Huawei termékek Cisco-s szemmel

Balla Attila

CCIE #7264

balla.attila@synergon.hu

Tartalom

- LAN switch-ek

- Access Router-ek

- High-end Router-ek

Huawei LAN switch portfolió

SYNERGON INFORMATION SYSTEMS PLC.

Core Routing Switch Quidway S8000/6000

Quidway S6503/6506/6506R   Quidway S6502   S8505   S8508

Quidway S8512

Gigabit Routing Switch Quidway S5000

Quidway S5024/5012   Quidway S5600

L3 FE Workgroup Switch

Quidway S3900EI/S3500   Quidway S3528G/P   Quidway S3552G/P   S3552F/F-HI

L2 FE Workgroup Switch

Quidway S3026C/G/T   Quidway S3050C   Quidway S3900SI

Desktop Switch Quidway S2000

Quidway S2008EI   Quidway S2016EI   Quidway S2403H-EI

Layer2 LAN switch-k

Quidway

- S2000
  - S2008 - 8 FE
  - S2016 - 16 FE + 1 modul
  - S2403 - 25 FE + 1 modul
- S3000
  - S3026 - 24 FE + 2 modul
  - S3026-PWR
  - S3050C - 48 FE + 2 modul
- S5000
  - S5012G - 12 GE-T / 4 GBIC
  - S5012T - 4 GE-T / 12 GBIC
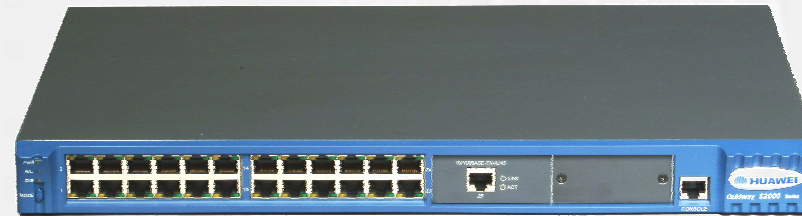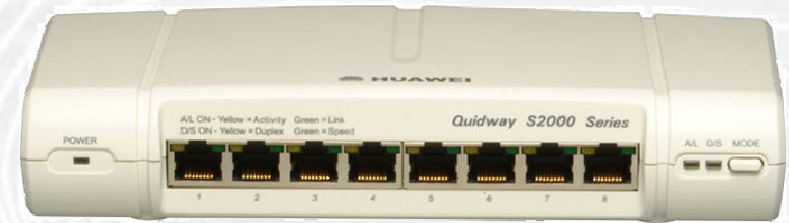 - S5024G - 20 GE-T / 4 GBIC

Catalyst

- C2940
  - 8 10/100 + FX/GE-T
- C2950
  - 12/24/48 10/100
- C2960
  - 24/48 10/100 + 4 SFP
  - 24 10/100/1000 + 4 SFP
- C2970
  - 24 10/100/1000 + 4 SFP

L2 feature-k

S2000

- ➢ Wire speed forwarding
- ➢ 512 VLAN
- ➢ 4 queue/port
- ➢ Rate-limit – 64k
- ➢ No fan
- ➢ IGMP snooping
- ➢ SSH
- ➢ Modul
  - – 100BaseFX
  - – PoE – 2016
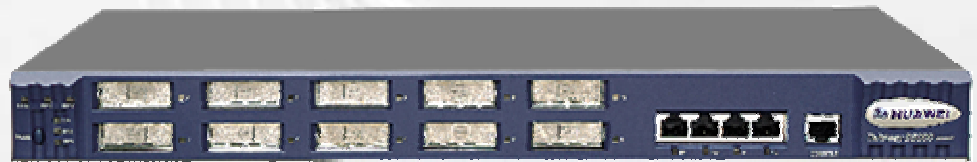
L2 feature-k

S3000

- ➢ Wire speed forwarding
- ➢ 256 VLAN
- ➢ 8 queue/port
- ➢ Rate-limit
  - – 1M/FE, 8M/GE
- ➢ IGMP snooping
- ➢ 16 device stackable
- ➢ SSH
- ➢ Modul
  - – GE-X
  - – 100BaseFX

L2 feature-k

S5000

- ➤ Wire speed forwarding
- ➤ 4k VLAN
- ➤ 8 queue/port
- ➤ Rate-limit – 1M
- ➤ IGMP snooping
- ➤ 16 device stackable

S3900 series

ENHANCED — Distributed Networking
IRF

STANDARD — Cost Effective Networking

Fiber
24 x FX
2 x SFP GE Slots
2 x 10/100/1000

Copper
24 x 10/100
4 x SFP GE Slots

48 x 10/100
4 x SFP GE Slots

PoE
+ 2 Power over Ethernet Models

Copper
24 x 10/100
2 x 10/100/1000
2 x SFP GE Slots

24 x 10/100
4 x SFP GE Slots

48 x 10/100
4 x SFP GE Slots

MEMBERS OF SYNERGON GROUP   FibeX   infinity   SPAN   SYNERGON INFORMATION SYSTEMS PLC.   SAO SYNERGON IT OUTSOURCING

Layer3 LAN switch-ek

Quidway

- **S3900-SI**
  - ➢ S3928-SI – 24 FE + 4 SFP
  - ➢ S3952-SI – 48 FE + 4 SFP
  - ➢ RIP, 1k IP prefix

- **S3900-EI**
  - ➢ S3928-EI/PWR - PoE
  - ➢ S3952-EI/PWR - PoE
  - ➢ S3928F-EI
    - – 24 FX, 2 GE-T, 2 GBIC
  - ➢ RIP, OSPF, 6k IP prefix

Catalyst

- **C3560**
  - ➢ 24/48 10/100/1000 + 4SFP
  - ➢ 24/48 10/100 + 2/4 SFP
  - ➢ PoE

- **C3750**
  - ➢ 24/48 10/100/1000 + 4 SFP
  - ➢ 12 SFP
  - ➢ 24FX + 2 SFP
  - ➢ 16 10/100/1000 + XENPAK
  - ➢ PoE
  - ➢ 32Gbps stacking!
  - ➢ 11k IP Prefix, BGP!

S3900 L2/L3 feature-k

- L2/L3 wire-speed forwarding
- 4K VLAN
- EI: AC/DC support
- Multicast
  - IGMP Snooping
  - PIM (EI)
- EI: QinQ

- Routing table
  - 1k for SI
  - 8k for EI
- S39xx-PWR
  - 802.3af
- 8 device stackable
- SSH

S5600

S5624P

S5648P

S5624F

Layer3 LAN switch-ek

S5600 series

- S5624P, S6524F
  - 24 10/100/1000 + 4SFP (Combo) + modul
  - 24 SFP + 4 10/100/100 (Combo) + modul
  - 65.5Mpps
- S5648P
  - 48 10/100/1000 + modul
  - 102Mpps

Pro

- Modul:
  - 8port SFP, 1-2 10GE
- 48Gbps stacking!
- PoE

Catalyst 4948 series

- C4948
  - 48 10/100/1000 + 4 SFP (Combo)
  - 72Mpps
- C4948-10GE
  - 48 10/100/1000 + 2 X2
  - 102Mpps

Pro

- BGP!

L3 Feature-k

S5600

- 16k MAC address
- 4k VLAN
- 16k routing table
  - RIP, OSPF
- Multicast
  - PIM SM/DM
  - IGMP/IGMP snooping
- QoS
  - 8 queue/port
  - Rate-limit
    - flow/port
- Security
  - 802.1x, ACL

C4948

- 32k MAC address
- 4k VLAN
- 32k routing table
  - RIP, EIGRP, OSPF, BGP
- Multicast
  - PIM, SSM, DVMRP
  - IGMP snooping
- QoS
  - 4 queue/port
  - Rate-limit
  - Shaping
- Security
  - 802.1x, ACL…

Feature-k

- IRF – Intelligent Resilient Framework
  - DDM – Distributed Device Management
  - DRR – Distributed Resilient Routing
  - DLA – Distributed Link Aggregation

Roadmap

- **S3100**
  - S3108T/C
  - S3116T/C
  - S3126T/C
  - Nincs ventillátor
  - 2006Q1

- **S3900-V6**
  - IPv6, BGP
  - 2007Q1

- **S5500-V6**
  - IPv6, BGP
  - 2007Q1

- **S5100**
  - S5124P-EI
    - 24 GE-T, 4 SFP Combo
  - S5148P-EI
    - 48 GE-T, 4 SFP Combo
  - S5126C-EI
    - 24 GE-T, 4 SFP Combo
    - 2db 10GE
  - S5150C-EI
    - 48 GE-T, 4 SFP Combo
    - 2db 10GE
  - 4 Gbps stack
  - 2006Q2

Moduláris LAN switch-ek

Quidway

- S6500
  - S6502 – 2 slot
  - S6503 – 3+1 slot
  - S6506 – 6+1 slot
  - S6506R – 6+2 slot
  - 8Gbps/slot + 2XG bus

- Interface-k
  - 48 10/100 – PoE
  - 24/48 100BaseFX
  - 4/8/20/48 GE – PoE, XG
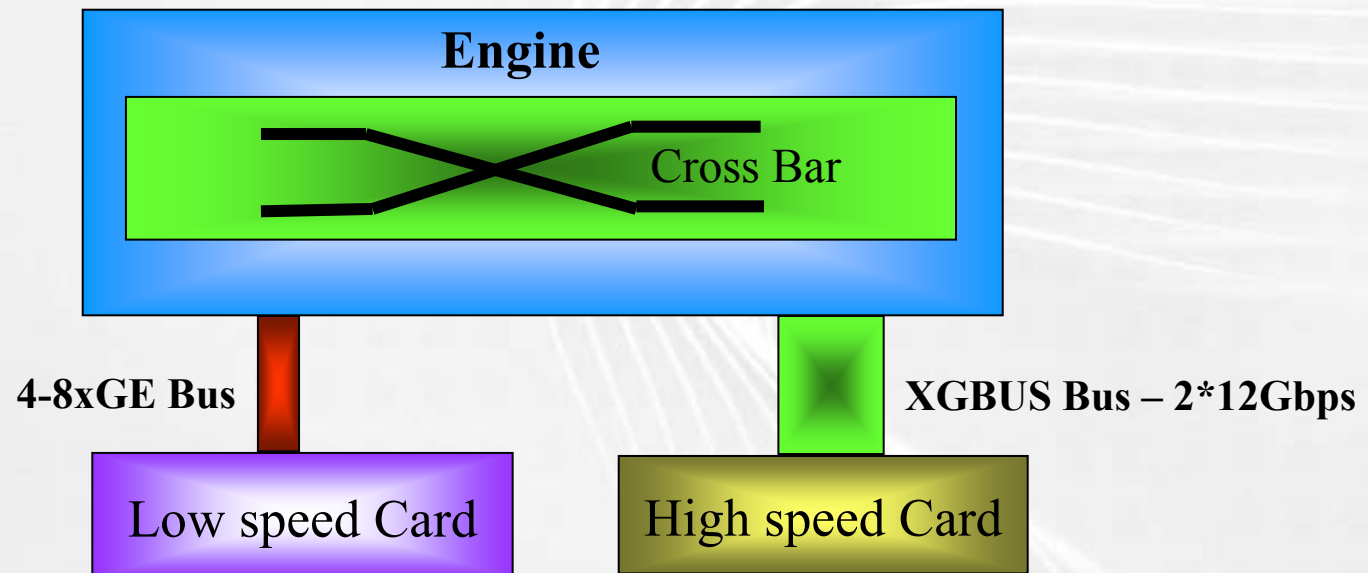 - 1/2/4 port 10GE – XG

Catalyst

- C4500
  - C4503 – 2+1 slot
  - C4506 – 5+1 slot
  - C4507R – 5+2 slot
  - C4510R – 8+2slot
  - 6Gbps/slot

- Interface-k
  - 24/48 10/100 – PoE
  - 32 10/100 + 2GBIC
  - 2/6/18/24/48 GE
  - 1port 10GE

S6500 architektúra

Engine

Cross Bar

4-8xGE Bus

XGBUS Bus – 2*12Gbps

Low speed Card

High speed Card

For low speed card

With limited uplink bandwidth, support wire-speed in-board

For high speed card

With up to 40Gbps/slot, support wire-speed in-board

Supervisor-k

- **Salience III Lite**
  - 48Gbps / 36Mpps
- Salience III Edge
  - 96Gbps / 72 Mpps
- Salience III
  - 192Gbps / 126Mpps
  - 2 slot XG bus (2*24Gbps)
- **Salience III Plus**
  - 768Gbps / 432 Mpps
  - 48Gbps/slot

- Supervisor II+
  - 64Gbps / 48Mpps – L2
- Supervisor II+ 10GE
  - 108Gbps / 81Mpps – L2
- Supervisor IV
  - 64Gbps / 48 Mpps
- Supervisor V
  - 96Gbps / 72Mpps
- Supervisor V-10GE
  - 136Gbps / 102Mpps

Roadmap
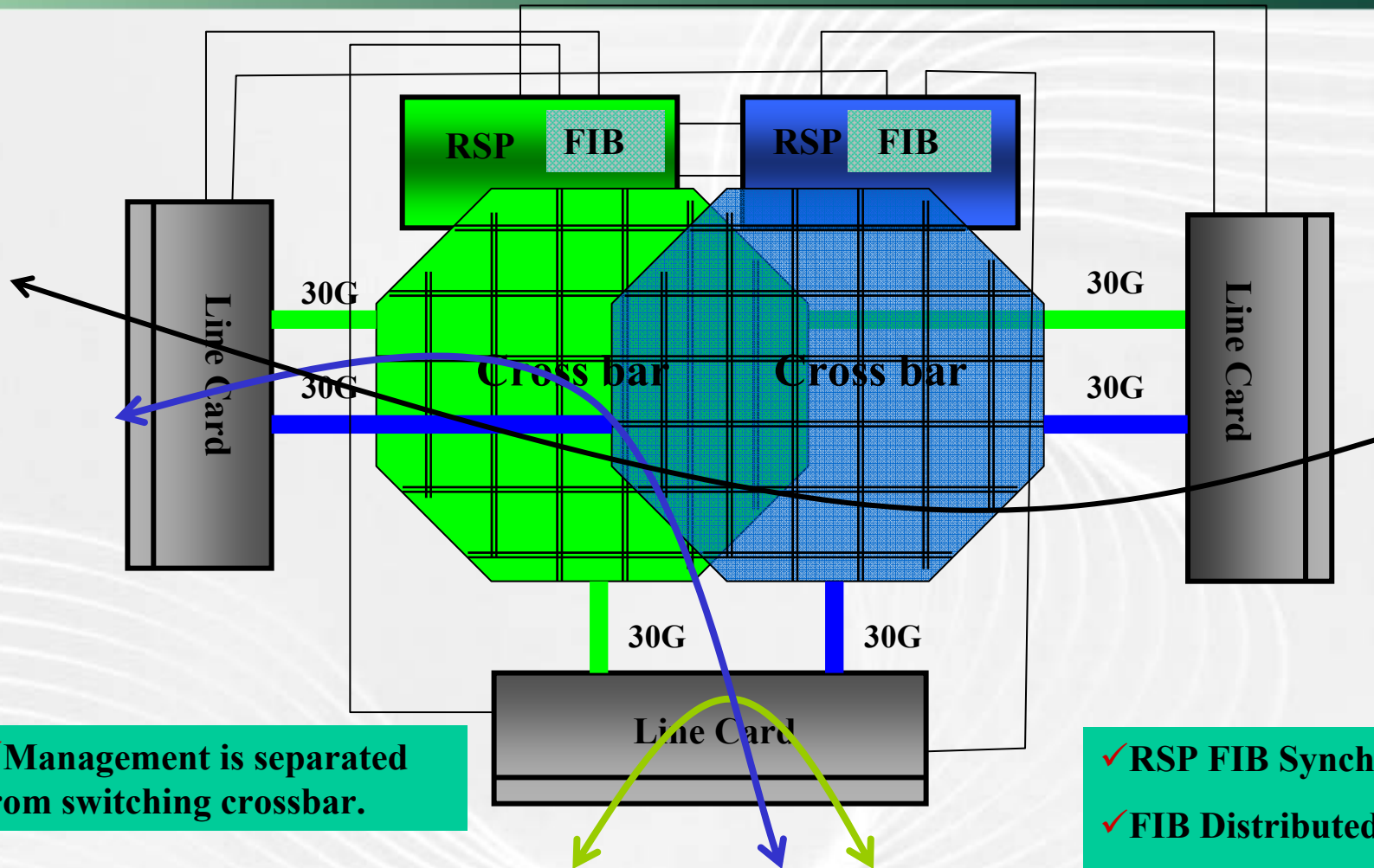
- **RRPP – Rapid Ring Protection Protocol**
  - Gyűrű topológia
  - 50ms konvergencia idő
  - Node szám független

- **MPLS**
  - L3/L2 VPN

Moduláris LAN switch-k

- **S8500**
  - S8505, S8508, S8512

- **Interface-k**
  - Standard
  - MPLS
  - IPv6

- **Roadmap**
  - PoE
  - Nagy portsűrűség
  - S8508V
  - Új vezérlő 1.44 Tbps

- **Catalyst 6500**
  - 6503, 6504
  - 6506, 6509
  - 6513

- **Interface-k**
  - 96 10/100 Ethernet
  - 48 GigabitEthernet
  - 4 TenGigabitEthernet
  - SIP, OSM
  - Service Module-k

S8500 architektúra

RSP **FIB**   **RSP** **FIB**

Line Card

30G
30G

Cross bar   **Cross bar**

Line Card

30G
30G

30G   30G

Line Card

✓**Management is separated from switching crossbar.**

✓**RSP FIB Synchronization**

✓**FIB Distributed**

✓**Distributed Forwarding**

Supervisor-k

S8500

- Vezérlő
  - Külön minden chassis-hoz
  - 300Gbps / 178Mpps
  - 480Gbps / 285Mpps
  - 720Gbps / 432Mpps

Catalyst 6500/7600

- Supervisor2
  - 32Gbps – 256Gbps
  - 15Mpps – 210Mpps
- Supervisor32
  - 32Gbps
  - 15Mpps
- Supervisor720
  - 15Mpps – 400Mpps
  - 720Gbps – 2x20Gbps/slot

Access Router-ek - Fix

- **AR 18-1x**
  - ➢ Serial/ISDN/E1 uplink
  - ➢ 1FE

- **AR 18-2x**
  - ➢ Ethernet uplink
  - ➢ 4 FE

- **AR 18-3x**
  - ➢ ADSL uplink
  - ➢ 4 FE

- **Cisco 800 series**
  - ➢ Fix

- **Cisco 1700**
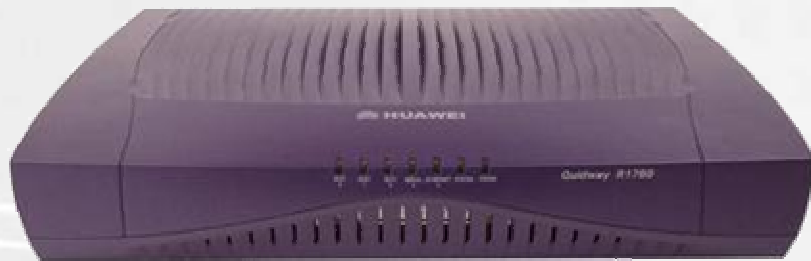 - ➢ 2-3-4 slot WIC/VIC

Access Router-ek

- **AR 28-09/10/11**
  - 1 MIM, 2 SIC, 1 fix serial
  - 60-70kpps

- **AR 28-30/31**
  - 3 MIM
  - 80kpps

- **AR 28-40/80**
  - 4/8 MIM
  - 90-100kpps

- **Cisco 1800**
  - Wireless support
  - Up to 75kpps

- **Cisco 2600**
  - 1 NM, 2-3 WIC
  - 15-70kpps

- **Cisco 2800**
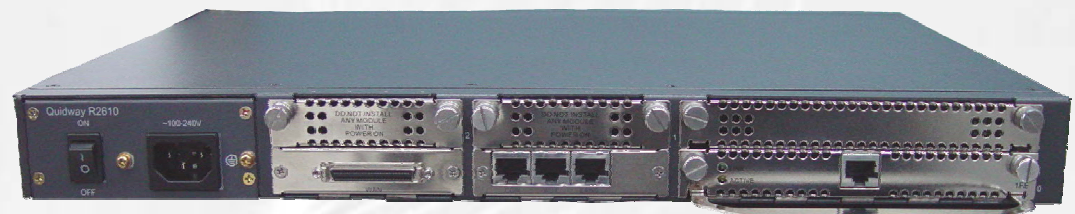 - 90-220kpps

- **Cisco 3600**
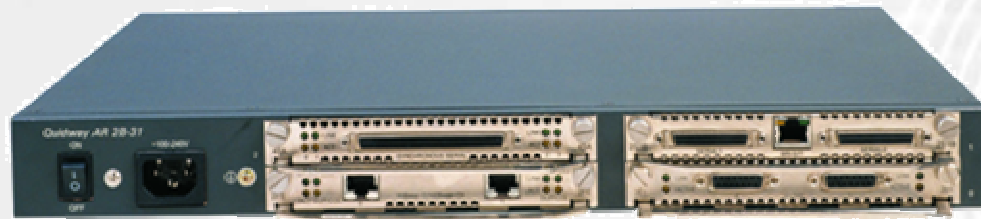 - 2-4 NM
  - 20-70kpps

AR 28-09/1x

AR 28-09

AR 28-1x

AR 28-3x/40/80

SYNERGON INFORMATION SYSTEMS PLC.

AR 28-3x

AR 28-40

AR 28-80

Interface-k

- **Smart Interface Card**
  - ➤ Soros, ISDN, E1
  - ➤ Analog Modem
  - ➤ Ethernet
  - ➤ Voice

- **Multi-Functional Interface Module**
  - ➤ Ethernet (1-2 port)
  - ➤ ADSL, Soros, ISDN, E1
  - ➤ E3, chSTM-1, STM-1
  - ➤ ATM

  - ➤ Voice – FXS, FXO, E1
  - ➤ Roadmap: ISDN-BRI
  - ➤ Encryption

Feature-k

- QoS
  - CBWFQ, CAR, GTS, WRED

- Routing
  - RIP, OSPF, BGP, VRRP, PIM, IGMP

- Service
  - MPLS, MPLS/VPN, VoIP, IPSec

AR 46-xx

- **AR 46-20/40/80**
  - ➤ 2/4/8 MIM

- **RPU**
  - ➤ 2 10/100 Ethernet
  - ➤ 350kpps

- **E-RPU**
  - ➤ 3 10/100/1000 Ethernet
  - ➤ 1 Mpps

- **Cisco 3725/3745**
  - ➤ 2 10/100 Ethernet
  - ➤ 2-4 NM, 3 WIC, 2 AIM
  - ➤ 120-250kpps

- **Cisco 3825/3845**
  - ➤ 2 10/100/1000 Ethernet
  - ➤ 2-4 NM, 4 HWIC, 2 AIM
  - ➤ 350-500kpps

NetEngine – high end

- **NE-20**
  - ~4.5Mpps
  - 2-4-8 slot
  - NP architektúra
  - 3 HIC

- **Roadmap: NE-20E**
  - ~6Mpps
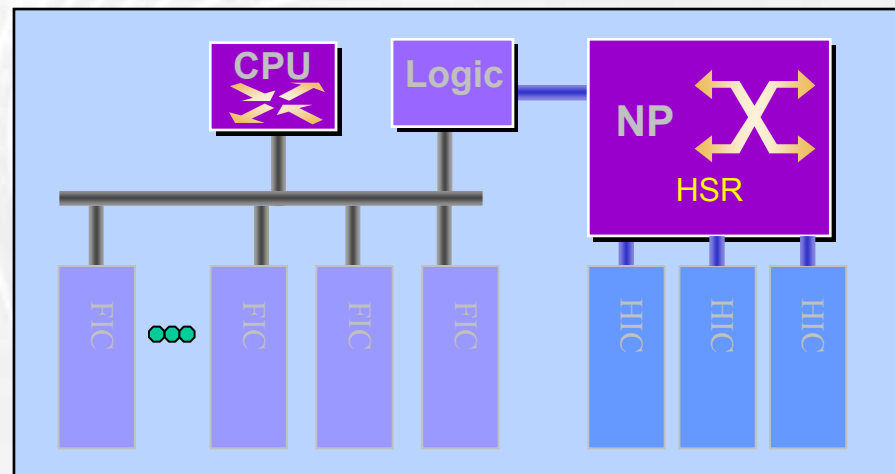 - 8 slot

- **Cisco 7200**
  - ~1Mpps
  - 4-6 slot
  - 3 10/100/1000 Ethernet

- **Cisco 7301**
  - ~1Mpps
  - 1 slot
  - 3 10/100/1000 Ethernet

- **Cisco 7304**
  - NPE-G100 ~ 1Mpps
  - NSE-100 ~ 3.5Mpps
  - 4 slot
 - 2 – 3 10/100/1000 Ethernet

NE20 architektúra

- HIC
  - High-speed interface Card
  - Maximum 3!
- FIC
  - Flexible interface card
- Forwarding
  - NP

2G PCI share data bus   2G D_bus switch

NetEngine – GSR/USR

- NE40
  - 2-4-8 slot
  - 6Mpps/slot
- NE80
  - 16 slot
  - 6Mpps/slot
- NE40E
  - 8 slot
  - 2*10Gbps/slot
- NE80E
  - 16 slot
  - 10Gbps/slot

- Cisco 7600
  - 40Gbps/slot
  - 15Mpps – 400Mpps
- Cisco 120xx
  - 2.5Gbps/slot
- Cisco 124xx
  - 10Gbps/slot
- Cisco 128xx
  - 40Gbps/slot

NE40 series
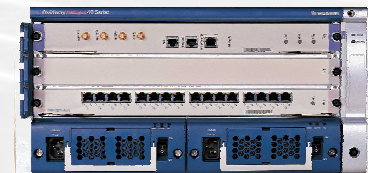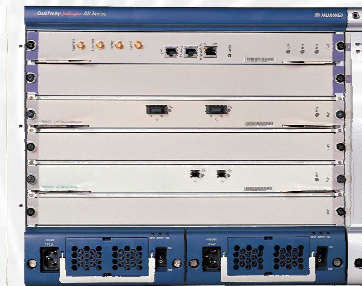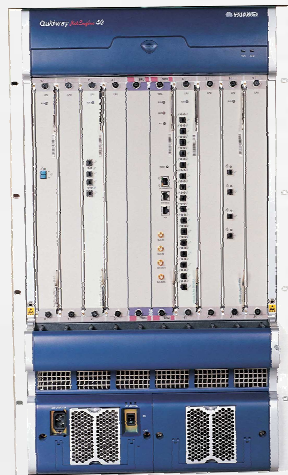
	NE40-8	NE40-4	NE40-2
Throughput	64G non-block switch, redundant	32G non-block switch, redundant	16G non-block switch
Performance	48Mpps	24Mpps	12Mpps
Interface Slots	8	4	2

NE40 architektúra
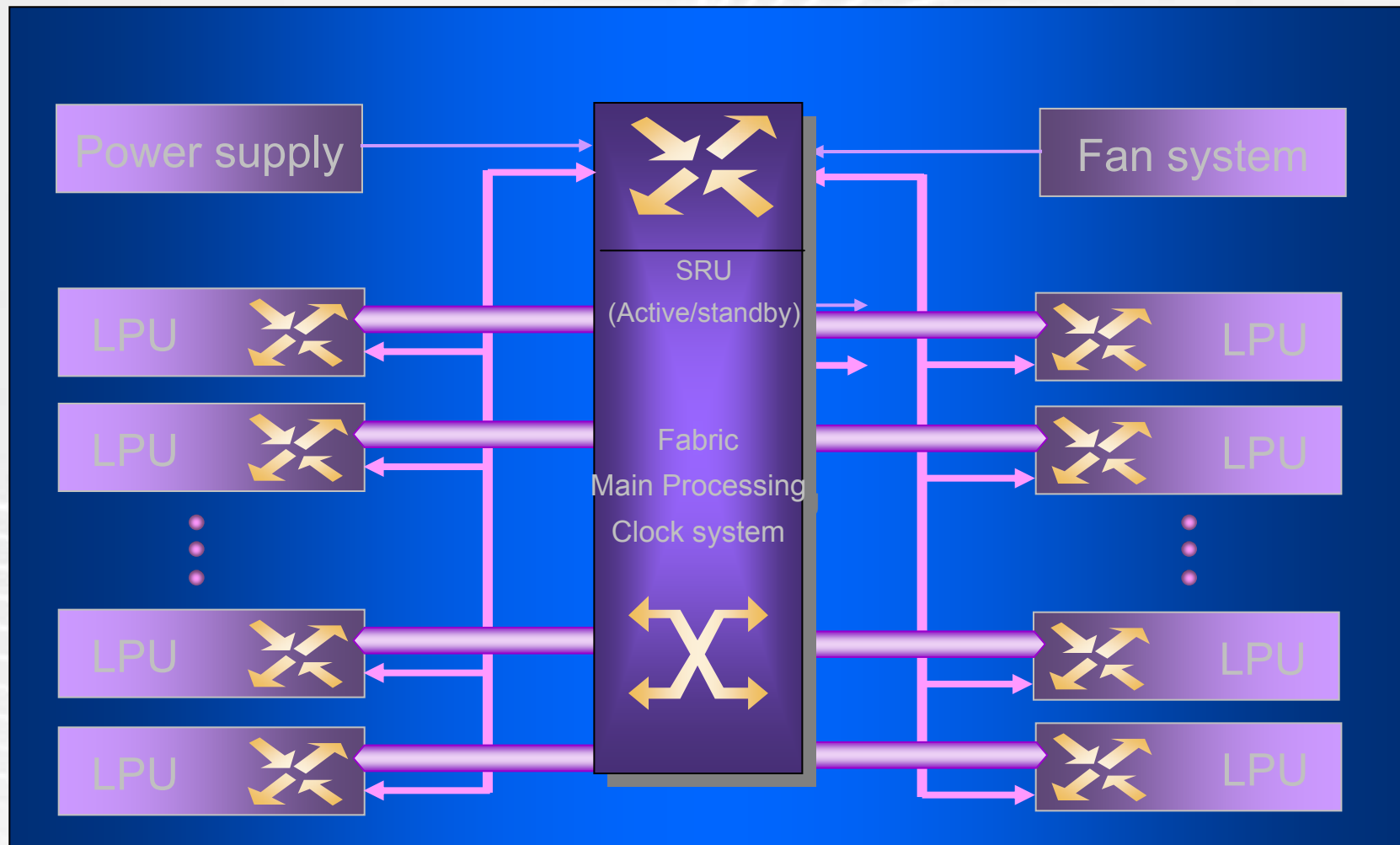
NE40 feature-k

- Routing
  - RIP, OSPF, IS-IS
  - BGP ~1.8M prefix
- MPLS
  - VPN
  - AToM
  - VPLS
  - L2 VPN
    - Martini
    - Kompella

- Multicast
  - IGMP, PIM, MSDP
  - 64k
- QoS
  - DiffServ
- NAT
- IPv6

NE40 interface-k

- Ethernet
  - 4port GE LAN/WAN
  - 8/16/32 port FE LAN/WAN
- SDH
  - 1port STM-16, RPR
  - 2port STM-4
  - 4/8port STM-1
  - 2/4port chSTM-1
  - 8port E1
- ATM
  - 8port STM-1

- LPUF
  - FE, GE, chE1, E3, ATM, PoS

- NAT
  - 1M session
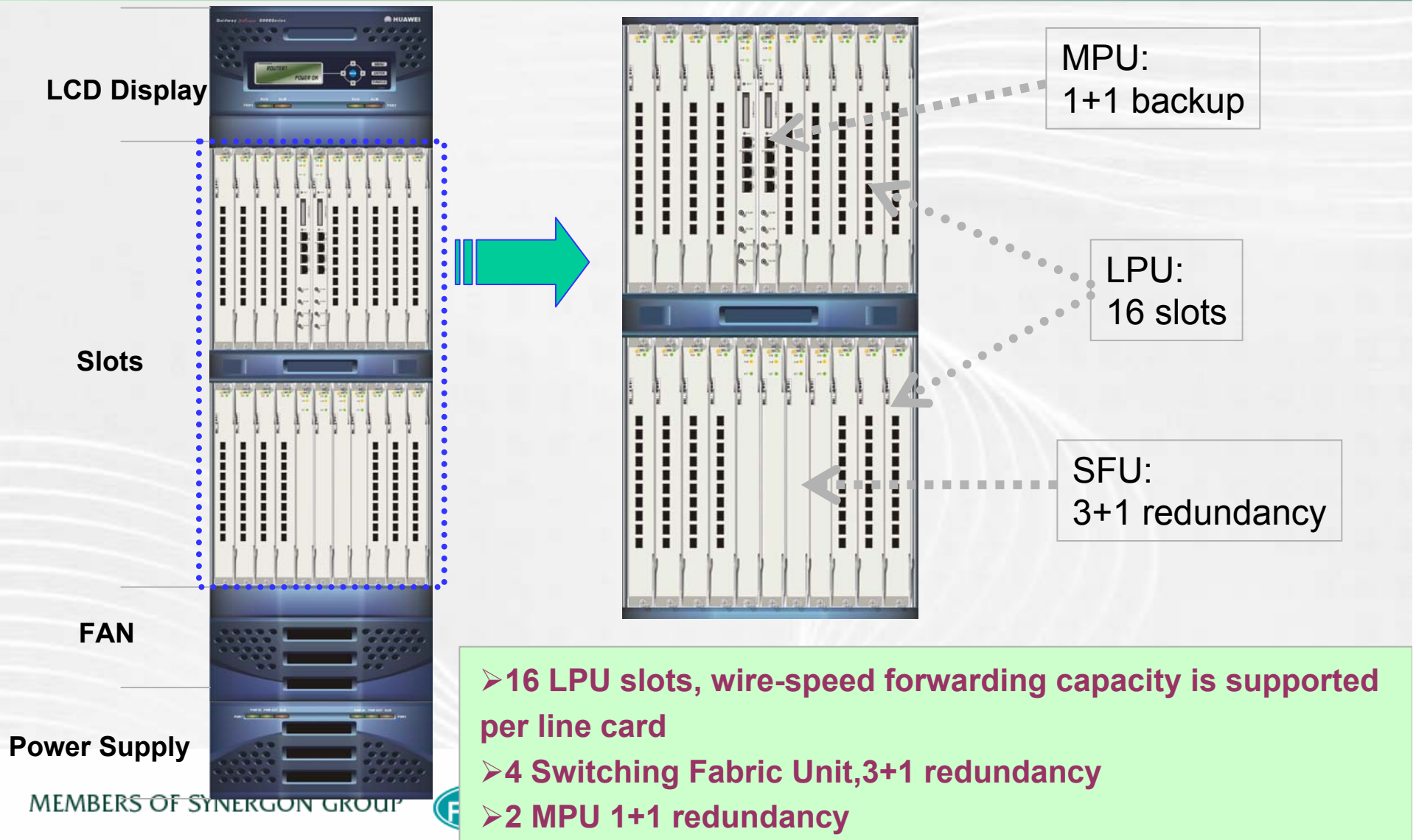 - 1Gbps
- NetStream
  - ~Cisco Netflow

NetEngine – TSR

- **NE5000E**
  - 16 slot
  - 40Gbps/slot
  - 1.28Tbps
  - 1600Mpps
  - 64 cascade
    - 80Tbps
  - Switching Fabric
    - 3+1
  - Jelenleg kettő cascade
  - NE80E LC kompatibilis

- **CRS-1**
  - 16 slot
  - 40Gbps/slot
  - 1.2Tbps
  - 1600Mpps
  - 72 cascade
    - 92Tbps
  - Switching Fabric
    - 7+1

NE5000E

LCD Display

Slots

FAN

Power Supply

MPU:
1+1 backup

LPU:
16 slots

SFU:
3+1 redundancy

➢16 LPU slots, wire-speed forwarding capacity is supported per line card
➢4 Switching Fabric Unit,3+1 redundancy
➢2 MPU 1+1 redundancy

Huawei Portfolio

- **Datacom**
  - ➢ LAN Switch
  - ➢ Access Router
  - ➢ NetEngine
  - ➢ BRAS
  - ➢ Firewall
  - ➢ Access Server
- **Access Network**
  - ➢ CPE
  - ➢ DSLAM

- **Optical Transport**
  - ➢ SDH, DWDM, CWDM
- **Video Communication**
- **Wireless**
  - ➢ 3G
  - ➢ WiMax
  - ➢ WLAN
- **NGN**

Kérdések & Válaszok

Balla Attila
balla.attila@synergon.hu