



Enterprise IP Telephony Migration

How Cisco IT Migrated to
Enterprise-Wide IP Telephony



A Cisco on Cisco Case Study: Inside Cisco IT

Overview

- Challenge

 - Migrating 40,000 Cisco employees from a TDM Telephony to IP Telephony

- Solution – Migration Process

 - Before Deployment – Develop a Solid Foundation

 - Planning the Migration Strategy

 - Migration Implementation

 - Day 2 Handoff and Support

 - Migration: Final Steps

Overview (Contd.)

- Results

 - Internal Cisco cost savings and new capabilities

 - Best Practices and Lessons Learned documented in case study for clients

- Next Steps

 - Completed migration of Telephony, Contact Center and Voicemail

 - Taking advantage of new capabilities

Challenge - Migrating 40,000 Cisco employees from a TDM Telephony to IP Telephony

- In 2000 Cisco® began replacing its traditional PBX systems with Cisco Unified CallManager clusters
 - Employees on campuses worldwide started using Cisco IP phones and Cisco IP SoftPhone software.
- We realized we needed to:
 - Treat IPT not as a phone replacement, but as a vertical IP data application
 - Use existing staff to create a cross-functional implementation team
 - Focus on employee needs and telephony uses, and anticipated how IPT would impact them.
- Planning, communication, teamwork, and understanding your user's requirements are as important as technical expertise

Solution - Before Deployment – Develop a Solid Foundation

- Create a Cross-Functional Team

Made up of an executive sponsor, a steering committee, a Team Lead and Program Manager, and a Core Team that included four tracks: technology, support, finance, and each of Cisco's global theaters.

- Ensure Executive Management Sponsorship

Executive sponsorship is critical to gain buy-in from team members, financial sponsors, and end users. Cisco's executive sponsor was its CEO, John Chambers, who: championed the initiative, communicated the vision and importance, and committed the required resources

- Managing Change

Understanding user needs, communicating the 'who, what, where, when, and why' to end users at each phase, to manage expectations and build user acceptance

Solution - Before Deployment – Develop a Solid Foundation (Contd.)

- Where Do You Begin: The Engineering Story

Building the right team requires communication, then cooperation, then integration of voice and data experts.

- Planning the Migration

Understand the Infrastructure

Plan the Dial Plan

Plan for Growth

Solution - Planning the Migration Strategy

- The Migration

Dividing the retrofit into logical segments : new employees, adds/moves/changes, then building by building.

- Assign the Project Team

Every group who will be impacted: Telephony, LAN and WAN Engineering, Implementation, Support, and Finance.

- Develop the Project Plan

Set goals and establish milestones to keep the project moving and show progress.

Keep LAN team two to three weeks ahead of Implementation team.

Set up an Operations Center in each building being converted

- The Communication Plan

Determine who your user groups are, and what they need to know.

Use email, a project Website, Email alias, and other media

Solution - Planning the Migration Strategy (Contd.)

- Identify Critical Users

Admin personnel, Executives, Call Centers and Help Desks have special needs

- User Training

Provide different user training options (Web-based training, demos, user guides, facilitated sessions) and let users choose

- Identify Operational Changes

Pay attention to new support models, to security issues, and to different handling of modem lines and unused lines

Solution - Migration Implementation

- LAN Infrastructure Requirements

 - Standardize LAN design globally to maintain consistency, increase network stability, and reduce support costs

 - LAN QoS is important

- WAN Infrastructure Requirements

 - Provision / size WAN links to support both data and voice requirements

 - WAN QoS is critical

- Network Provisioning

 - Cable provisioning is simplified with a single network, but cable distance limitations must be understood in large buildings.

- Provisioning the VLAN

 - Create separate VLANs for Voice and Data

Solution - Migration Implementation (Contd.)

- Connecting to Voicemail

 - Analyze traffic carefully to plan for integration with voicemail

- The Implementation

 - Performing a detailed site survey (collect key information about users, services, and special configurations)

- Customer Service

 - Heighten customer service to ease user fears

Solution - Day 2 Handoff and Support

- The Support Team

Engage the Operations and Support teams early to ensure familiarity and identify special issues early.

- The Support Model

Use existing support model as much as possible

Cisco's model includes tiered support, escalating priority designations and associated response times.

- The Support Tools

Cisco IT uses EMAN (Enterprise Management) for CallManager and other IPT equipment availability and alarms, and for collecting historic data for problem identification, trending, capacity planning, and statistical analysis. Other monitoring tools include Performance Monitor, Event Viewer, CallManager Trace, and Sniffer Trace.

Determine service thresholds for availability and performance; Cisco uses an automatic paging system for all alerts.

Solution - Day 2 Handoff and Support (Contd.)

- Power Backup

All Cisco Catalyst 6500 Series Switches and Cisco Unified Call Manager servers that support IP telephony at Cisco are on UPS power.

- Serviceability

Availability goals are based on business requirements. Cisco Unified CallManager availability standards are currently set for 99.99% LAN; SRST routers protect voice processing at remote sites.

- Backup Support and Recovery

Most IPT network devices, including Cisco IOS gateway and MGCP gateway devices, support TFTP for configuration file backups.

Solution - Migration: Final Steps (1)

- Change Management

 - Good change management procedures can minimize downtime.

 - . Change requests are reviewed for impact to the network, fit, timing, and upgrades already in the funnel.

- Software Upgrades

 - Cisco created a Call Manager software upgrade checklist

 - Need to keep upgrades synchronized with all the versions that were currently active.

- Disaster Recovery

 - IP Telephony made Disaster Recovery easier, and should be factored into current DR plans.

Solution - Migration: Final Steps (1) (Contd.)

- PBX Lease Returns

The Cisco IT IP Telephony implementation schedule was largely dictated by the PBX lease return dates. The initiative involved returning 55 PBXs

- Vendor Rules of Engagement

Discontinuing lease arrangements, returning equipment, and migrating to new technology will change the vendor relationship.

Honesty, trust, integrity, and continuing to treat them as partner and valued member of the team will enable the process to go more smoothly.

Solution - Migration: Final Steps (2)

- Non-leased Equipment Disposal

Equipment was sold, transferred internally, or discarded and written off.

- Retrofit Clean up

- Decide whether to disconnect remaining modem and analog lines or to steer them onto the CallManager.

- Preparing Your Network for the Future

- Put in place a system to analyze new IPT technology as it becomes available, test for feasibility, provide an adoption position, and ensures that all teams are involved and in agreement (IT Project Life Cycle)

- Lessons Learned

- Document lessons learned for future deployments within the business environment

Results - Benefits to Cisco and to Customers

- Benefits to Cisco

 - Reduced costs – PBX leases, cabling costs, operations costs, voice traffic costs

 - New technology leads to increased flexibility – New features, Extension Mobility, Cisco IP Communicator, Cisco Unified Video Telephony Advantage, Cisco MeetingPlace integration, other IP telephony applications

- Benefits to Customers

 - By documenting the processes, the planning considerations and even the checklists used within Cisco IT, Cisco has preserved many of the lessons learned from its migration from TDM to an IP Telephony environment.

 - Customers can reduce their migration time and effort by learning from Cisco IT's initial trial and error in 2000-2001.

Next Steps - Summary

- Migration of all TDM to IP Telephony – Complete (2002)
- Migration of all Contact Centers from TDM to IP Contact Center architecture - Complete (2002)
- Migration of all TDM Voicemail to Unity Voicemail – Complete (2003)
- Full deployment of IP Communicator and VTA – under way (May 2006)
- Upgrading to Linux-based CallManager 5.x – under way (May 2006)
- Continuing to develop and test more IP Telephony applications - ongoing

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