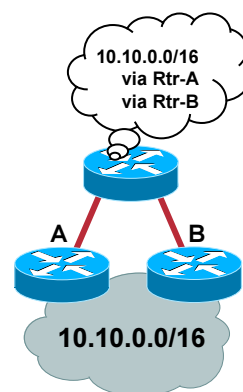
```
3203 10.101.0.0/16 Gi2/12, 0007.b30a.8bfc
```

```
6509-neb#
```



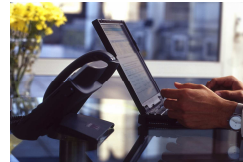
IPv4 CEF Load Sharing

- Up to 8 hardware load-sharing paths per prefix
- Use `maximum-paths` command in routing protocols to control number of LB paths
- IPv4 CEF load-balancing is per-IP flow
- Per-packet load-balancing NOT supported
- Load-sharing based on Source and Destination IP addresses by default
- Configuration option supports inclusion of L4 ports in the hash (`mls ip cef load-sharing full`)
- “Unique ID” in Supervisor 720 prevents polarization (can be changed with `ip cef load-sharing algorithm universal` command)



Hardware Load-Balancing Prefix bejegyzés

- `show mls cef`
- `show mls cef lookup`



```
6509-neb#show mls cef lookup 10.100.20.1
```

Codes: decap - Decapsulation, + - Push Label

Index	Prefix	Adjacency	
3222	10.100.20.0/24	Gi1/1,	0000.0000.0013
		Gi1/2,	0000.0000.0014
		Gi2/1,	0000.0373.e078
		Gi2/2,	0000.0373.e079

```
6509-neb#
```

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Load-Balancing útválasztás vizsgálata

`show mls cef exact-route`



```
6509-neb#show mls cef exact-route 10.77.17.8 10.100.20.199
```

```
Interface: Gi1/1, Next Hop: 10.10.1.2, Vlan: 1019, Destination Mac: 0000.0000.0013
```

```
6509-neb#show mls cef exact-route 10.44.91.111 10.100.20.199
```

```
Interface: Gi2/2, Next Hop: 10.40.1.2, Vlan: 1018, Destination Mac: 0000.0373.e079
```

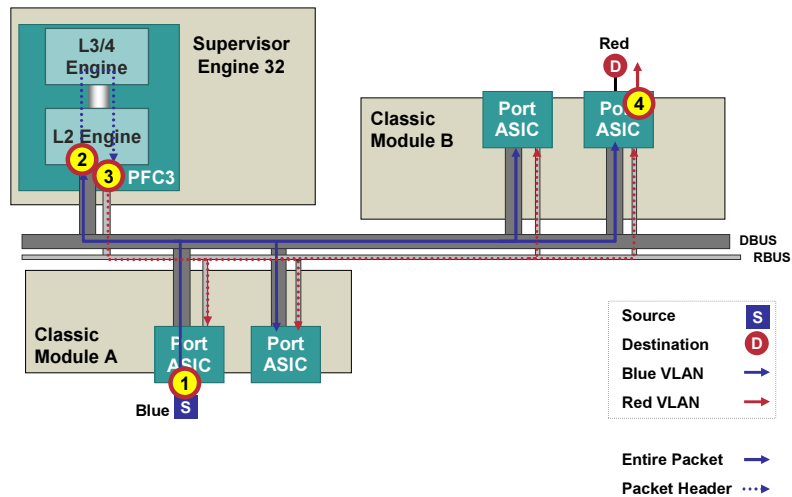
```
6509-neb#
```

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Classic - Classic központi Forwarding



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Reference: Classic to Classic Centralized Forwarding

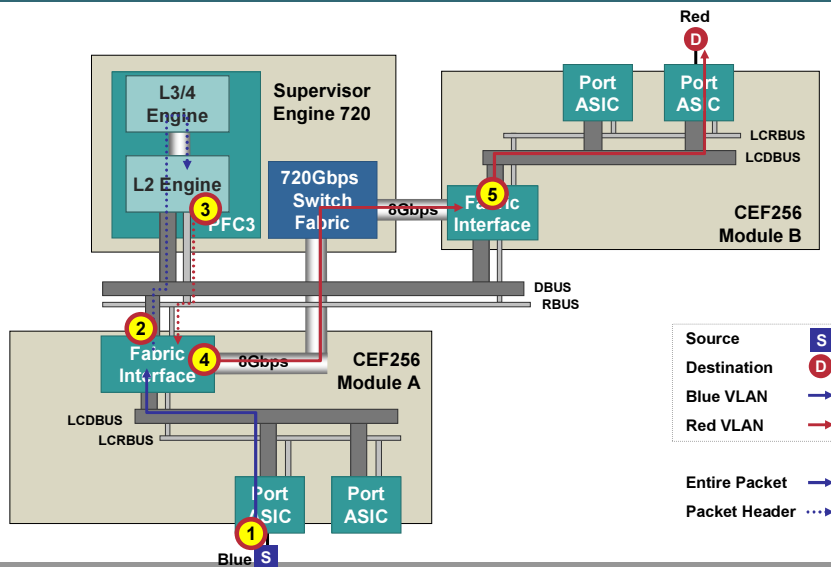
1. Unicast IPv4 packet received on Classic Module A; entire packet is flooded on DBUS and all devices, including the PFC on the supervisor engine, receive it
2. PFC makes a forwarding decision for the packet
3. PFC floods forwarding decision result on RBUS
4. Egress port ASIC on Classic Module B is selected to transmit the packet—all other devices on the bus discard the packet

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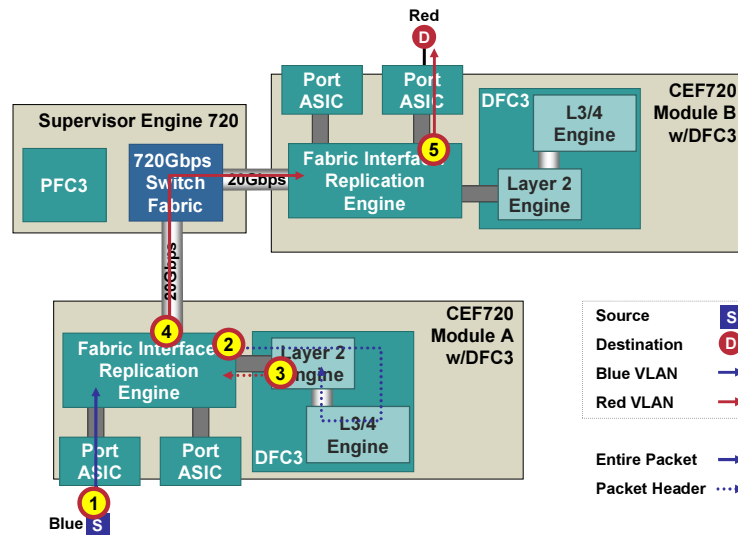
CEF256 - CEF256 Központi Forwarding



Reference: CEF256 to CEF256 Centralized Forwarding

1. Unicast IPv4 packet received on CEF256 Module A; entire packet is flooded on LCDBUS and fabric interface receives it
2. Fabric interface floods just the packet header on the DBUS; PFC receives packet header and makes a forwarding decision for the packet
3. PFC floods forwarding decision result on RBUS
4. Fabric interface transmits packet across the fabric
5. CEF256 Module B receives the packet and transmits the packet, and the result, on its LCDBUS; the egress port ASIC is selected to transmit the packet

CEF720/DFC3 - CEF720/DFC3 Elosztott Forwarding



Reference: CEF720/DFC3 to CEF720/DFC3 Distributed Forwarding

1. Unicast IPv4 packet received on CEF720 Module A; entire packet is forwarded to the fabric interface
2. Fabric interface sends just the packet header to the DFC; DFC makes a forwarding decision for the packet
3. DFC returns the forwarding decision result to the fabric interface
4. Fabric interface transmits packet across the fabric
5. CEF720 Module B receives the packet and transmits the packet to the egress port ASIC

ÚJ WAN MODULOK (SPA ÉS SIP)



PPT-1581
1. Cisco 7600 SIP v2
1. Cisco 7600 SIP v2

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57 67

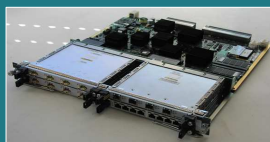
Cisco 7600 SIP – SPA Interface Processor

7600-SIP-200

1.1 Mpps
622 Mbps Szervizekkel

7500 Feature Parity
4 SPA Bay

Dual CPU



cRTP
LFI – ATM, FR, MLPPP
Classification, Marking
CBWFQ/LLQ
WRED
Hierarchical TS

7600-SIP-400

6 Mpps
2.5 Gbps Szervizekkel

32,000 RX/TX queue
4 SPA Bay

Dual Network Processor



Hierarchical Shaping
Dual-rate, 3-Color Policing
CBWFQ + LLQ with WRED
AToM Funkció (Ethernet,
ATM (AAL5 & Cell Relay, FR)

7600-SIP-600

25 Mpps
10 Gbps Szervizekkel

8,000 total queue
1 SPA Bay

DFC3BXL + PXF, 10G
Shaping & Queuing ASIC



Security ACLeK
Policing
Classification, Marking
CBWFQ/LLQ
Hierarchical TS
WRED

Cisco 7600 SPA Carrier kártya 7600-SIP-200 – 622M Carrier

Általános jellemző:

CPU alapú Carrier Cisco 7500
Feature Paritással

Performancia: 1.1 Mpps
Teljesítmény: 622 Mbps
SPA bayek száma: 4

Forwarding & Queuing:
Dual CPUs

QoS tulajdonságok:

cRTP
LFI – ATM, FR, MLPPP
Classification
Marking
CBWFQ/LLQ
WRED
Hierarchical Traffic Shaping

SIP1 SPA

T1/E1	8
T3/E3	2, 4
OC3 POS	2, 4
OC3 ATM	2, 4
CT3>DS0	2, 4



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Cisco 7600 SPA Carrier kártya 7600-SIP-400 – 2.5G Carrier

Általános jellemző :

Network Processor-based Carrier with
32k Queues at 2.5Gbps Throughput

Performancia: 6 Mpps (40-byte pkt)
Teljesítmény: 2.5 Gbps szolg.
Queuek: 32,000 Queues (RX/TX)
SPA bay: 4

Forwarding & Queuing:
Dual Network Processors

QoS Features:

3-Level Hierarchical Shaping
Dual-rate, 3-Color Policing
CBWFQ + LLQ with WRED

AToM:

Ethernet over MPLS
Frame Relay over MPLS
ATM AAL5 over MPLS
ATM Cell Relay over MPLS

SIP2 SPA

OC12 ATM	1-port
OC3 ATM	2, 4-ports
OC3 POS	2, 4-ports
OC12 POS	1-port
IPSEC SPA	



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Cisco 7600 SPA Carrier Cards 7600-SIP-600 – 10G Carrier

Általános jellemző :

ASICalapú Carrier elosztott
DFC3BXL, PXF, & Shaping ASICs

Performancia: 25 Mpps
Teljesítmény: 10Gbps szolg.
Queues: 8,000 Total Queue
SPA bays: 1

Forwarding & Queuing:

DFC3BXL + PXF
Shaping ASIC

Jellemzők:

10G VPLS
Security ACL
Policing
Classification
Marking
CBWFQ/LLQ
Hierarchical Traffic Shaping
WRED

SIP2 SPAs

OC192/STM-64 POS	1-port
10GE-WAN	1-port
GE-WAN	5-, 10-port



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H80N6E labor 2005

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Cisco 7600 SPA áttekintés "Inter"-facing the Future

ATM

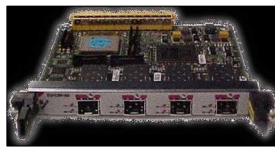
- T3/E3
- OC3
- OC12
- OC48

Ethernet

- nxFE
- nxGE
- 10GE

Clear Chan

- T1/E1
- T3/E3



Channelized

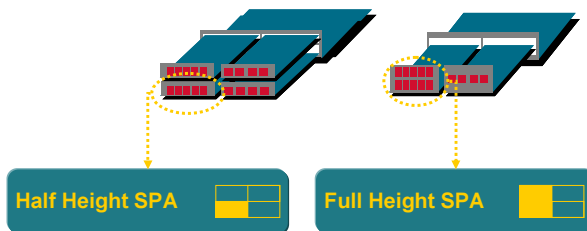
- T1/E1
- T3/E3
- STM1

POS

- OC3
- OC12

POS/DPT

- OC48
- OC192



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SIP/SPA Solutions POS/RPR, ATM & Channelized

Speed	Ports	Interface	Form Factor
OC-3/STM-1 POS	2, 4	SFP	Single Height
OC-12/STM-4 POS	1, 2, 8	SFP	Single Height
OC48/STM-16 POS/RPR	2, 4	SFP	Single Height
OC192/STM-64 POS/SRP/802.17	1	XFP - SR,IR VSR, LR - fixed	Single Height Double Height
T3/E3 ATM	2, 4	Copper	Single Height
OC-3/STM-1 ATM	2, 4	SFP	Double Height
OC12/STM-4 ATM	1	SFP	Double Height
OC48/STM-16 ATM	1	SFP	Double Height
Channelized T1/E1	8	Copper	Single Height
Clear Channel T3/E3	2, 4	Copper	Single Height
Channelized T3	2, 4	Copper	Single Height
Channelized OC-3/STM-1	1	SFP	Single Height

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HSONE Issue 2005

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SIP/SPA Solutions -Ethernet

Speed	Ports	Interface	Form Factor
FE	4, 8	TX, FX	Single Height
GE	1,2,5,8	SFP	Single Height
GE	10	SFP	Double Height
1GE/RPR	4	XFP	Single Height
10GE	1	XFP	Single Height
10GE/RPR	1	XFP	Single Height

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MODULÁRIS IOS CAT6500/7600 PLATFORMON



DOT-1584
1. Cat6500/7600 v2
1. modulárIOS

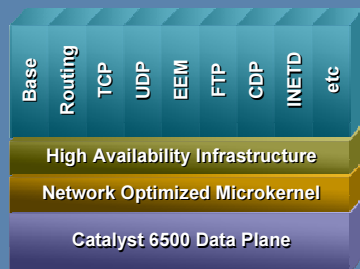
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65 65

Catalyst 6500 Cisco Moduláris IOS Software

INNOVÁCIÓ

Cisco Moduláris IOS Software



- Memória védelem
- Hiba behatárolás
- Stateful process újraindítás
- Subsystem ISSU

ELŐNYÖK

Cisco Moduláris IOS Software



Minimizált leállítás

Egyszerűsített Software upgrade

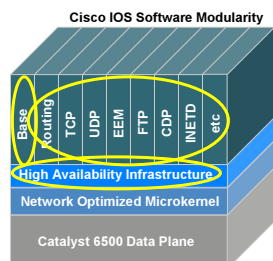
Automatizált Policy Control

Cat6500 Update
HBONE tábor 2005

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Catalyst 6500 Moduláris IOS Software



- Hálózatra optimalizált microkernel és a nagyvállalati/metro Ethernet felhasználók igényeihez igazodó funkciók ötvöze:

20+ független process

A megmaradó funkciók a IOS Base processben vannak megvalósítva

Cisco IOS funkciókat megtartja

- Integrált Nagy Rendelkezésreállítású HA infrastruktúra – adaptíven eldönti a legjobb megoldást hiba esetén

- Megőrzi a Catalyst 6500 eddigi tulajdonságait:

Elkülönített Control és Data Plane

NSF és GOLD

Hardware gyorsítás

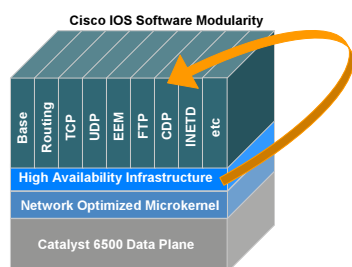
Skálázhatóság

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Catalyst 6500 Moduláris IOS Software Minimalizált leállítás



Traffic forwarding continues during unplanned process restarts

Moduláris Processben fellépő Hiba esetén ...

- HA subsystem eldönti a legjobb javítást

Újra indítja a moduláris processt

Átkapcsol standby Supervisorra

Kikapcsolja a rendszert

- Process újraindításnak nincs hatása a data plane-re

Cisco Nonstop Forwarding (NSF) eljárást használja

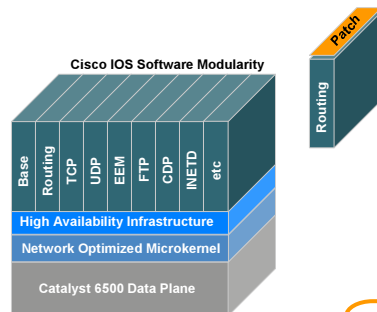
Állapot ellenőrzés gyors újraindítást eredményez

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Catalyst 6500 Moduláris IOS Software Egyszerűsíti a Software upgrade-et



Ha software upgrade szükséges (pl. biztonsági patch)...

- Az upgrade csak a megfelelő process egy individual patche, ami csökkenti a code megjelenési idejét



- Subsystem In-Service Software Upgrade (ISSU)* biztosítja a leállítás nélküli upgrade-et

Csomagtovábbítás a software upgrade alatt is

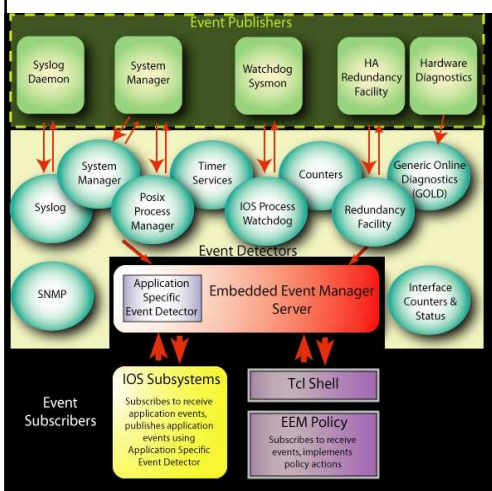
*minden moduláris processésre

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Catalyst 6500 Moduláris IOS Software Menedzselhetőség




- **Embedded Event Manager**
Egyedi akciók és policy-k
TCL nyelven programozható akciók
Esemény indítás CLI, syslog, SNMP MIB változó alapon
Beállítható a process újraindítás és supervisor switchover
Automatizált patch
- **Patch Navigator**
Külön CCO hely áll rendelkezésre, hogy milyen patch áll rendelkezésre a base image-hez.
- **CiscoWorks RME**
- **SNMP MIB és CLI parancsok**

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ISR ROUTER ÚJDONSÁGOK



RPT-1684
 1. Cisco Integrált Szolgáltatású Router Újdonságok
 2005. március 15.

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Cisco Integrált Szolgáltatású Routerok


A megfelelő eszközt a megfelelő irodába

Piaci szegmens

Nagy vállalat
 Közepes vállalat
 Kis vállalat


Performance és szolgáltatás

3800 Series




Nagy port sűrűség és performance Konkurens szolgáltatásokkal

2800 Series




Beépített, intelligens Hang, Video, Adat és Security Szolgáltatások

1800 Series



Modular

800 Series



Fixed

Új típusok kis irodáknak

Nagy Performanciájú Integrált Security és Adat

Secure Broadband és Wireless Kapcsolat

Iroda Méret

Nagy iroda
 Közepes iroda
 Kis iroda
 Otthon dolgozó
 Egy telephelyes kis iroda

3800 Újítás
 HBCNE tábor 2005

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Új Cisco 800 & 1800-Fix ISR routerek és Wireless Integráció a Moduláris ISR eszközökbe

- Cisco ISR Portfolio a kis irodákba
- Integrált WLAN a teljes ISR portfolion

- Új WLAN modul (HWIC-AP) integrált 802.11 a moduláris ISR routerkbe
- Új Fix 1800 sorozatú routerek beépített Wireless moduldal (és anélkül)
- 870 és 850 sorozatú routerek a kis irodákba



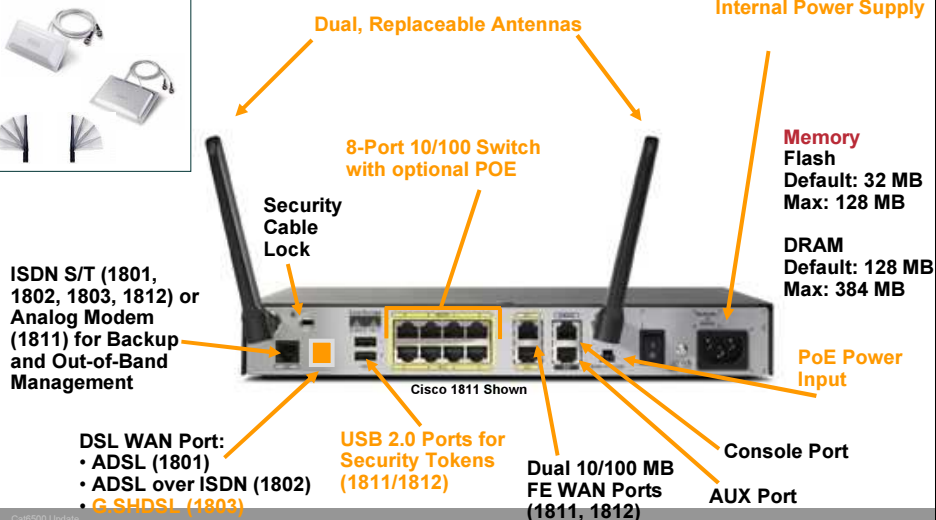
Cat8500 Update
HSONE társaság 2005

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Cisco 1800 Fix konfigurációjú Integrált Szolgáltatású Routerek (Cisco 1811)

Antenna Options



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Cisco 870 Fix konfigurációjú Integrált Szolgáltatású Routerok

Antenna Options



Dual, Removable Antennae

ISDN S/T Port
(876 and 878
Only)

Security
Cable
Lock

Console
Port/Virtual
AUX Port

Memory

Flash
Default: 24 MB
Max: 52 MB

DRAM
Default: 128 MB
Max: 256 MB

USB 2.0 Ports for
Security Tokens
(871 Only)

4-Port 10/100
Managed
Switch

WAN Port:
871 = 100 MB Ethernet
876 = ADSL over ISDN
877 = ADSL
878 = G.SHDSL (4-wire)

Reset
Button

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Cisco 850 Fix konfigurációjú Integrált Szolgáltatású Routerok

Reset
Button

Security
Cable
Lock

Console
Port/Virtual
AUX Port

Memory

Flash
Default: 24 MB
Max: 24 MB

DRAM
Default: 64 MB
Max: 64 MB

4-Port 10/100
Switch

WAN Port:
851 = 10 MB Ethernet
857 = ADSL

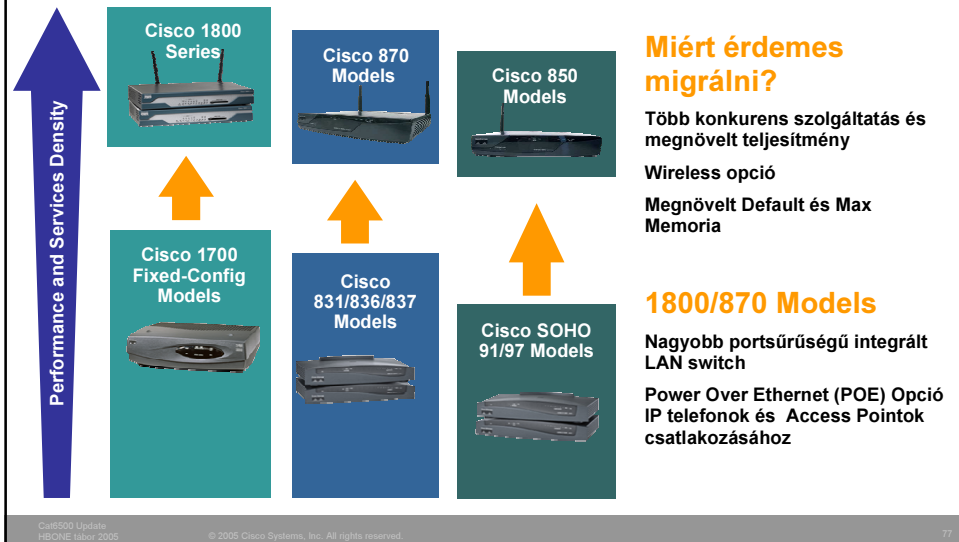
Single Fixed
Antenna

Cat8500 Update
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Fix konfigurációjú Integrált Szolgáltatású Routerek Migrációja



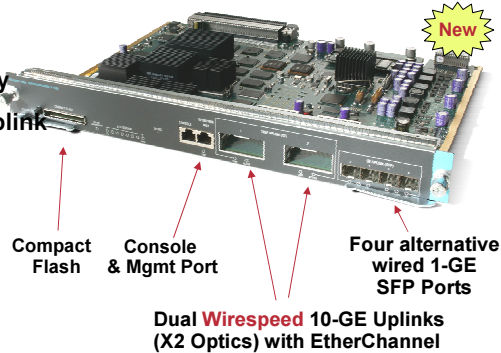
SWITCH ÚJDONSÁGOK



Catalyst 4500 Supervisor Engine V-10GE

Supervisor V- 10GE

- 136 Gbps Switch Fabric
102 Mpps L2/L3/L4 teljesítmény
- Dual Vonali sebességű 10GE Uplink
- Integrált NetFlow az alaplapon
- Minden Catalyst 4500 Sasziban támogatott




Cat4500 Update
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Catalyst 4900 család



Feature	Catalyst 4948	Catalyst 4948-10GE
Layer 2,3,4 Throughput	72 Mpps	102 Mpps
Switch Capacity	96 Gbps	136 Gbps
Last four 10/100/100 ports alternative wired: Cu/SFP	Yes	No
Total wire-speed ports	48 Gigabit	48 Gigabit + 2x10GE
Management port	10/100	10/100/1000
CPU	266 MHz	666 MHz 
Optic Support	Gigabit Ethernet (SFP)	10 Gigabit Ethernet (X2)
Usable MAC addresses	32K unicast, 16K mcast	55K unicast, 16K mcast

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Cisco Catalyst 2960 Sorozat

Catalyst 2960-24TC

NEW

- 24 10/100 ports
- 2 Dual-Purpose Uplink ports

Catalyst 2960-48TC

NEW

- 48 10/100 ports
- 2 Dual Purpose Uplink ports

Catalyst 2960-24TT

NEW

- 24 10/100 ports
- 2 10/100/1000 Uplink Ports

Catalyst 2960-48TT

NEW

- 48 10/100 ports
- 2 10/100/1000 Uplink ports

Catalyst 2960G-24TS

NEW

- 20 10/100/1000 ports
- 4 Dual-Purpose Uplink Ports

Software

- LAN Base Image
 - Enterprise-class
 - Intelligens Szolgáltatások:
 - Fejlett QoS,
 - Security,
 - Nagy rendelkezésre állás

Uplink

- Dual Purpose Uplink
 - 10/100/1000 TX Port és SFP Port
 - Egyik vagy másik aktív egyszerre

Cat5500 Update
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Cisco Catalyst Express 500 Sorozat

Cisco® Catalyst® Express 500-24TT



- 24 10/100 port
- 2 10/100/1000 Base-T port

Cisco Catalyst Express 500-24LC



- 20 10/100 port
- 4 10/100 PoE port
- 2 10/100/1000BT or SFP port
- 62W IEEE 802.3af / Cisco prestandard PoE

Cisco Catalyst Express 500-24PC



- 24 10/100 PoE port
- 2 10/100/1000BT/SFP port
- 370W IEEE 802.3af / Cisco prestandard PoE

Cisco Catalyst Express 500G-24TC



- 8 10/100/1000BT port
- 4 10/100/1000BT or SFP port

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CISCO SYSTEMS



EMPOWERING THE
INTERNET GENERATION