AlaxalA

Carrier Grade Router / Switch Products
[Guaranteed IP Networks]

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Contents

- What is ALAXALA?
- Guaranteed IP Network Concept
- Products Line-up
- Technologies for Guaranteed IP Network
- Products Roadmap
- Summary

AlaxalA

Ala
Wing(Customers)

X
(e**X**change)

Ala
Wing(Our Company)

Development, Manufacturing, Sales, and Maintenance of Routers and Switches

ALAXALA Networks

- **Established** : October 1st, 2004
- **Capital** : about 55M$ (5,500M¥)
- **Employee** : 320(as of Oct / 2004)
- **Head Quarter** : Shin-Kawasaki, Kanagawa JAPAN
- **Product Line** : AX series (High-End Router, High/Mid-range Switch)

Parent Companies Technologies

AlaxalA

Philosophy

[Guaranteed Network]

- Contribute to the establishment of a society rich in information and telecommunications.
- Provide user-friendly and security-conscious networks for the customers all over the world.
- Highly Reliable, Stable, and Secure Guaranteed Networks in IP/Ethernet Environments

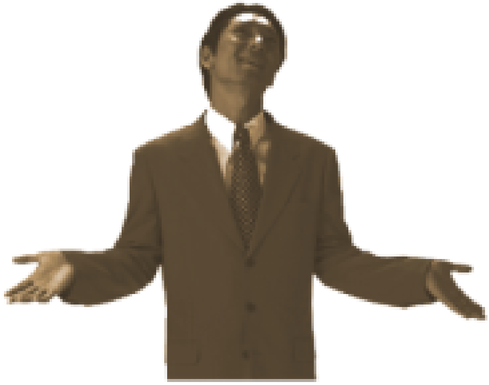
Network Outage causing...

User

Disconnected from my network during this emergency!!!

Another system failure!!!! We're losing business opportunities…

Service Provider



SIer/NIer

More trouble!!!! Tremendous loss of time and money…

Network Outage causes Significant Loss!

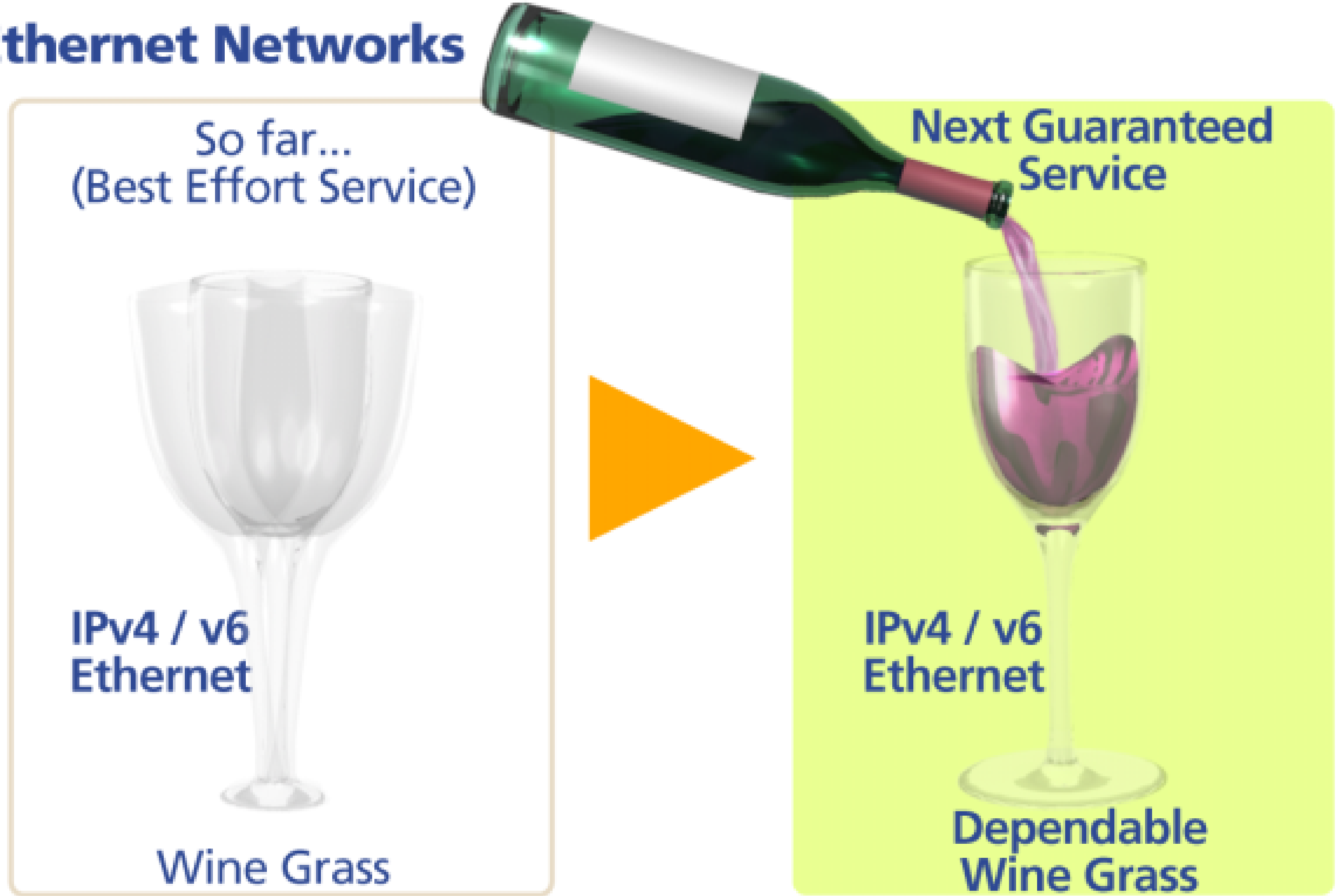
Infonetics Research report(2003)

Network Downtime Causing Significant Revenue Losses

The Costs of Enterprise Downtime 2003, released today by Infonetics Research, concludes that **network outages and degradations are causing significant losses in productivity and revenue, ranging from less than 1/10th of 1% of total revenue to almost 1% (up to $74.6 million) per year.**

Towards Broadband Service Era

Dependable, Reliable & Stable Services over Guaranteed IP/Ethernet Networks



So far...
(Best Effort Service)

IPv4 / v6
Ethernet

Wine Grass

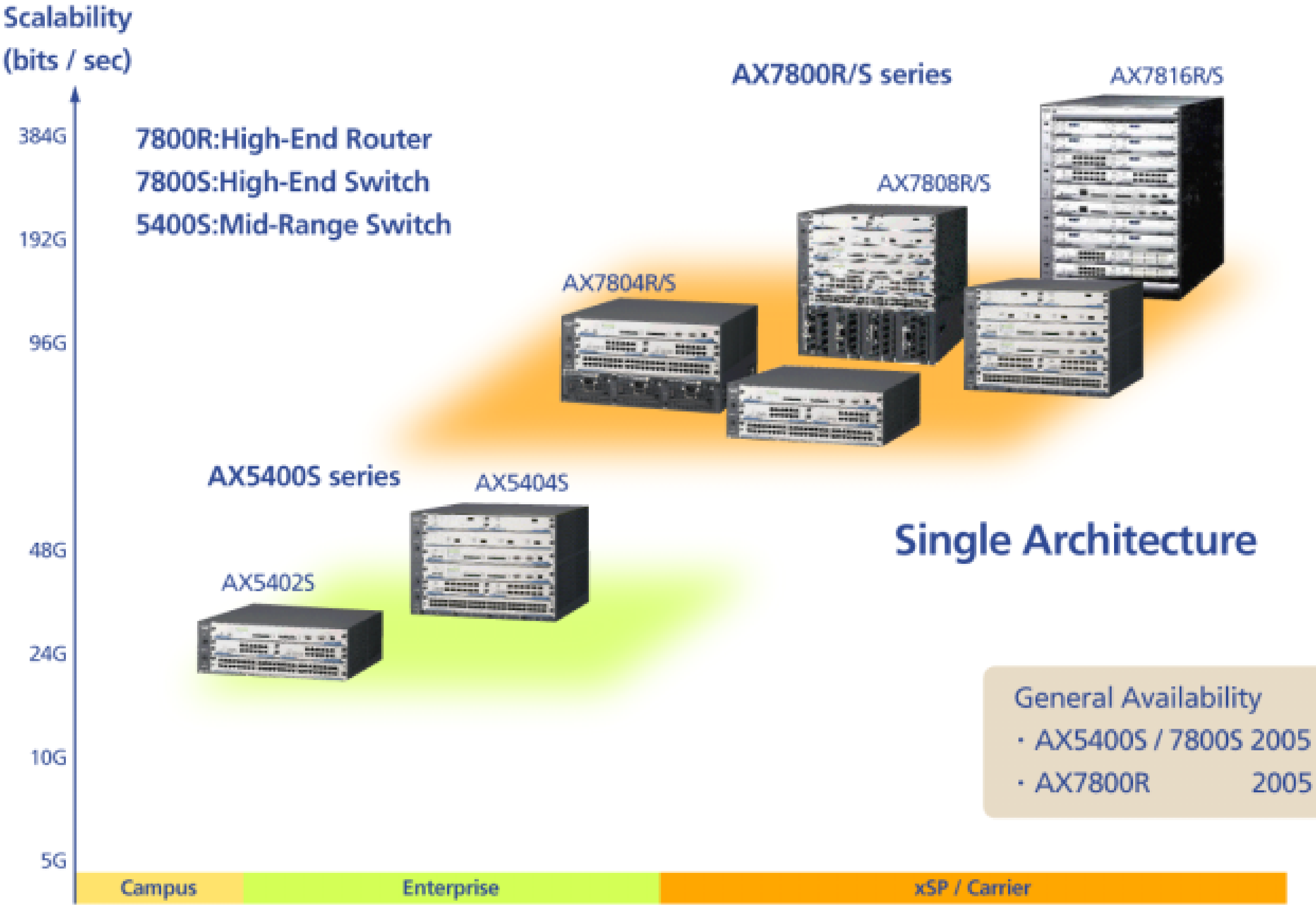
Next Guaranteed
Service

IPv4 / v6
Ethernet

Dependable
Wine Grass

AlaxalA

ALAXALA Products Line-up



7800R:High-End Router
7800S:High-End Switch
5400S:Mid-Range Switch

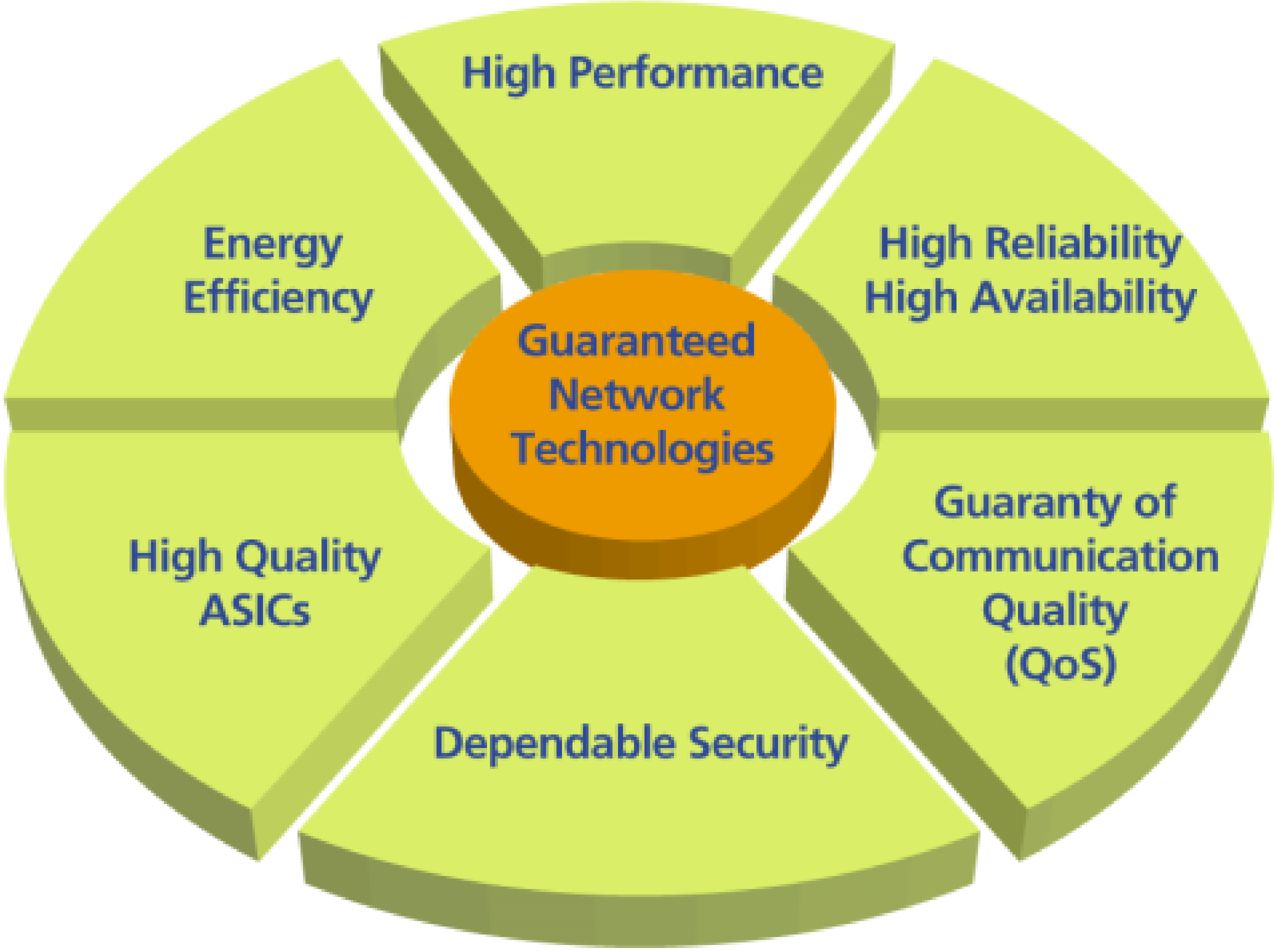
Single Architecture

General Availability

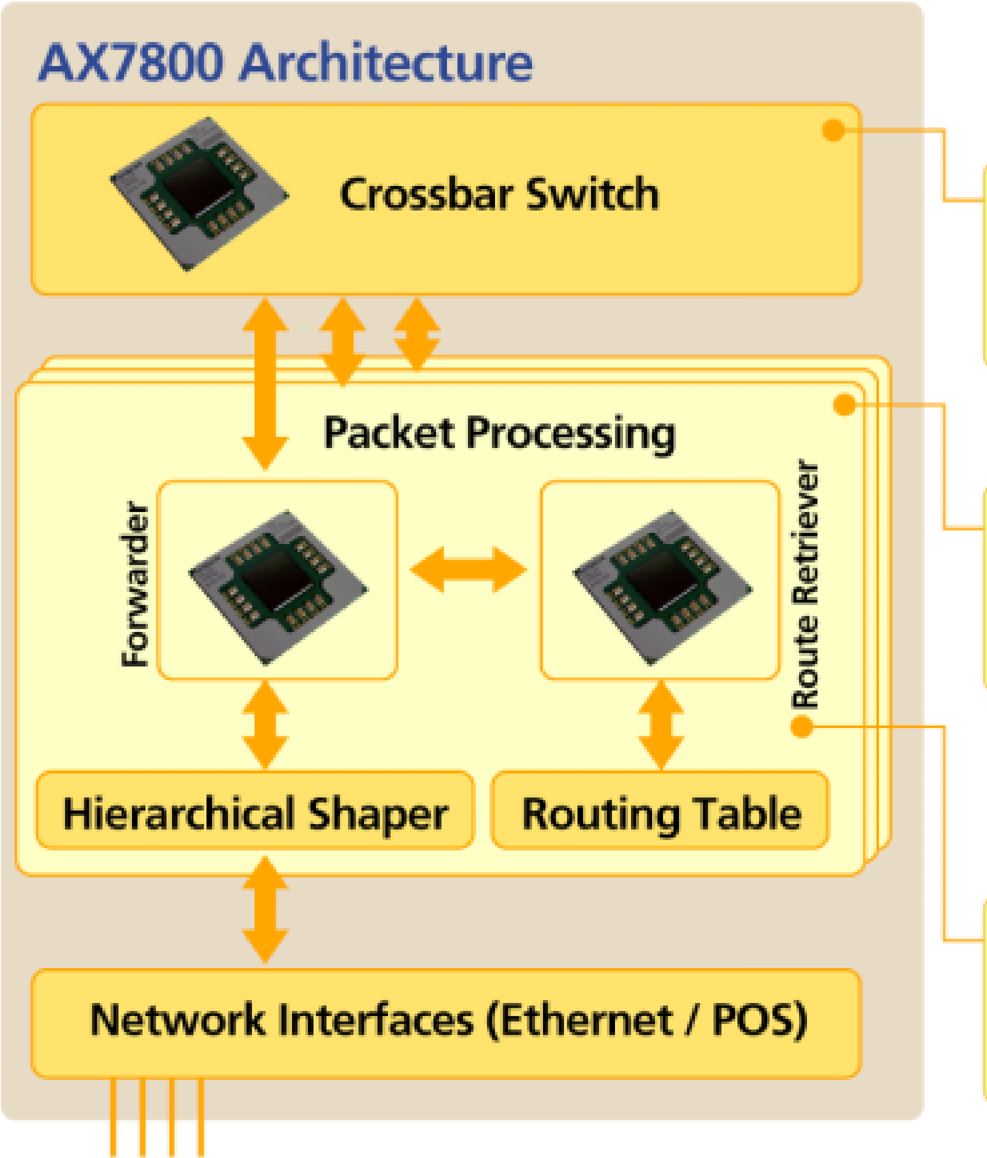
- AX5400S / 7800S 2005 Jan 31
- AX7800R 2005 Jan 31

Product Key Features

6 major features to support carrier grade services.


High Performance
Energy Efficiency
High Reliability High Availability
Guaranteed Network Technologies
High Quality ASICs
Guaranty of Communication Quality (QoS)
Dependable Security

Guaranteed High Performance



AX7800 Architecture

Crossbar Switch

Packet Processing

Forwarder

Route Retriever

Hierarchical Shaper

Routing Table

Network Interfaces (Ethernet / POS)

- **Distributed Packet Processor**
  - 320Gbps throughput
  - Smaller Pin counts
  - 1+1 Redundancy

- Wire-speed Packet Forwarding
- Wire-speed Packet Filtering
- Classified QoS/Queuing

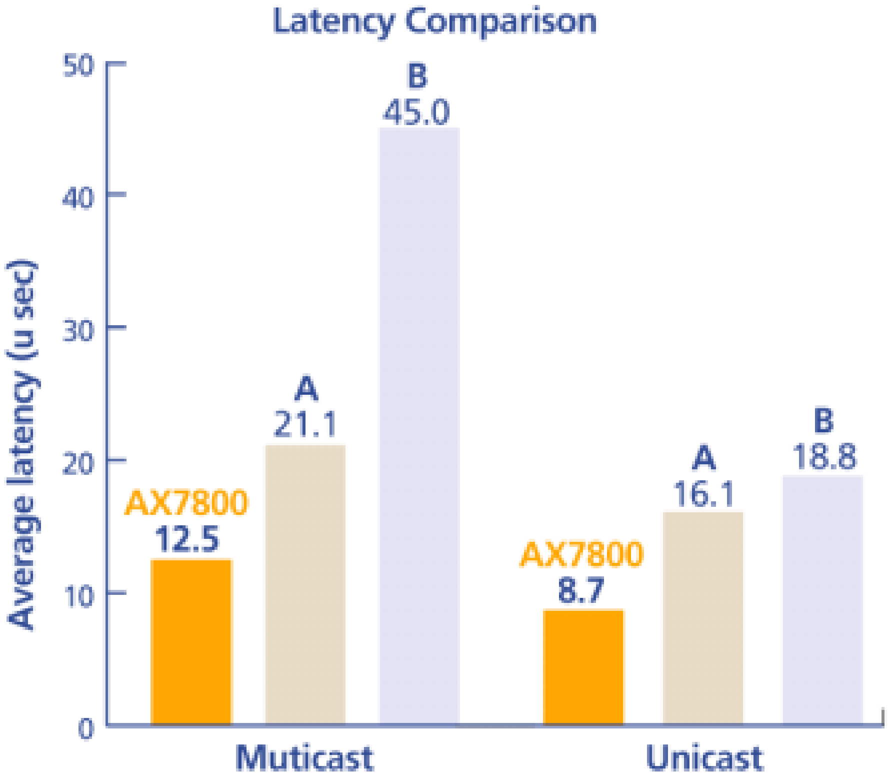
- **Single Engine for Multiple Forwarders**
  - 20Gbps/chip
  - IPv6/v4 + Ethernet
  - Filter/QoS

Guaranteed Low Latency Switching

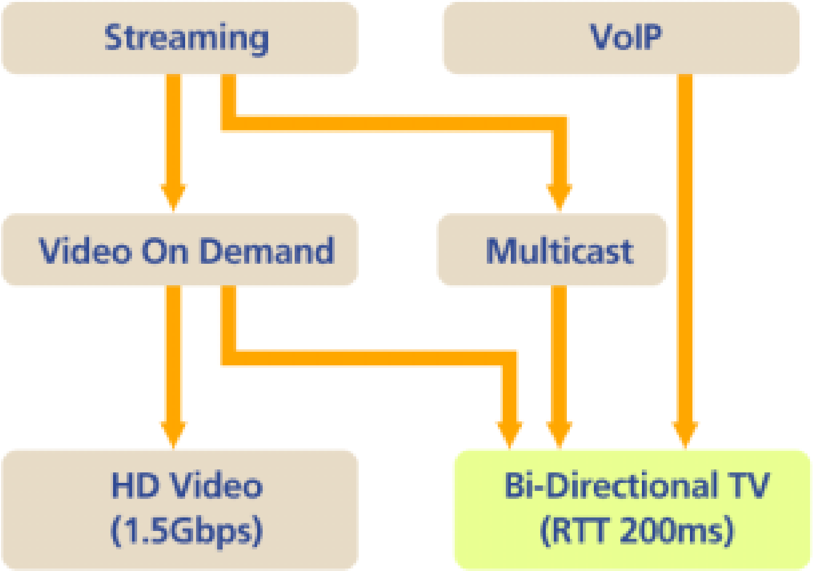
Low Latency and small delay variation

Delay sensitive application(VoIP, Real-time HD-Video)

Throughput / Transaction increase (smaller RTT)



Latency Sensitive Applications increase...

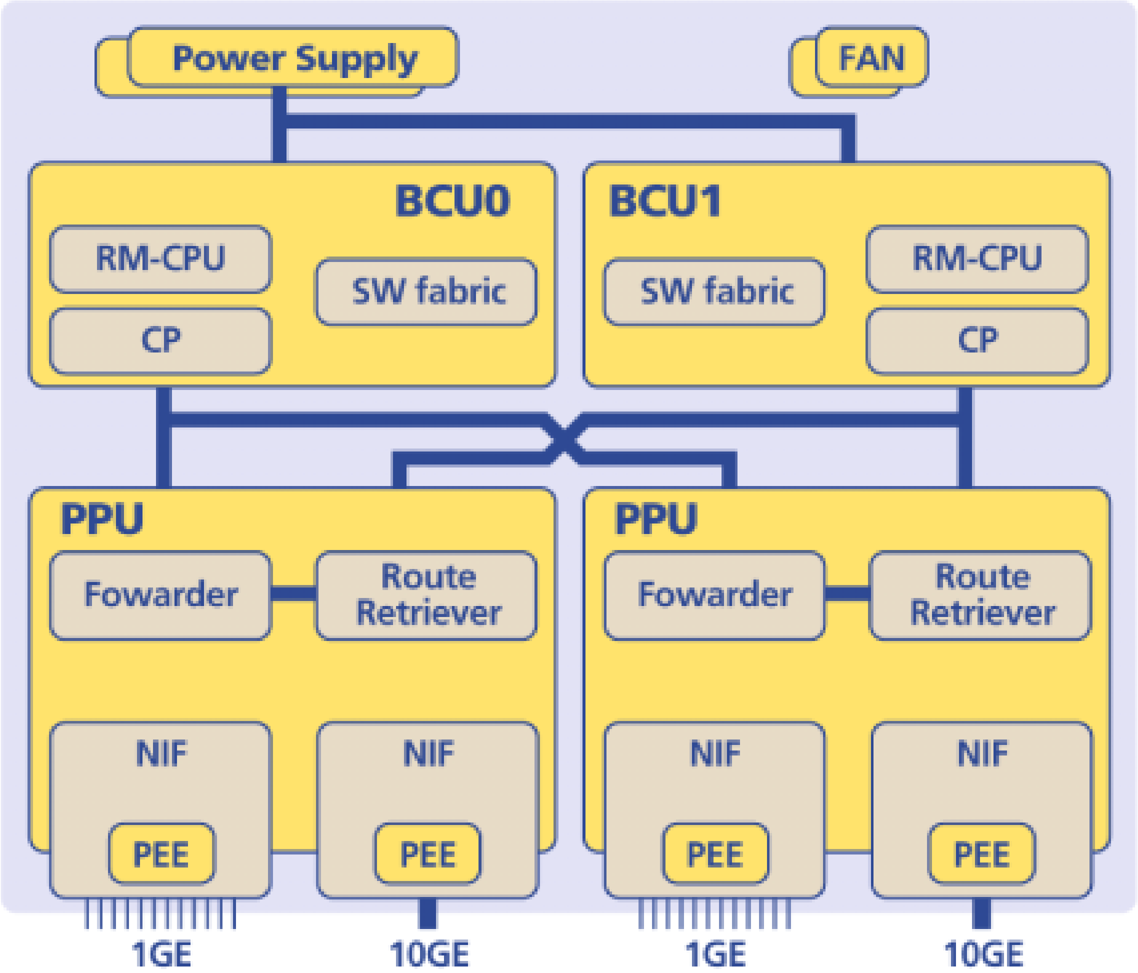

Streaming
VoIP
Video On Demand
Multicast
HD Video
(1.5Gbps)
Bi-Directional TV
(RTT 200ms)

RTT=Round Trip Time

Highly Available AX series Architecture

Carrier Grade High-Availability

Architecture, Design and Manufacturing


Power Supply
FAN
BCU0
RM-CPU
CP
SW fabric
BCU1
SW fabric
RM-CPU
CP
PPU
Fowarder
Route Retriever
NIF
PEE
NIF
PEE
PPU
Fowarder
Route Retriever
NIF
PEE
NIF
PEE
1GE
10GE
1GE
10GE

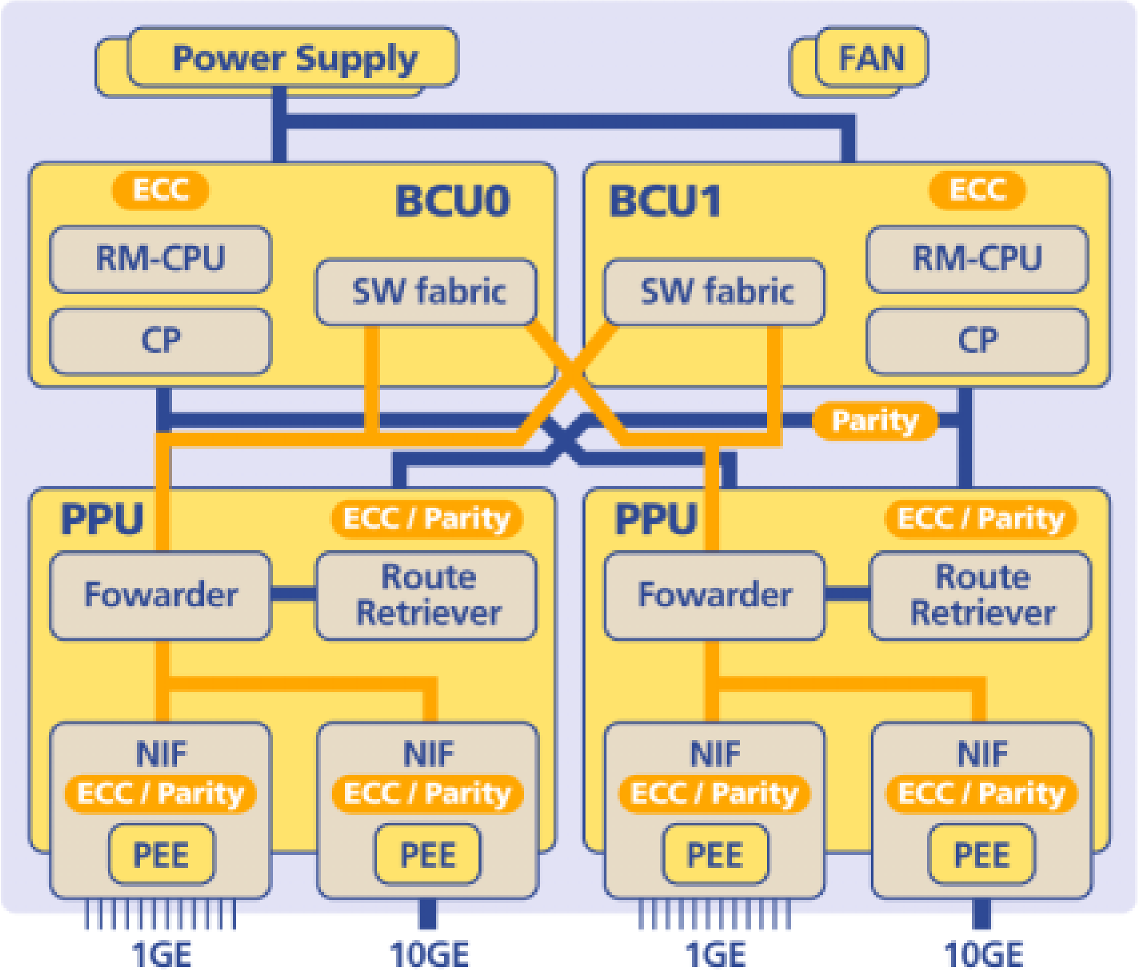
Redundant

- Power Supply
- Switch fabric
- Routing Manager

Highly Available AX series Architecture

Carrier Grade High-Availability

Architecture, Design and Manufacturing


Power Supply
FAN
ECC
BCU0
RM-CPU
CP
SW fabric
BCU1
ECC
SW fabric
RM-CPU
CP
Parity
PPU
ECC / Parity
Fowarder
Route Retriever
NIF
ECC / Parity
PEE
NIF
ECC / Parity
PEE
1GE
10GE
PPU
ECC / Parity
Fowarder
Route Retriever
NIF
ECC / Parity
PEE
NIF
ECC / Parity
PEE
1GE
10GE

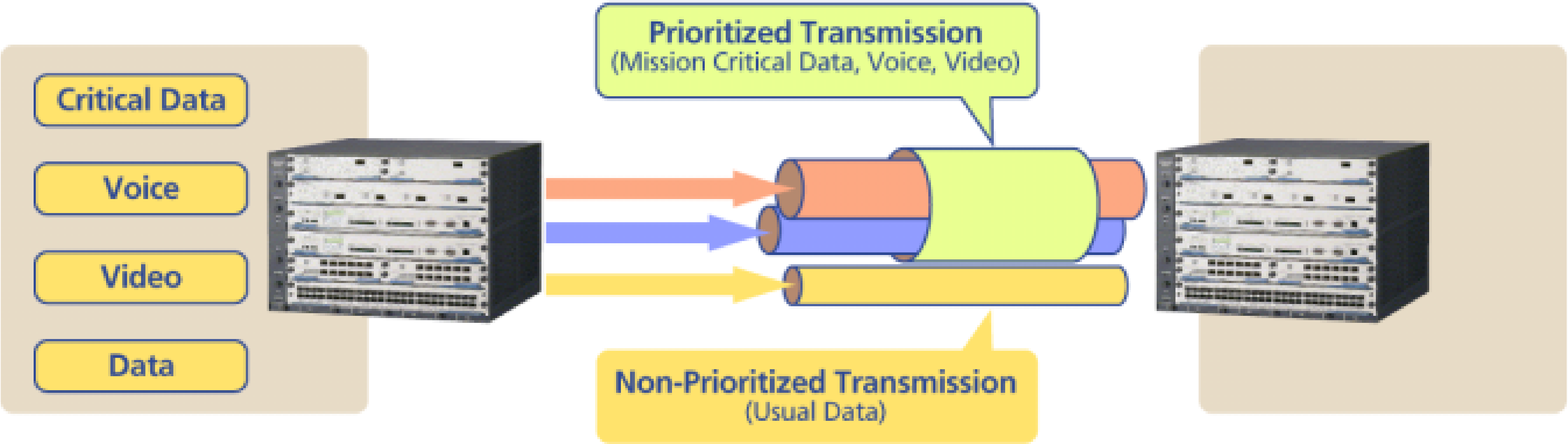
Parity/ECC check

- BAS
- ASIC interface

Guaranteed Quality of Service

AX series QoS(BW control, prioritizing) Supports

Multiple Application Consolidation(Triple-Play, etc)
Real time communication(voice video)
Mission Critical data communication

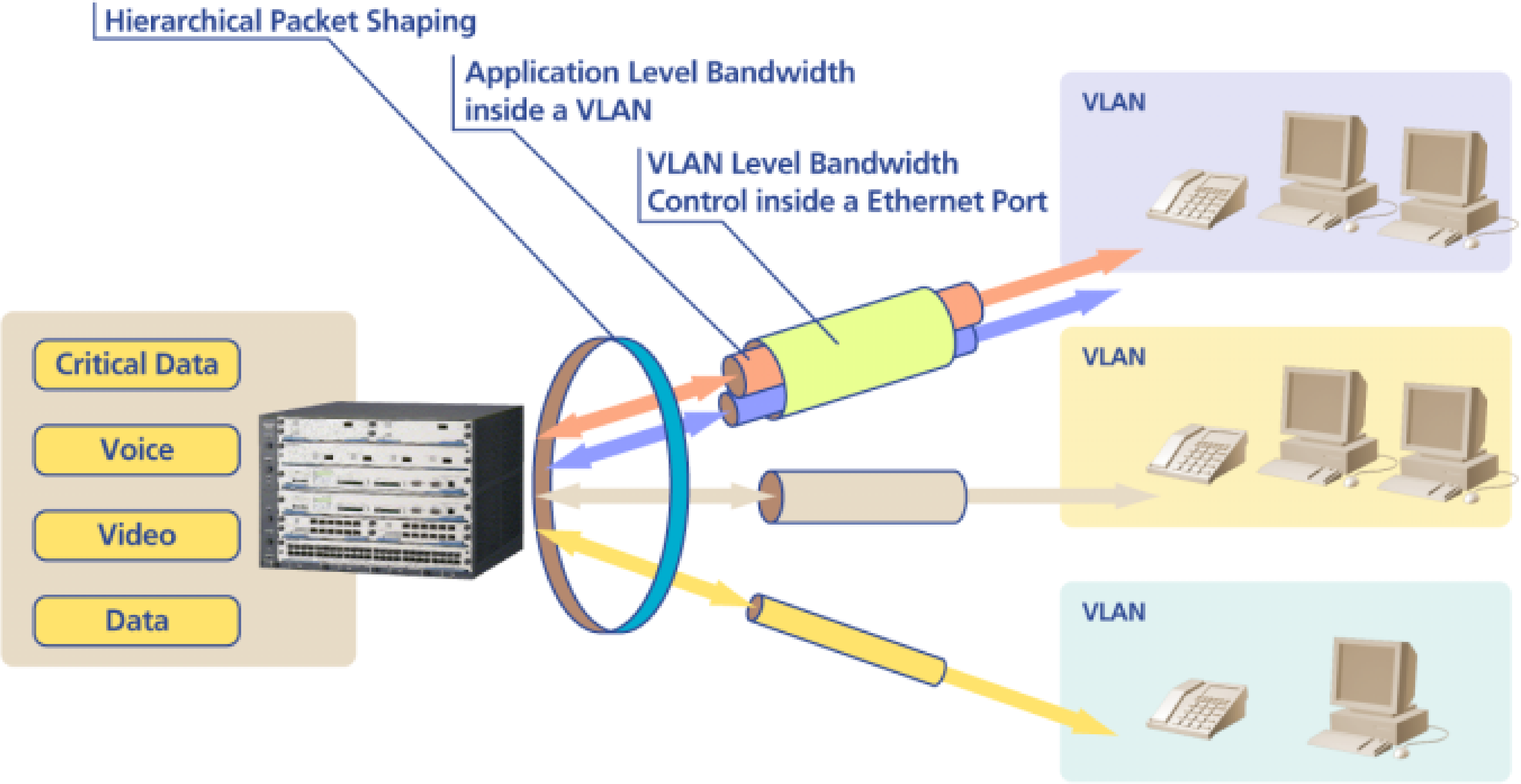

Critical Data
Voice
Video
Data
Prioritized Transmission
(Mission Critical Data, Voice, Video)
Non-Prioritized Transmission
(Usual Data)

Fine Granularity QoS

Hierarchical Packet Shaper

Flexible QoS configuration

ATM-like QoS over Ethernet



Hierarchical Packet Shaping

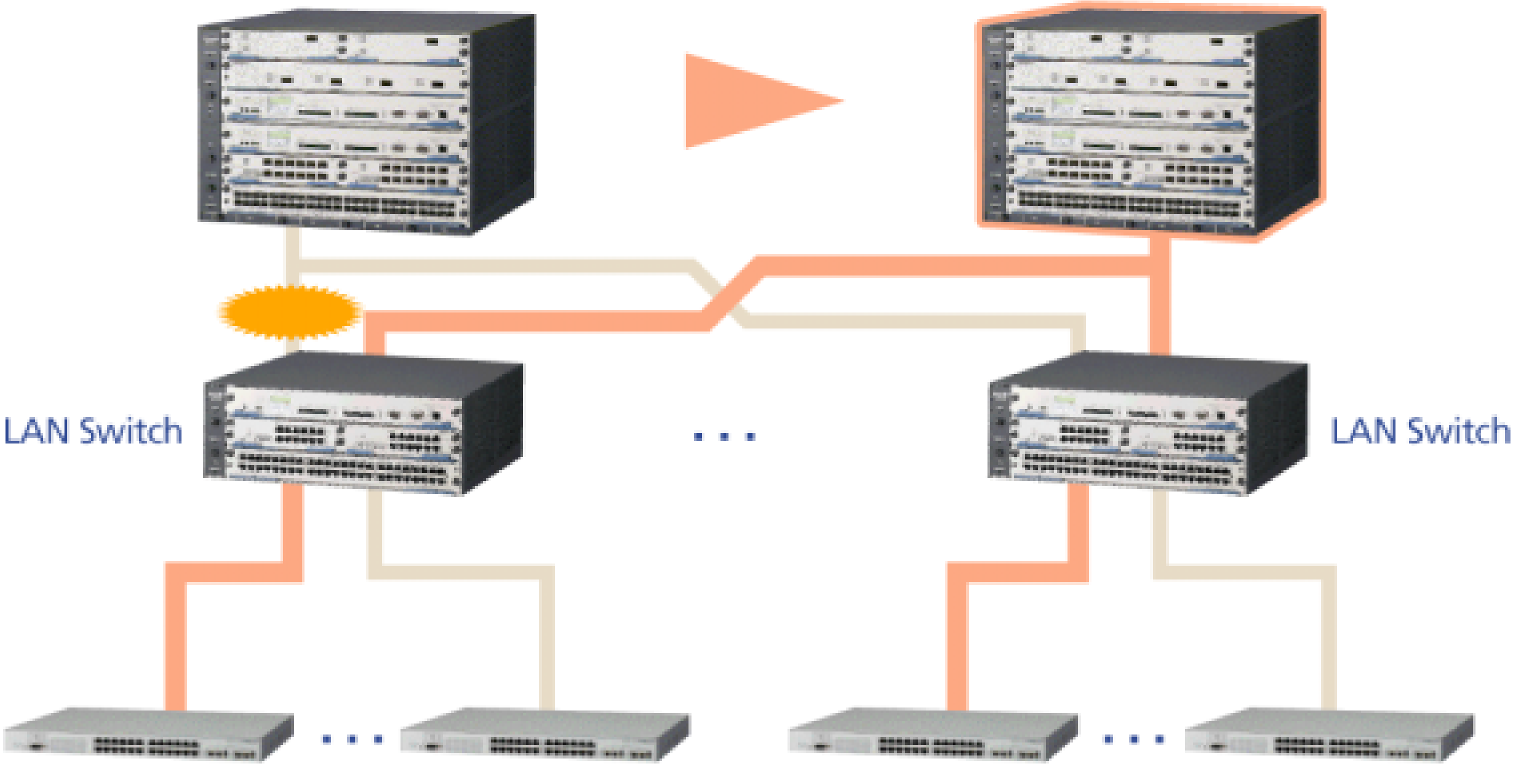
Application Level Bandwidth inside a VLAN

VLAN Level Bandwidth Control inside a Ethernet Port

Critical Data
Voice
Video
Data
VLAN
VLAN
VLAN

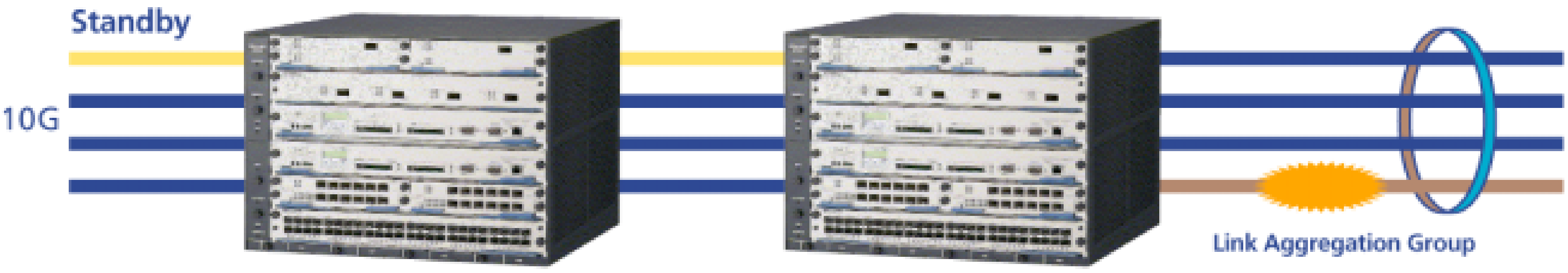
GSRP (Gigabit Switch Redundancy Protocol)

L2 Switch Fail-over System


LAN Switch
LAN Switch

Standby-Link Aggregation to keep bandwidth

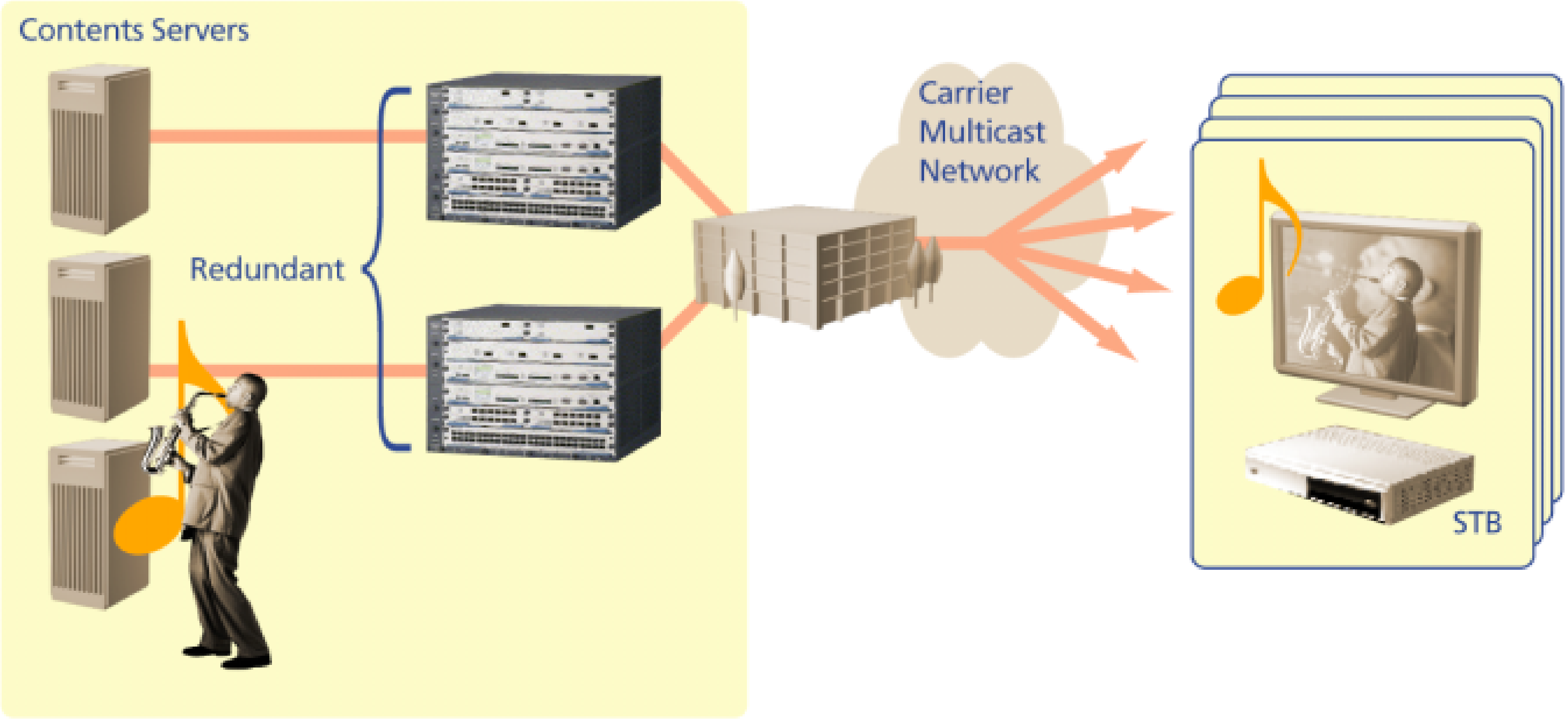
10G x 16(max.) Link Aggregation for 160G Link


Standby
10G
Link Aggregation Group

Large Number IPv6 Multicast

Large number IPv6 Multicast for Voice, Sound and Video

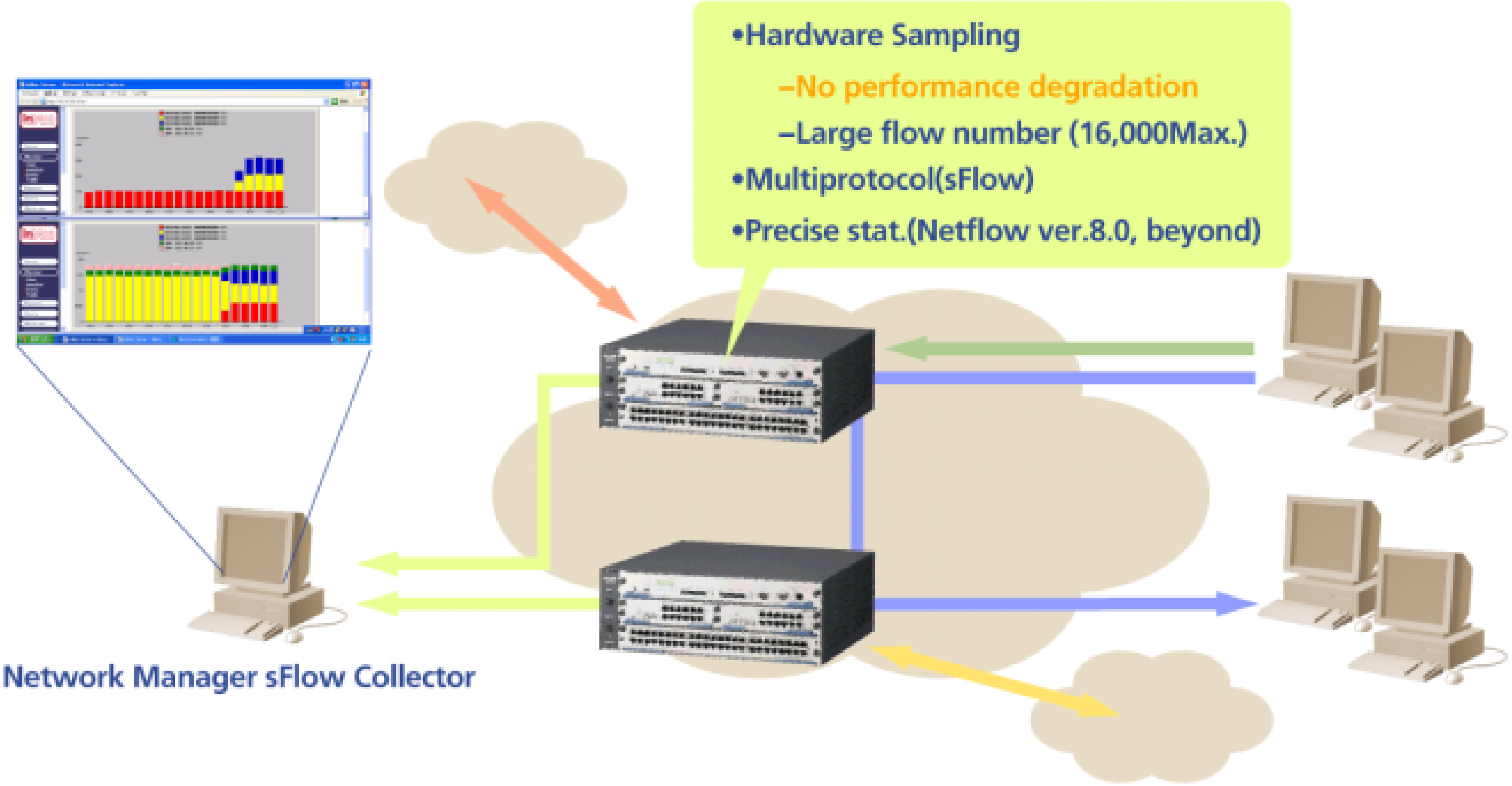
- No Performance degradation (Hardware Multicast packet copy)
- Simultaneous copy to 8,000 subscribers
- Stable and dependable IPv6/v4 Multicast


Contents Servers
Redundant
Carrier
Multicast
Network
STB

Guaranteed Performance Monitors

Hardware Flow measurement and statistics

- Feed-back to continuous Network bandwidth design
- Early detection for suspicious **Intrusion / DoS attack**



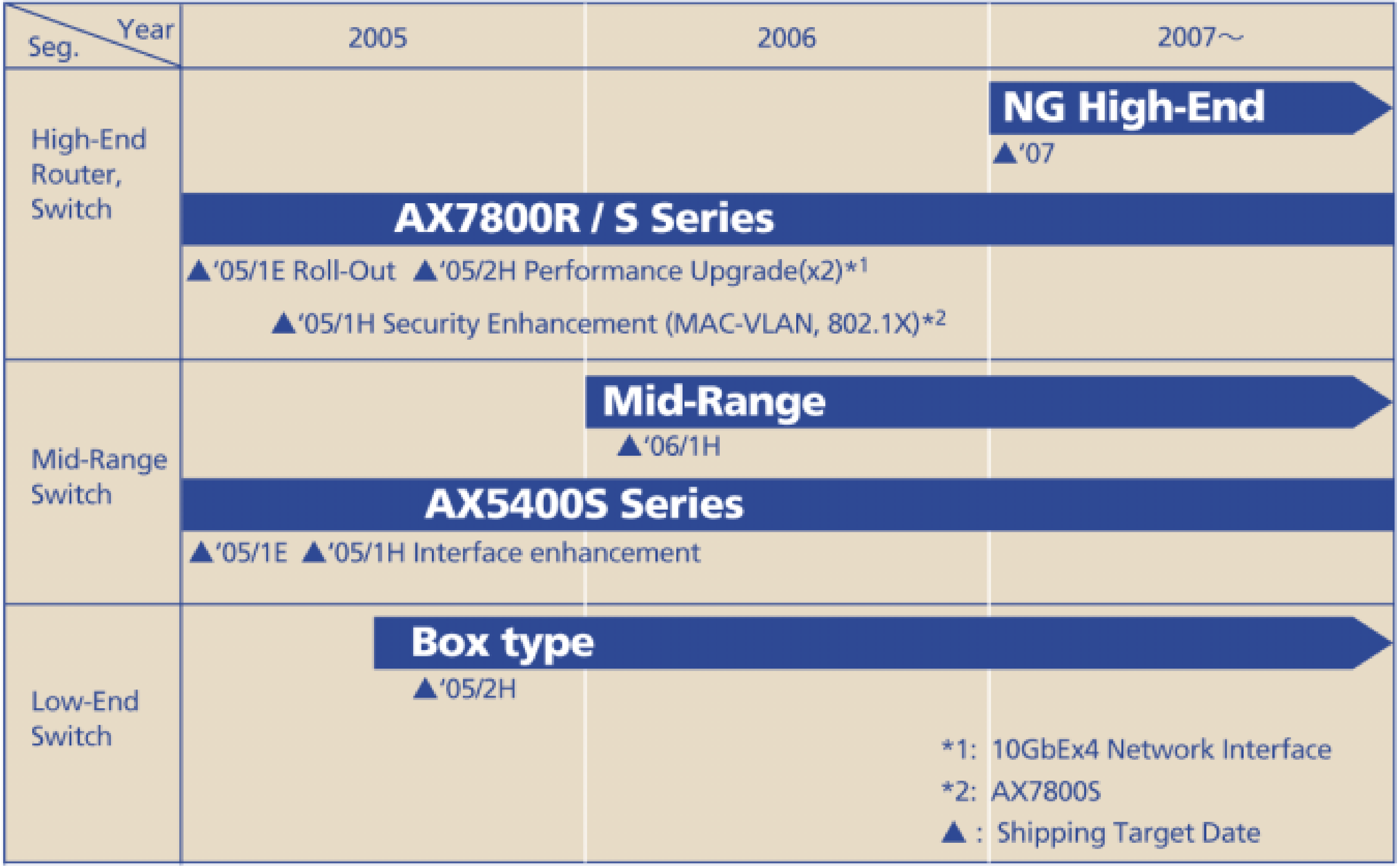
- Hardware Sampling
  - No performance degradation
  - Large flow number (16,000Max.)
- Multiprotocol(sFlow)
- Precise stat.(Netflow ver.8.0, beyond)

Network Manager sFlow Collector

Core Competence & Benefits

- Guaranteed High Performance
- Guaranteed Low Latency Switching
- Highly Available AX series Architecture
- Guaranteed Quality of Service
- Fine Granularity QoS
- High Availability Networking
- Large Number IPv6 Multicast
- Guaranteed Performance Monitors

Product Roadmap



Seg.
Year
2005
2006
2007～
High-End Router, Switch
NG High-End
▲'07
AX7800R / S Series
▲'05/1E Roll-Out ▲'05/2H Performance Upgrade(x2)*1
▲'05/1H Security Enhancement (MAC-VLAN, 802.1X)*2
Mid-Range Switch
Mid-Range
▲'06/1H
AX5400S Series
▲'05/1E ▲'05/1H Interface enhancement
Low-End Switch
Box type
▲'05/2H

*1: 10GbEx4 Network Interface

*2: AX7800S

▲ : Shipping Target Date

Standardization Activities

1992 Join WIDE Project

1992 GateD Consortium

IETF IPv6 Contribution

1999 JGN, JGNv6, IPv6 Forum

2001 IPv6 Promortion Council

2002 China-Japan IPv6 Project

2003 IPv6 Ready Logo Program

2004 JGN2

Continuous Contribution as "ALAXALA"

Summary

ALAXALA Networks established Oct. 1 2004

Aiming to Carrier grade IP Networking Products

Guaranteed IP Network

Supporting Highly available & Stable Infrastructure

AX series from Mid-range to High-End R/S

Based on own ASIC hardware routing

Dense 10G/GbE interfaces

IPv6,QoS, Link-aggregation, GSRP, Multicast, flow statistics

Continuous Carrier Grade Product roll-out

Part of ALAXALA's activity supported by Ministry of Economy, Trade and Industry, Japan

Thank you !

http://www.alaxala.com/