Introducing the Cisco Advanced ATM Multiservice Portfolio (AAMP)

Session PRD-8059
 Agenda

Carrier Market Dynamics
Cisco Advanced ATM Portfolio (AAMP)
Cisco AAMP Value Proposition
Cisco AAMP Case Studies
Cisco AAMP Leadership

Today’s Service Provider Dynamics

Sweet Spot: Enable New Services without Disrupting the Revenue Stream from Traditional Services

Cisco Advanced ATM Multiservice Portfolio

The Cisco MGX 8950 Scales Carrier Networks by Providing True 10 Gbps ATM interfaces, a 180 Gbps Redundant Switching Fabric, Industry-Leading Broadband Density

- Industry leading always-on 180G
  ...Offering dynamic load sharing for highest resilient fabric capacity across 4 separate 60 Gbps fabric modules

- 10G I/O capacity per slot
  ...Offering industry leading broadband ATM density

- Complete separation of data and control plane
  ...Offering highest reliability
Cisco 8950-Powered by Cisco Europa Chipset

Cisco’s Europa Chipset Provides 10G Line Rate ATM in a Variety of Interface Speeds

- Line rate 10G ATM
  ...Offering unmatched scale
- Industry’s leading channelized interfaces for OC-3/STM-1 and OC-12/STM-4 density
  ...Optimizing CAPEX
- Cisco patent-pending features to prevent cell loss and maintain line rate speeds
  ...Ensuring full bandwidth utilization

Cisco 8950-Cisco QuadNonStop Switching Fabric—Built for Non-Stop Operation

- 4 independent, always-on switching fabrics offering highest resiliency though continuous load sharing
- Designed to support line rate OC-192c/STM-64 traffic with highest control over jitter and latency
Cisco MGX 8850
Multiservice Switch

High-End Multiservice Switch for Services, Broadband Aggregation and Trunking

- 45 Gbps non-blocking switching capacity
  - Price/performance suited for larger sites with narrowband and broadband services growth
- Enhanced support for Frame Relay, voice and MPLS
  - Suited for high density voice, VPN and high speed Frame Relay services requirements
- T1/E1 to OC-48c/STM-16
  - Scales to meet both services and trunking needs
  - High density scale for channelized services

Cisco MGX 8830
Entry Level Compact 1.2G Switch

Extends a Full Suite of Narrowband and Broadband Interfaces to Remote Sites with Low Density and High Service Mix Requirements, Using PNNI and MPLS for Flexible Network and Services Evolution

- 1.2 Gbps non-blocking switching capacity with PNNI Routing
- Supports 8 I/O slots
- Optimized for reduced space and power

Cisco Innovation—Industry’s First ATM Modular Optics
- Unique ability to add bandwidth and mix optical interfaces for service providers
- Enabling high availability with hot swappable and replaceable individual transceivers for repairs
Cisco AAMP: Scaling with Customer Needs

Narrowband Densities

- 64 T1/E1
- 192 T1/E1
- 1344 T1*
- 8X30
- 8250
- 8850
- 8250
- 8850

*Channelized

Broadband Densities

- 12 OC192/STM-64
- 48 OC48/STM-16
- 192 OC12-STM-4*
- 768 OC3/STM-1*
- 768 T3*
- 8230/8830
- 8250/8850
- 8850
- 8950
- 8250/8850
- 8950

Route Processor Module
IP Services Gateway Powered by Cisco IOS® and PXF

The Cisco RPM-XF is a Seamlessly Integrated IP Services Gateway for Cisco AAMP Leveraging Industry Leading Cisco IOS Software and Powered By Cisco PXF Innovative Adaptive Processing for Highest Service Performance

- Scales IP Service on Any Port (ISAP) offering service providers easy upsell from traditional frame, ATM or voice service
- Wire speed quality of service, low latency queuing to enable VoIP services
- Cisco IOS offers guaranteed interoperability, uniform delivery of applications and services with Cisco routers
Voice Interworking Service Module VISI

The Cisco Voice Interworking Service Module (VISM) is a seamlessly Integrated Packet Voice Gateway for Cisco AAMP. Leveraging Industry Leading High Availability and Cisco Packet Voice Leadership to Provide VoIP and VoATM within a Single Multiservice Switch.

- Adds packet VoIP or VoATM to existing ATM infrastructure enabling carriers ability to offer converged voice services
- Leverages ATM infrastructure for VoATM trunking and switching to reduce carrier’s voice transport costs
- Proven high availability ensures “voice-grade” packet voice
- Broad Call Agent support enables differentiated voice services

Multiservice Innovation

- Broadband Access
- Integrated Access
- Wireless Switched Voice
- Wireless Trunking
- Class 4 Replacement

Frame Relay, ATM, Circuit Emulation

Complete Range of Narrowband Interfaces with Industry-Leading Narrowband Density

- Classes of Frame Relay services using over-subscription with traffic management techniques
  ...Differentiate existing services to meet customer price/performance needs

- Narrowband services on edge concentrators for high-density aggregation using BPX/MGX 8850
  ...Industry-leading narrowband port density per switch
Cisco WAN Manager

- Robust, reliable network-centric architecture
  - High-availability even under intense stress
- Integration with upper level OSS’s
  - Ease of operation
- Scalability for very large networks
  - Investment protection

Service Management Layer
- Info Center
- NMT
- OSS
- CPC

Network Management Layer
- Topology
- Connection Management
- Fault Management
- Performance Management and Reporting

Element Management Layer
- CiscoView™ for WAN Network Elements

Open, Standard APIs

Service Agent

• Robust, reliable network-centric architecture
  - High-availability even under intense stress
• Integration with upper level OSS’s
  - Ease of operation
• Scalability for very large networks
  - Investment protection

Scaling Multiservice Networks with Cisco AAMP

ATM

OC-3 STM-1

OC-12 STM-4

OC-48 STM-16

OC-3 STM-1

OC-12 STM-4

8850 PXM-45

8830
8850 PXM-1E

8850 PXM-1E

8850 PXM-45

8850 PXM-45

8230
8250
8850 PXM-1

BPX

n x OC-12
STM-4

n x OC-48c
STM-16

CC-192c
STM-64

POS GigE

POS GigE

8950
Cisco Advanced ATM Multiservice Portfolio—Value Proposition

Investment Protection

• Multiservice agility
• Core agnostic
• Platform scalability with common resources

AAMPifying Service Provider Profitability

Investment Protection

Cisco AAMP Driving Down Total Cost of Ownership
Cisco AAMP Offers Multiservice Agility

- Supports ATM, Voice and IP Services Simultaneously over a Single Switching Plane

Cisco AAMP Is Core Agnostic
Seamless Transition from ATM to MPLS Core

- With No New Hardware Required
- Seamless Transition Existing Services from PNNI to MPLS as Desired

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**Cisco AAMP—Scalability with Common Resources**

- Shared line cards (Frame, ATM, CES, packet voice, IP/MPLS)
- Common highly available OS
- “Load sharing” redundancy architecture
- Common EMS/NMS
- Route processor module leverages Cisco technology

**Application Density**

- **Traditional Applications**
  - Router interconnect using layer two FR/ATM
  - TDM replacement using circuit emulation services

- **Emerging Applications**
  - IP VPN services
  - Packet video transport
  - Voice over IP
  - Distributed content storage

*Cisco AAMP—Enabling New Applications whilst Maintaining the Ability to Support Existing Requirements*
**Cisco AAMP Multiservice Application—IP-Enabled Service on Any Port (ISAP) Solution**

- **Cisco Advantages**
  - Experience—More than 50 customers
  - IOS advantage—seamless integration with Cisco routers
  - Seamless integration with widely deployed Cisco VPNSC for VPN provisioning
  - Single chassis offers space, cost and provisioning advantage

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**Cisco AAMP Multiservice Application—Frame/ATM/Leased Line solution**

- **Cisco Advantages**
  - Broadest range of services per switch
  - Multiple services supported by native control planes
  - Scales from DS0 to OC-192c/STM 64
Cisco AAMP Multiservice Application—Fully Integrated Packet Voice

- Cisco Advantage
  - Adds VoIP or VoATM to existing ATM infrastructure enabling carriers ability to offer converged voice services
  - Leverages IP gateway for high capacity VoIP applications
  - Flexible service mix of VoIP and/or VoATM with partners offers investment protection as voice networks evolve

Broadband Access, Wireless Switched Voice, Wireless Trunking, Class 4 Replacement

Cisco AAMP Multiservice Application—Mobile Wireless Network Solution

- Cisco Advantages
  - IP, ATM and Voice in a single chassis offers space and cost savings with seamless evolution from ATM to IP/MPLS
  - Investment protection—Supports 2G, 2.5G and 3G services over a common ATM or IP network
Reliability Philosophy

1. Platform and Network Designed for High Availability
   - 1:1 or 1:N redundancy with high component reliability and serviceability
   - Extensive Markov modeling of new features prior to design
   - Extensive failure testing including fault insertion

2. Modeling and Testing
   - Up front planning and continuous monitoring
   - Low MTTR and failure feedback into platform design
   - Very reliable transport facilities e.g. SONET/SDH

3. Partner for Operational Excellence
   - 99.999+% Network Availability

Cisco AAMP—Key High-Availability Features

1. Separation of User, Control and Mgmt Planes
   - Protect user traffic from control messages
   - Continue to carry user traffic when control or management plane fails

2. Network-Centric Management Model
   - Avoid synchronization problems caused by database-centric models

3. Closed-Loop Congestion Management with CAC
   - Verify that capacity is available before rerouting traffic
Cisco AAMP—Exceeding 99.999% Measured Network Availability

<table>
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<th>Availability</th>
<th>DPM</th>
<th>Downtime Per Year (24x365)</th>
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<td>1000</td>
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<td>500</td>
<td>1 Day 19 Hours 48 Minutes</td>
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<tr>
<td>99.999%</td>
<td>10</td>
<td>30 Seconds</td>
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Source: Trend Based on Several Real Customer Data

A Foundation for IP Applications

Services and Applications: Multimedia, VoIP, Content, Hosting, Net Commerce, Training

VPN-Aware Networks: Intranet A, Extranet, Internet, ATM

Multiservice Infrastructure: Frame Relay, MPLS-Enabled Network
Simultaneous Support for L2 and L3 Applications

Cisco AAMP Differentiators

- Industry’s leading IP and MPLS implementation
  - FR, PPP, ATM and CE
  - VoIP and VoATM
- Scalability
  - DSO to OC192
  - 1.2-180Gbp/s
- Low Cost of Ownership
  - Integrated broadband uplinks—Low-cost entry
  - High density service modules
  - Common operations and sparing
- Carrier Class Reliability
  - Hot standby common logic; graceful upgrades
  - SONET/SDH automatic protection switching
  - 1:1 and 1:N service port redundancy
Cisco AAMP—Leadership through Innovation

Cisco Advanced ATM Multiservice Portfolio (AAMP)

- Largest Deployed Frame/ATM Networks
- CVSA Enabling Industry-Leading Application Density
- Measured Highest Network Availability Exceeding 99.999%
- Investment Protection

Recommended Reading

- Cisco Multiservice Switching Networks
  ISBN: 1-58705-068-4
- Cisco WAN Professional Reference

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