Deploying Enhanced Services in the New World

Session 1206
Session Agenda

- Enhanced Services Strategy Overview
- Enhanced Services/Product Portfolio
- Migration Deployment Approaches
- New World Deployment Approaches
- Unified Communications

New World Services Accelerated by Open Model

Computing

Old World: Centralized Mainframe
New World: Open Distributed Computing

Telecommunications

Old World: Central Office Circuit Switch
New World: Open Distributed Telecommunications
New World Ecosystem

Open Telephony Model

Open and Standardize the Telephony Infrastructure
Voice-Service—Architecture Vision

- Call Control Agent
  - Cisco VSC, Bellcore
  - Basic Call Control
  - Basic Services
    (Call Forwarding, Call Waiting, Transfer)
- 3rd-Party Apps.
- Open-Call Multiservice Controller
  - New World SCP
  - High Transaction Processing Services (800, LNP)

Signaling

Edge → IP/ATM/FR → Edge

Bearer

New World Service Node/Intelligent Peripheral
  - Media Termination Services
    (Voice Mail, Calling Card)

Today’s Programmable Switching Model

- OAM and P Application
- Open Service Application Layer
- Intelligent Call Services
- Open Call Control Layer
- Standards-Based Packet Infrastructure Layer
- Host-Based Application
- VCO/4K Switch
Value Proposition

Access to Enhanced Services and Partners

Mixed Environment Gateway

Internet PRI Off-load

Representative Value-Added Services Partners

- Voice Messaging—Unisys, Priority Call
- Calling Card—Comverse, Vicorp, Simplified
- Debit Card—Comverse, Glenayre, Synopsis
- International Callback—Compro, ITL
- Operator Services—MD Telecom
- Predictive Dialing—Castel
- Directory Assistance—Voicetek/Aspect
- Voice Dialing—Intelliovoice
- Lawful Intercept—ADC
- Single Number—Priority Call, Compaq/DEC
- Web Enabled Services—Timeshift

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Application Example

AP-VS3 with VCO/4K Bundle

Data Network

VoIP

Host Control Link

VRU

Billing System

PIN Database

Host Computer

VRU

Voice Shelf

Router Shelf

AccessPath

PSTN

T1 or E1 W/ss7

VoIP

Application Example

Messaging

- Store and forward
- Unified mailbox (voice, fax, e-mail)
- Short messaging
- Voice dialing
- Distribution lists
- Multi-language

Unisys

Unisys Messaging

- Store and forward
- Unified mailbox (voice, fax, e-mail)
- Short messaging
- Voice dialing
- Distribution lists
- Multi-language

Unisys
Debit/Credit Card Calling

- On-line balance recharge
- Restrictive calling areas
- Real-time call rating
- Low balance warning
- Fraud prevention
- Multi-language
- Project codes
- Speed dial

One Number Service

How One Number Works

Priority Call Management

- Simultaneous ringing of multiple phones
- Caller ID and name
- Meet me paging

- Connect to caller in voice mail
- Hold and transfer
- Telecommuting service
Fax Services

- Fax mail
- Desktop faxing
- Internet fax
- Fax-to-e-mail
- Never busy
- Fax request
- Broadcast
- Guarantee delivery

Faxnet

Virtual Private Fax Network

Web-Enabled Telephony

Any Internet-Enabled Device
- PDA
- PC
- Cell Phone

International LD

Conferencing

TimeShift

Instant Messaging
Find-Me/ Follow-Me
Enhanced Services

- Profitable services now
- Rich and broad portfolio
- Enables new service innovation
- Carrier-class solutions
- World-wide deployment
AccessPath VS3
System Overview

- Carrier-class VoIP system
  - Scalability
    - CT1/PRI VoIP port capacity: 96 to 1008
    - CE1/PRI VoIP port capacity: 120 to 1260
    - Engineered to support over 5,000 VoIP ports
  - Integrated gatekeeper (optional)
  - Integrated programmable switch (optional)
- High availability
  - VoIP feature shelves: hot swap and RPS
  - Gatekeepers: HSRP
  - DASA: no single point of failure
- NEBS compliant
- Completely integrated solution
  - Dial, switching, backhaul routing, system controller
  - Configurator—quick deployment, user friendly configuration

VCO/4K

- World’s highest density programmable switch
- Scale from 24 to 4,088 ports capacity
- Redundancy
- NEBS certified
- Live upgrade
- Rack mountable (17.5"W x 25.25"H)
Major VCO Elements

- Hierarchical Call Control
- Integrated Control Subsystem
- Application Tools
- SNMP
- Protocol Generation

- T1, E1, J1, ISDN
- Drop and Insert
- DSO Access (V.35 and RS-449)

- In-Band Signaling (DTMF, MF, MFCR2)
- Call Progress Analysis
- Integrated Prompt and Record
- Digital Conferencing
- Tone Generation

- ISUP and TCAP
- ANSI and ITU Compliant
- Integrated Solution

PSTN Connectivity

Type Approval, Tone Plan, MFCR2, ISDN and/or SS7 Variants for:

- Argentina
- Australia
- Belgium
- Botswana
- Brazil
- Canada
- Chile
- China
- Colombia
- Denmark
- Finland
- France
- Gabon
- Germany
- Haiti
- Hong Kong
- Israel
- Italy
- Japan
- Kazakhstan
- Korea
- Malaysia
- Mexico
- Monaco
- Netherlands
- New Zealand
- Peru
- Philippines
- Poland
- Portugal
- Rwanda
- Seychelles
- Singapore
- Slovakia
- South Africa
- Spain
- Sweden
- Switzerland
- Taiwan
- Thailand
- United Kingdom
- USA
- Vietnam

*See Country Compliance Matrix for Identification of which Variants Are Available with which Countries
Deployment Options

Large POP Deployment Architecture

- PSTN connection: VCO/4K
- Application intelligence: distributed @ POP
- Media resources: distributed @ POP
**Small/Mid-Size POP Deployment Architecture**

- PSTN connection: VCO/4K
- Application intelligence: centralized
- Media resources: centralized

**Small POP Deployment Architecture**

- PSTN connection: AS5300
- Application intelligence: centralized
- Media resources: centralized
Enhanced Services PSTN

Circuit Switched Voice

- Key issues:
  - Signaling
    - What is user doing
  - Call routing
    - How to complete circuit
  - Framing/timing
    - How to maintain circuit
  - Management
    - What is status of loop/line/trunk
Packet Telephony

Key issues:
- Signaling
  - What is user doing
- Call routing
  - Where is destination
- Quality of service (QoS)
  - How to maintain latency, jitter etc.
- Management
  - What is status of loop/line/IP session
Building Applications in the New World

The VoX Drivers

- Level of Importance or Value
- Time
- Arbitrage
- Value-Added Integrated Services
- New Service Access Options
- Operational Advantages
- Transport Benefits
Goals for an Open Telephony Architecture

An Architecture which Can

• Support voice services over heterogeneous networks
• Provide independence from underlying network transport infrastructure
• Provide an open framework to control voice services
• Place access to intelligence at the edges of the network
• Provide interoperability to legacy networks and services
• Support rapid network and service provisioning
• Achieve toll quality

Traditional Switch Architecture

• Legacy TDM closed architecture
• Limited scalability, bottlenecks
• Complex, inflexible
• Tied to physical infrastructure
• Lack of open, standard interfaces
Methods to Deliver Value-Added Integrated Services

• The old world way
  Extend TDM network and carry-over existing services (smart network/dumb endpoint)

• The new world way
  Introduce packet infrastructure to deliver many new services (dumb network/smart endpoint)

The Old World Network Solution

The “Intelligent” Network = Dumb Endpoints, Smart Switching, Smart Services

Relative IQ

SCP

TDM

End Office Tandem
The New World Network Solution

The “Stupid” Network = Smart Endpoints, Dumb Switching, Smarter Services

Relative IQ

- Routers and/or ATM Switches
- Servers
- ATM or IP

Telco and Internet Standards: The ITU vs. the IETF

ITU Model
- Few protocols with multiple features
- Many country variances

IETF Model
- Many protocols with few (focused) features
- Single world wide standard
Telco Vs. Internet ("Mixing Oil and Water")

- **Service Application**
  - TCAP
  - INAP
  - LDAP
  - Radius
  - H.323
  - RAS

- **Call Control and Signaling**
  - ISUP
  - ISDN
  - CAS
  - H.323
  - SIP
  - ISUP over IP

- **Bearer Services**
  - TDM
  - MGCP
  - ATM
  - IP

Telco Convergence View

- **Service Application**
  - TCAP
  - INAP
  - LDAP
  - Radius
  - H.323
  - RAS

- **Call Control and Signaling**
  - ISUP
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- **Bearer Services**
  - TDM
  - MGCP
  - ATM
  - IP

PSTN - Packet
New World Application Deployment

• In distributed VoX environments, media streams and signaling can come from anywhere

• Cisco will work with partners to effect a smooth migration to the new world

• There are many business opportunities spanning the new world and the old
What Is Unified Communications?

Cisco is bringing the New World to Unified Communications (UC), providing an anytime, anywhere availability of voice, fax, voice mail and e-mail on a standards-based, protocol-driven, reliable, scalable infrastructure.
Unified Communications

- Media Carriage
- Media Conversion
- Endpoint Capabilities Negotiation
- Message Storage and Management
- Subscriber Schedule
- Address Translation
- Directory, Distribution Lists
- Location Resolution (GPS, Cellular Triangulation)
- Subscriber Options (Greeting, Delivery)
- Initiator Options (Priority, Confirmation)

Carbon ↔ Carbon

Initiator

Silicon ↔ Carbon

Applications

Unified Communications

Revenue Estimates

- Dataquest estimates the world wide voice mail revenues to be $9B in 2001
- Gartner states that 40% of all voice mail will be UMS by 2002
- Frost and Sullivan states that UM will be a $3.43B market in 2002
- Creative Networks estimates that the e-mail market will be over $1B
New World Vs. Old World

New World
- Application Hosting
- Directory Services
- Unified Communication
- Integrated Architecture for Scalable Deployment
- Open, Standards-Based Protocols, Applications and Network
- Integrated, Directory Driven Management Approach

Old World
- Fax
- E-Mail
- Voice Mail
- PSTN Switching Infrastructure
- Stove Pipe Applications
- Proprietary Architecture
- Expensive, Legacy Leaden Environment
- Multiple Management Systems

Business Models

Value Chain

System Integrators
- ISVs
- ISVs
- ISV

Application Hosting
Directory Services
Unified Communication

Convergence Servers (Application Middleware)
- Policy Manager
- Directory
- Security
1. User receives an alert about a stock
2. Dialing into the convergence server retrieves voice mail
3. Keystroke routes to multimedia portal selects info on streamed audio
4. Keystroke buys stock by connecting to app server
5. App server delivers sales report to unified message store and fax machine
6. Keystroke selects analyst report to be delivered to message store
7. Web browser retrieves analyst report from unified message store
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