Introduction to Service Level Management
Session 2601
Agenda

- Service Level Management Defined
- Business Process
- Service Management Architectures
- SLA Monitoring Evolution and Strategies
- Cisco Total Service Management Solution

Service Level Management Defined

Service Level Management

Key Business Initiatives and Success Factors
- VoIP
- E-Business
- VPN
- QoS
- Policy-Based Networking

Key Service Level Management Success Factors
- Partner Ecosystem
- Integrated SLM Data for End-to-End View
- Complete SLM Metrics

Intelligent Network Infrastructure
Key Trends in SLM

- Service level management and applications management made top five list
- 60–70% of enterprise will implement management by SLA
- Successful deployment of VPN—SLA on a per-tunnel basis is important

Enterprise Trends—Details

Service-level management and applications management made the list (#2 and #3) of the top 5 areas where network management tools are the weakest

- 70% of network managers plan to implement SLAs by Y2001
- 61% plan to implement by Y2000
- 46% of which stated SLA on a per-tunnel basis is important
- 70% of Fortune 1000 will implement management by SLA by Y2000

1 "Ashton, Metzler & Associates" Network Management Market Analysis, July 1999
2 Forrester “Network Class Guarantees October 1998”
3 Infonetics “User Plans for VPN Services April 1998”
Service Provider Trends

• Differentiate service offerings through SLAs
• Cost recovery for not meeting SLAs
  Percentage of increased latency
  Dial metrics...
• Focus on customer and service centric and away from technical network centric

Service Level Management
Internal SLAs Defined

• Information services and end users
• Information services to external provider
• Manage from an end user perspective
• SLAs need to be mapped to business objectives
Service Level Management
External SLAs Defined

- End-to-end business view
- Solution needs to be adaptable to new technology
- Scale and cope for e-business partners
- Desire to be able to demarcate

New SLM Metrics

Service Level Management
User/Client-Based Defined

- Scale to thousands of users
- Manage per-client SLAs, any time anywhere
- Determine service levels for remote access VPNs
- Deal with encryption and security
Business Process

- Providers and consumers
- Major reasons for failure
- IT and business unit relationship
- Linking service and business management
- The process and approaches

Providers and Consumers

- Consumers of service
  - End users
  - Enterprise business units
- Providers of service
  - Enterprise information services groups
  - Classic service providers (xsp)
**Major Reasons for Failure**

- How network functions are regarded by business units
- Level of maturity of processes and technology
- Lack of clear reference model and architecture
- Industry support

**IT and Business Unit Relationship**

- Disconnect between IT and business
- Strategic really means important
  - Network Important but does not draw senior management attention 4.4%
  - Network Important but no links to costs and revenue 30.1%
  - Usually cannot use recognition of network impact on revenue for upgrades 19.5%
  - *Usually can* use recognition of network impact on revenue for upgrades 37.2%

Source: Ashton, Metzler & Associates
Linking Service and Business Management

- IT thinks of services in terms of traditional transmission services
  - ATM, Frame Relay, Fast Ethernet...
- Business units think in terms end user and business applications
  - On-line customer service, on-line training
  - Electronic customer self service...
- Define network services in terms that business unit managers understand

The Process Includes...

- Translating business and IT strategies into networking services
- Identifying a few key performance metrics for each service; i.e., availability, delay, time to install
- Identifying one or more cost metrics for each service; i.e., cost per minute, cost per megabyte
- Implementing a service management function to both create and evolve the networking services over time
- Deploy a service delivery function whose role is day to day operations
The Various Approaches

- None of the quadrants are right or wrong
- Dictated by importance to business, skills, and technology
- Start at bottom left and work towards top right
- Pick few clear metrics

Service Management Architectures

- Monolithic Single Vendor (ISV)
- Open-layered architecture
  - Typically found in xsp and telco home grown
  - Solutions for enterprise are maturing
- Trend is to move from monolithic to open layered architecture
**Monolithic Approach**

- Delivered by service management application vendors (ISV)
- Focused on client/server or Layer 1, Layer 2
- Integration and reporting specific to these elements
- Lack of breadth for true end-to-end service view

**Open Layered Architecture**

- Vendors can focus on their area of expertise
- Integration of data by third party made possible
- Leads to integrated end-to-end service views
- IT can select best-in-class management applications
- Operators deal with one overarching GUI
End-to-End Monitoring

• Defining monitoring IS complex—no short cuts
• Heterogeneity leads to further complexity
• Clearly define where the boundaries lie
• Which measurements and how to collect
• How to integrate to get an end-to-end view on service impact

Service Level Monitoring Evolution

NMS Centric Ping Monitors Application Instrumentation Intelligent Network Infrastructure

Past Present Future
Measurement Strategies

- Synthetic
- External Probes
- Embedded Agents
- Live
- Device Link Oriented

Measurement Techniques

- Synthetic, observed
  Traffic, transaction
  Representative, adds load

- Agents
  Embedded, external
  Provides reference point, its treatment in the network (UDP, ICMP)

- Probes
  Software, hardware
  Passive, active
Measurement Techniques Applied

- Synthetic, Observed Traffic Transaction
- Agents Embedded External
- Probes Passive Active

Layer 1/2
Wide Area (FR, ATM)

Layer 3/4
Network and Network Services

Layer 5/6/7
Client/Server

Measurement Techniques Applied

Synthetic, Observed Traffic Transaction
Agents Embedded External
Probes Passive Active

Layer 3/4
Network and Network Services
Layer 5/6/7
Client/Server

An Integrated Solution

Layer 3, Layer 4
SLM Applications

Service Latency
User Groups

Extensible Markup Language
Cisco’s Total SLM Solution

Service Level Management

- Key Business Initiatives and Success Factors
  - Voice over IP (VoIP)
  - E-Business
  - Virtual Private Network (VPN)
  - Quality of Service (QoS)
- Policy-Based Networking
- Scopes
- Telephony

Intelligent Network Infrastructure

CiscoWorks 2000

Service Management Solution

- Management
  - Intranet APIs and Cisco IOS® Agents
- Scalable Service Level Management Applications
- Partnerships

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Complete Service Management

Configure | Verification | Troubleshoot

QoS Network Policy Configuration | Network Service Level Verification | Service Level Troubleshooting

Per-Device Traffic Class Configuration | Per-Device Traffic Class Monitoring

Device | Network Wide

Device | Network Wide

Configure | Verification | Troubleshoot

SA Agent—Today

Increasing Service Value

HTTP | DLSw | Voice Jitter | Packet Loss | DNS/DHCP | Path Echo | Latency | Latency

HTTP | DLSw | Voice Jitter | Packet Loss | DNS/DHCP | Path Echo | Latency | Latency

TCP | UDP | ICMP | ToS

Cisco IOS-Based Service Assurance Agent
Test Operations That Need to Be Considered

- Jitter Testing for VoIP Readiness
- Forward Jitter
- Return Jitter
- Forward and Return Packet Loss
- Alarms
- Trap Notification
- Action

Beyond the Infrastructure
Managing Client Expectations

- Local LAN clients
  Option for hardware probes or client agents
- Remote clients use
  Client agents
  Intelligent CSU/DSU

Administering and Defining Service Levels

- Structured approach, wizards based
- Consistency of the definition procedure
- Precision of the definition
- Clarity for business unit and IT
- Flexibility of the definitions
- Ability to add comments in a structured way
- Ability to electronically communicate the definition
Considerations for Reporting

- One report does not fit all
- Business and technical users
- High level reports for broad business-based users
- Second level reporting for escalation, task definition and actions
- Detailed reports for day-to-day operations and troubleshooting

How Do You Scale the Solution Architecture

SNMP
Data Collector Aggregator Appliance
HTTP Interface
Local Store
Central Management Server
HTTP Interface
Local Store
SDK
Third-Party Application
HTTP Interface
Central Management Server
HTTP Interface
Local Store
Data Collector Aggregator Appliance
SNMP
HTTP Interface
Local Store
Building to the Open Layered Architecture

Case Study

- Managing end-user web services
- Local users
- Dial in users
- DNS SLAs
- Web server SLAs, backend database
- Demarcation
Example Partner Integration
Defining End-to-End SLAs

Convert to a Case Study Pitch

Partner Integration
Defining End-to-End SLAs

Reporting

End-to-End Service Levels

Service Operations

- Measures performance of IP network and application services in dial and dedicated networks
- Provides real-time alerts based on dynamic thresholds and baselines
- Provides extensive drill-down capabilities
Cisco’s Total SLM Solution

Creating a Service Level Management Ecosystem

- CiscoWorks 2000 SLM Suite
- Open XML interfaces
- Partner applications

SLM Partnering—Extending Cisco Management Connection
Related Sessions

- SA Agent (2219)
- Monitoring strategies 2603
- Demo of CiscoWorks2000 Service Management Solution

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