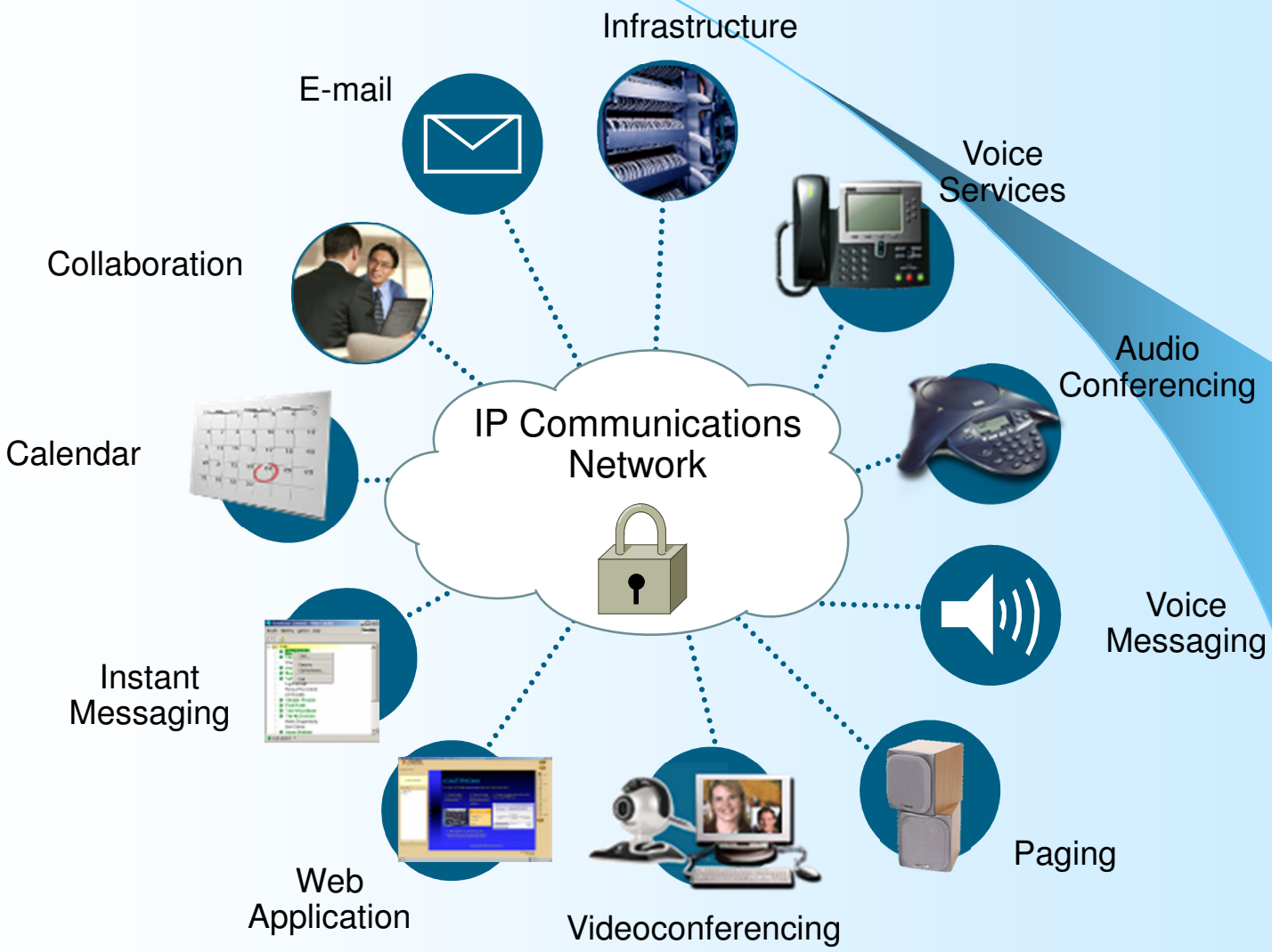
BC PLNet:
Addressing Common Infrastructure Challenge

July 14, 2011

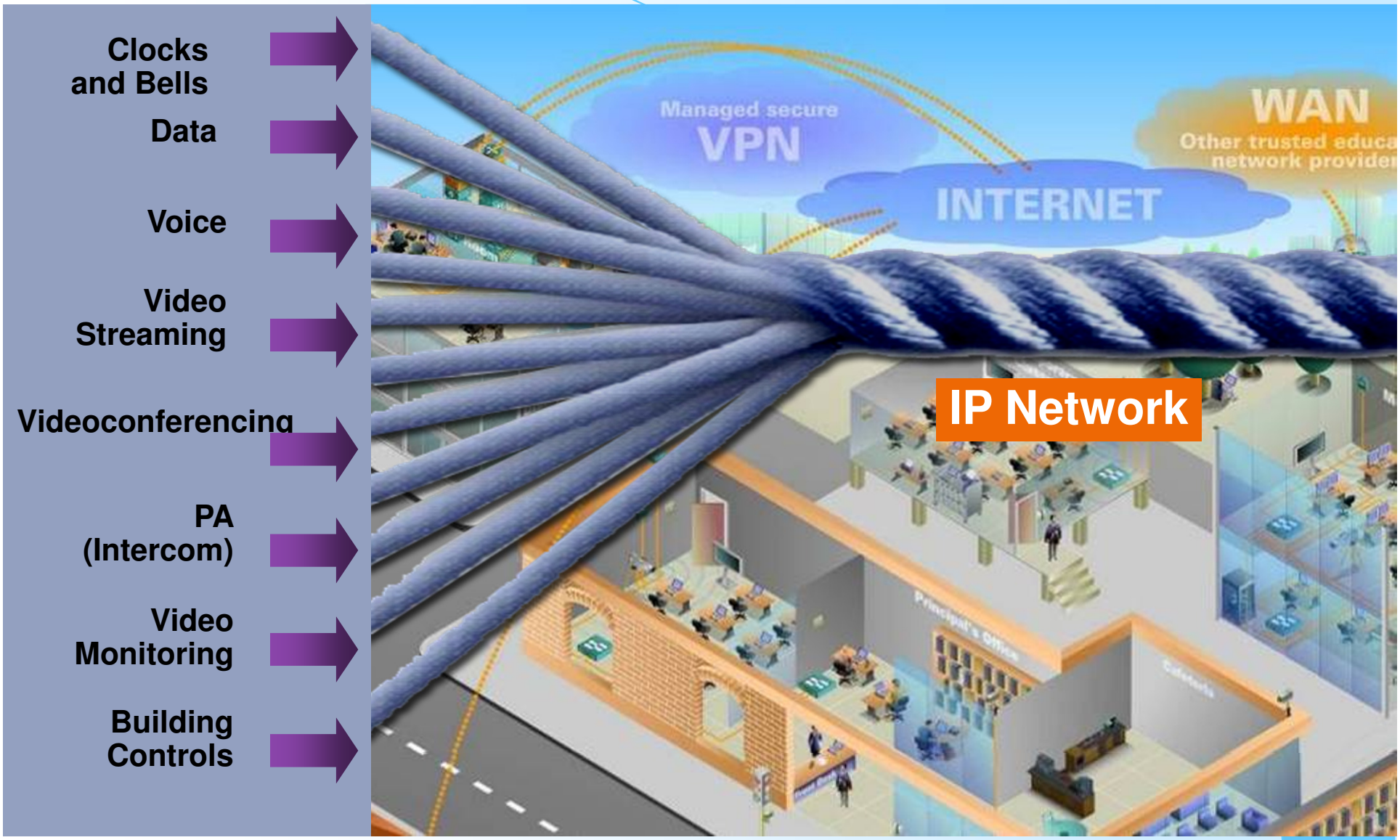
PLNet Common Infrastructure Challenge

- **BC PLNet**
  - ✓ Network infrastructure delivering educational content
  - ✓ Backbone and last mile connections to Government, 60 school districts, over 1900 schools, post secondary, and other public institutions in BC
  - ✓ Secure, managed, high-speed connectivity to Internet, regardless of location
- **Foundation Principles:**
  - ✓ The network services are provided by public & private sector organizations
  - ✓ Universal access - all users have equal access to educational programs
  - ✓ Equitable pricing - services are provided to the entire province at the same rate
  - ✓ Service driven by client needs, scaleable architecture & range of technologies
  - ✓ Regional and community focus on growth, cooperation, and interaction
- **The Challenge**
  - ✓ With respect to telecommunications services, how to build a common infrastructure which supports and provides foundation services for
    - ➢ Shared Systems - Student Information Systems, Finance, HR and Payroll (ERP)
    - ➢ Instantaneous communication
    - ➢ Access for administrators, teachers, students, parents, community (neighbourhood learning centres)
    - ➢ Access from any devices at anytime
    - ➢ Is secure?

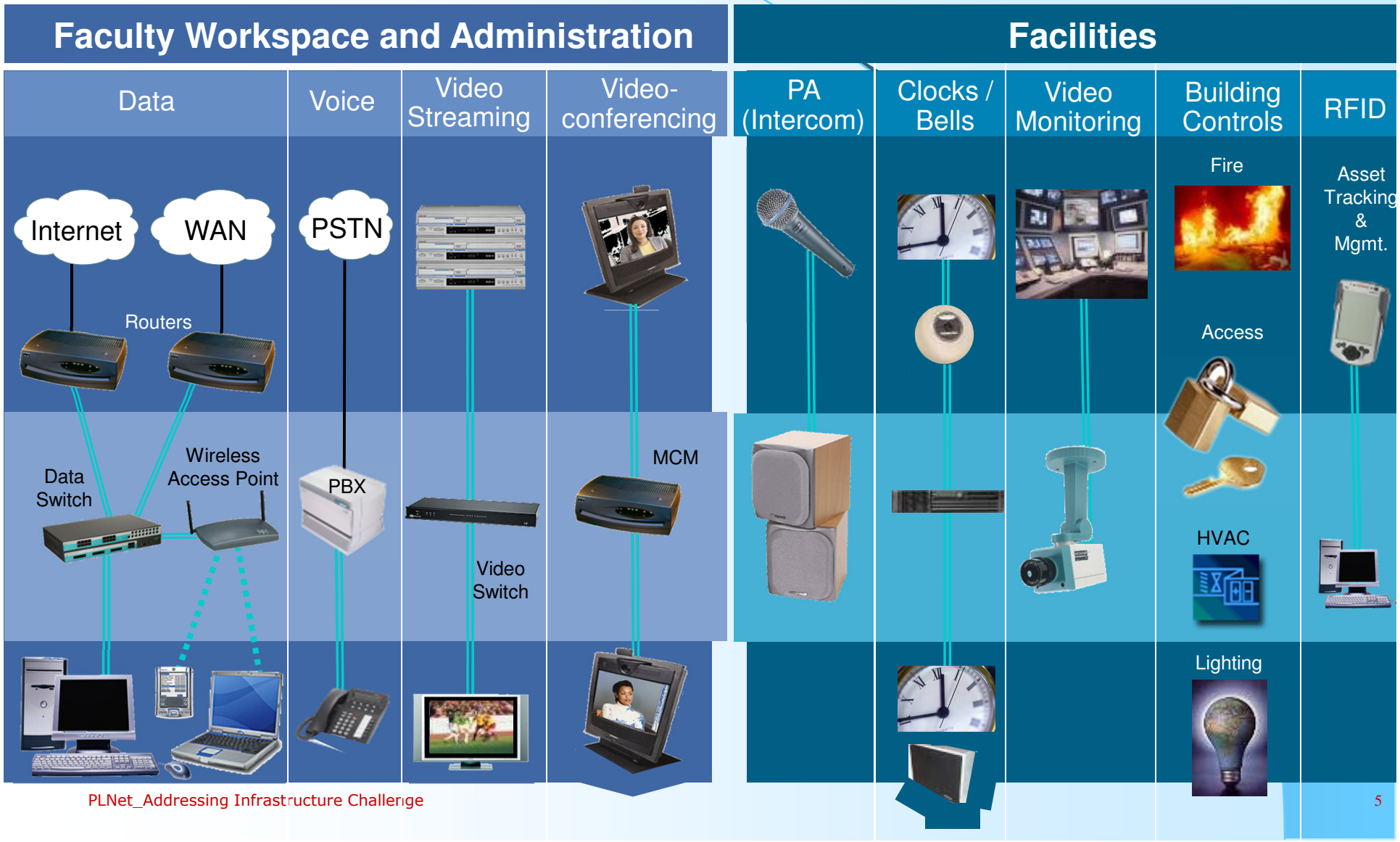
The Solution: Cisco Unified Communications Services



Multiple Locations & Services Through One Wire



Connecting All Buildings & Multiple Systems



Communication Tools & Network-Based Applications

- IP Phones with communication applications
- Desktop videoconferencing
- Web collaboration tools
- Integrated student information system
- Web-based human resources and finance applications
- Standard productivity applications
- Radio Frequency Identification (RFID)
- Global Positioning Systems (GPS)

Empower All Users with Technology

Applications

- Curriculum portal/software
- Grade books
- Student Information Systems

Robust professional development

Devices

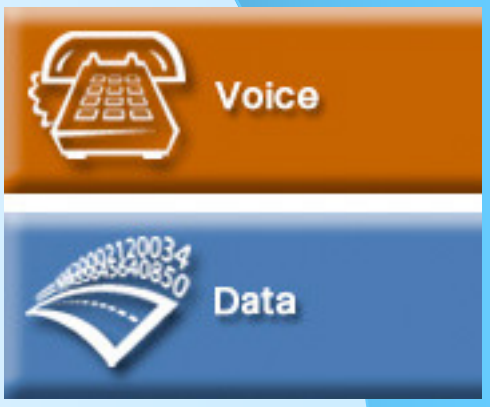
- Interactive white boards
- PDAs
- Touch screens
- Laptops and/or tablet PCs
- IP phones with communication applications
- Projectors
- Videoconferencing/Video on demand

Proven Process to Build Unified Communications

IP-enabled collaboration tools	 Collaboration
IP video conferencing & video on demand	 Video
IP paging & broadcast messaging	 Advanced Voice
Integrated IP voice network	 Voice
IP Foundation	 Data

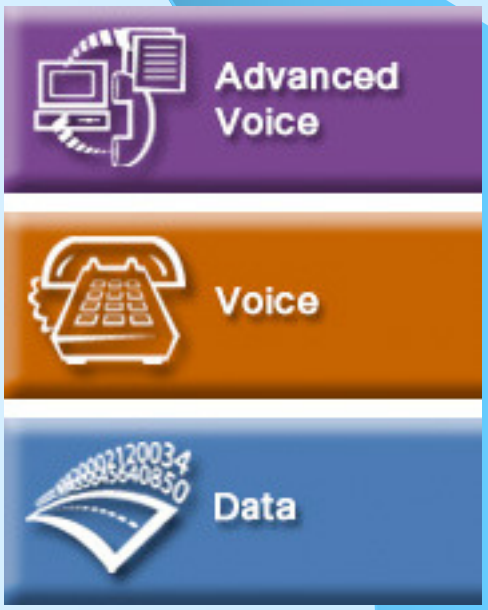
Effective Voice Solutions

- Centralized services to provide both wired and wireless voice services throughout the districts
- Eliminate maintenance and management of separate voice and data networks
- Utilize your existing IP foundation network—voice becomes just another application on the network
- Offer enhanced capabilities through phone-based applications
- Provide flexibility as your districts communications need evolve



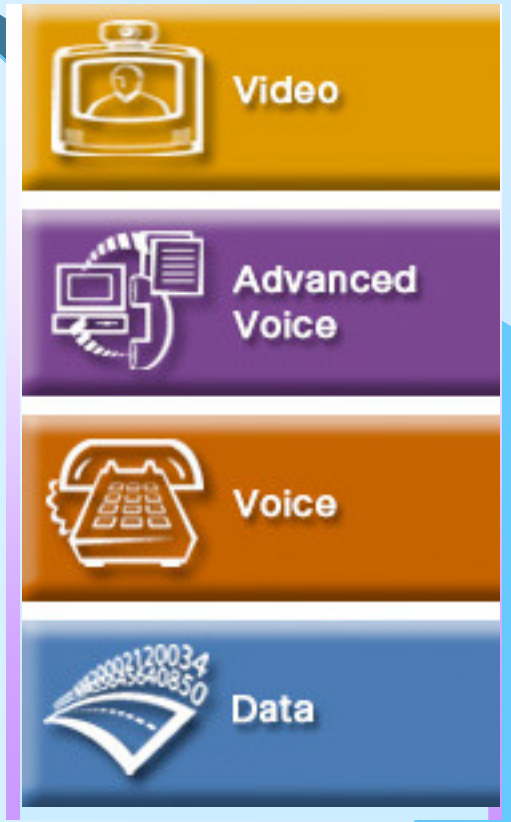
Effective Advanced Voice Solutions

- Centralize services for district-wide broadcast messaging to both internal and external district audiences
- Utilize your existing IP foundation network and voice services
- Integrate with district data systems for easy information extraction
- Provide additional functionality for employee time management, student data lookup, attendance, and more



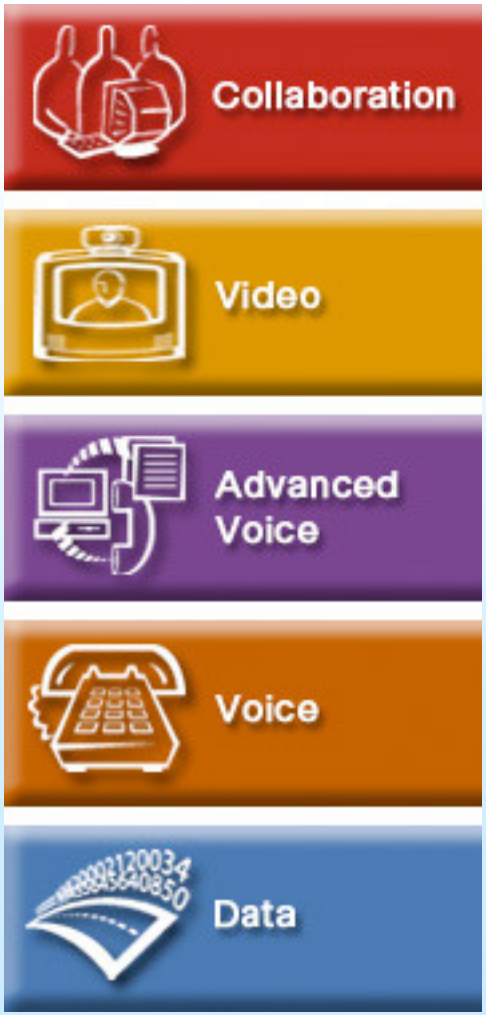
Effective Video Solutions

- Centralize systems for videoconferencing and on-demand video for district wide video communications
- Utilize your existing IP foundation network and voice services
- Eliminate maintaining and managing separate videoconferencing and video-on-demand networks
- Deliver efficient, consistent communications throughout the district with the power of video

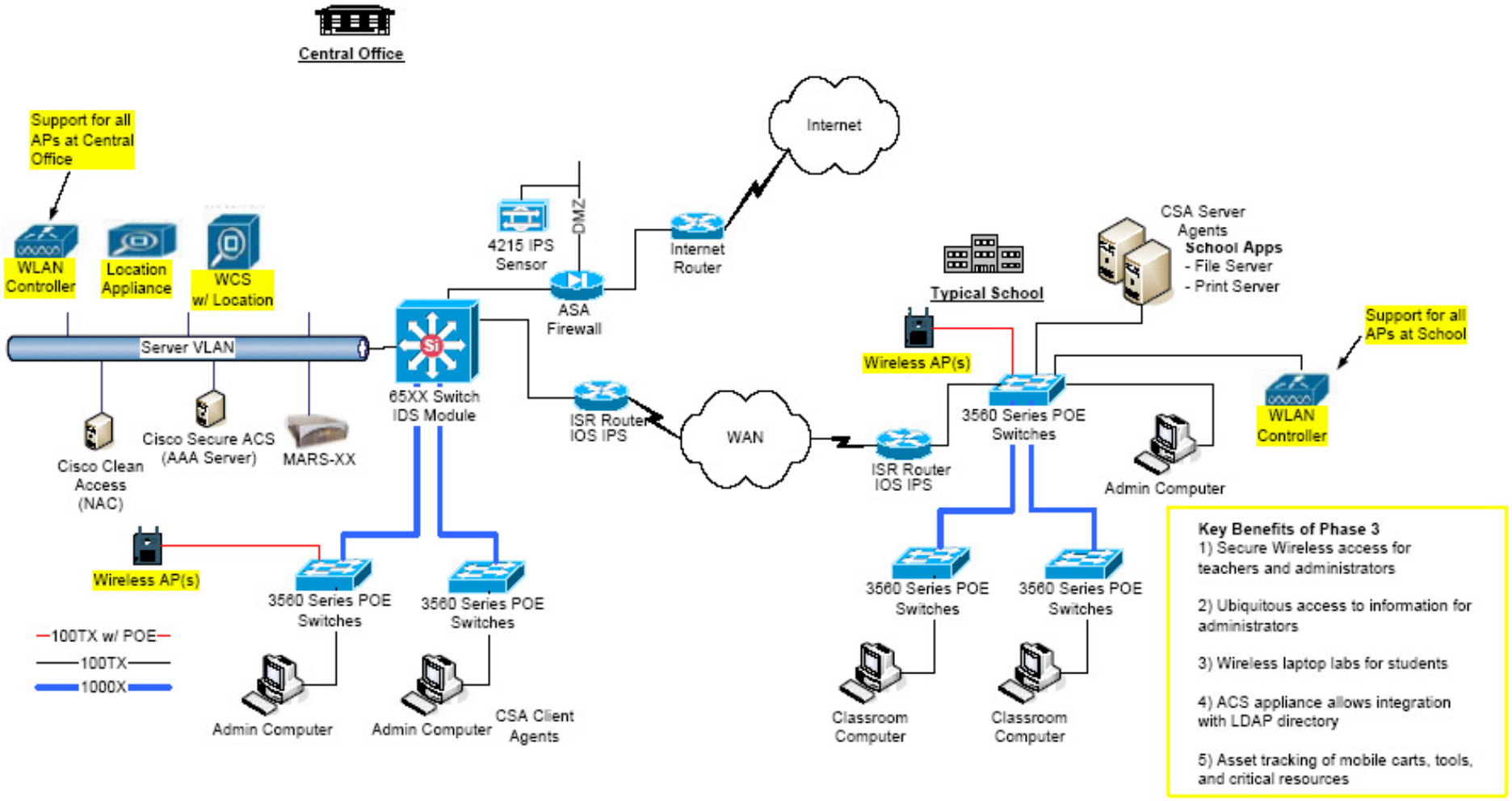


Effective Collaboration Systems

- Provide both audio and web collaboration district wide
- Utilize your existing IP foundation network with voice and video
- Deliver standing conference bridges for anytime conference calls
- Offer a robust platform for developing virtual environments for learning

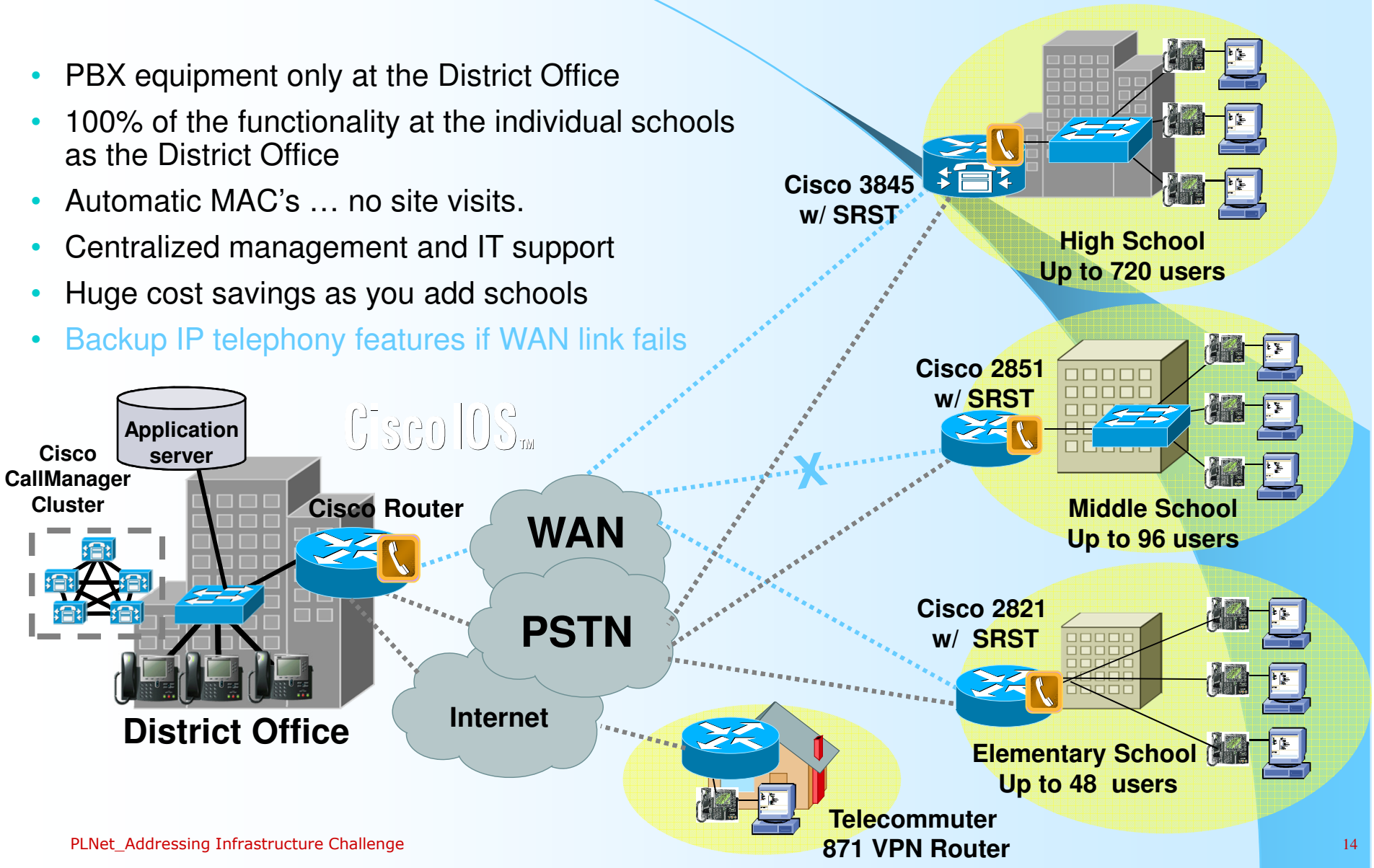


Architecture: Foundation Diagram



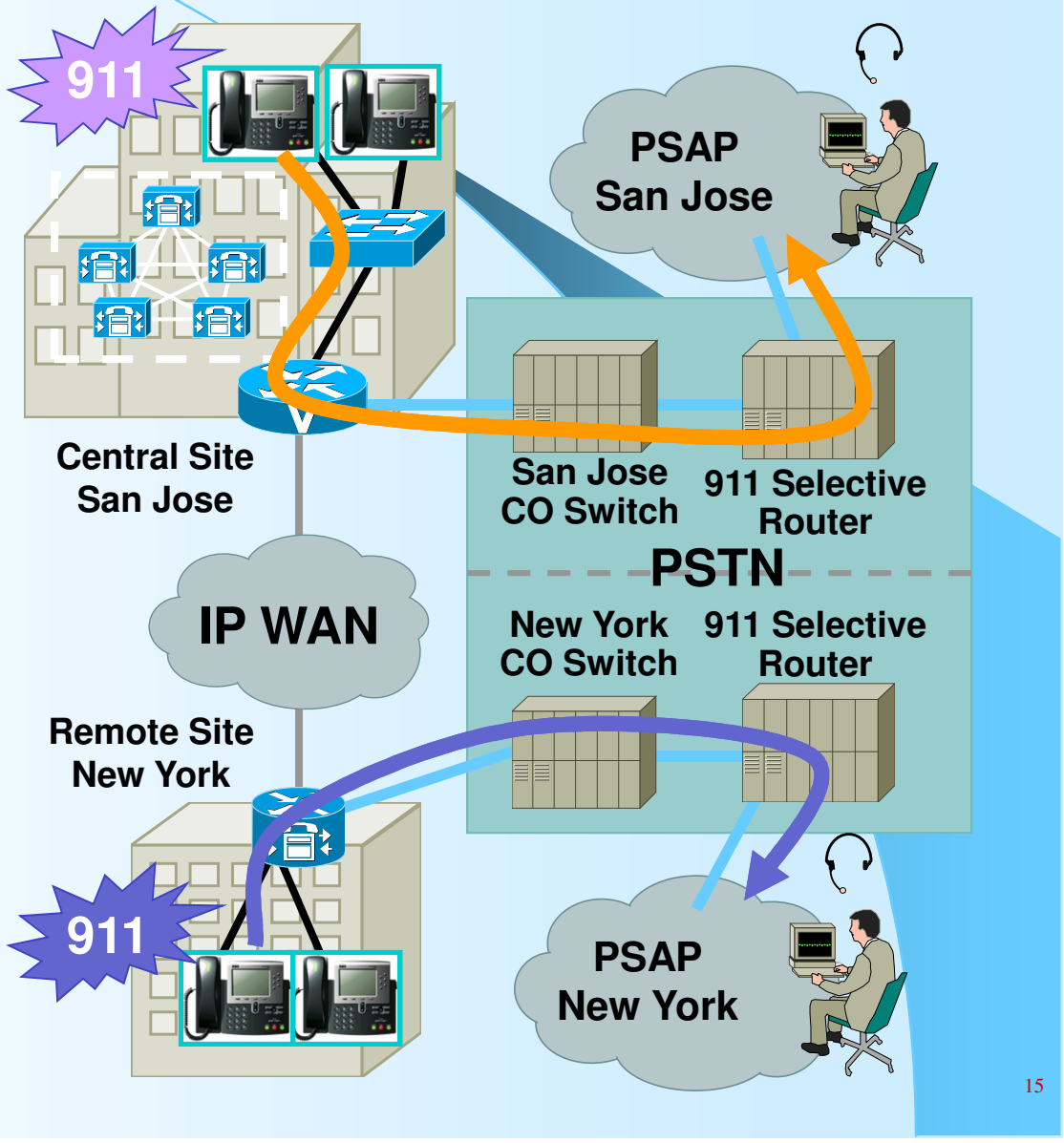
Centralized Call Processing

- PBX equipment only at the District Office
- 100% of the functionality at the individual schools as the District Office
- Automatic MAC's … no site visits.
- Centralized management and IT support
- Huge cost savings as you add schools
- Backup IP telephony features if WAN link fails



Enhanced 911 Support: Cisco Emergency Responder

- Cisco Discovery Protocol (CDP) allows CER to dynamically track physical location of endpoints
- Emergency calls routed to the correct emergency center, modifying the CLID as necessary so that the PSAP knows the caller's location and can return the call
- Runs on Cisco 7800 Series MCS server platforms, fully redundant and fault tolerant
- Reports and alerts generated for onsite emergency personnel
- ISDN PRI or CAMA trunks supported on wide range of MGCP, H.323 or SIP gateways



Hardware - Catalyst Switches: 802.3af Solutions

Catalyst 6500

48-port 10/100
96-port 10/100
48-port 10/100/1000

AC or DC Source Power

Catalyst 4500

24/48-port 10/100
24/ 48-port 10/100/1000

AC or DC Source Power

Catalyst 3750

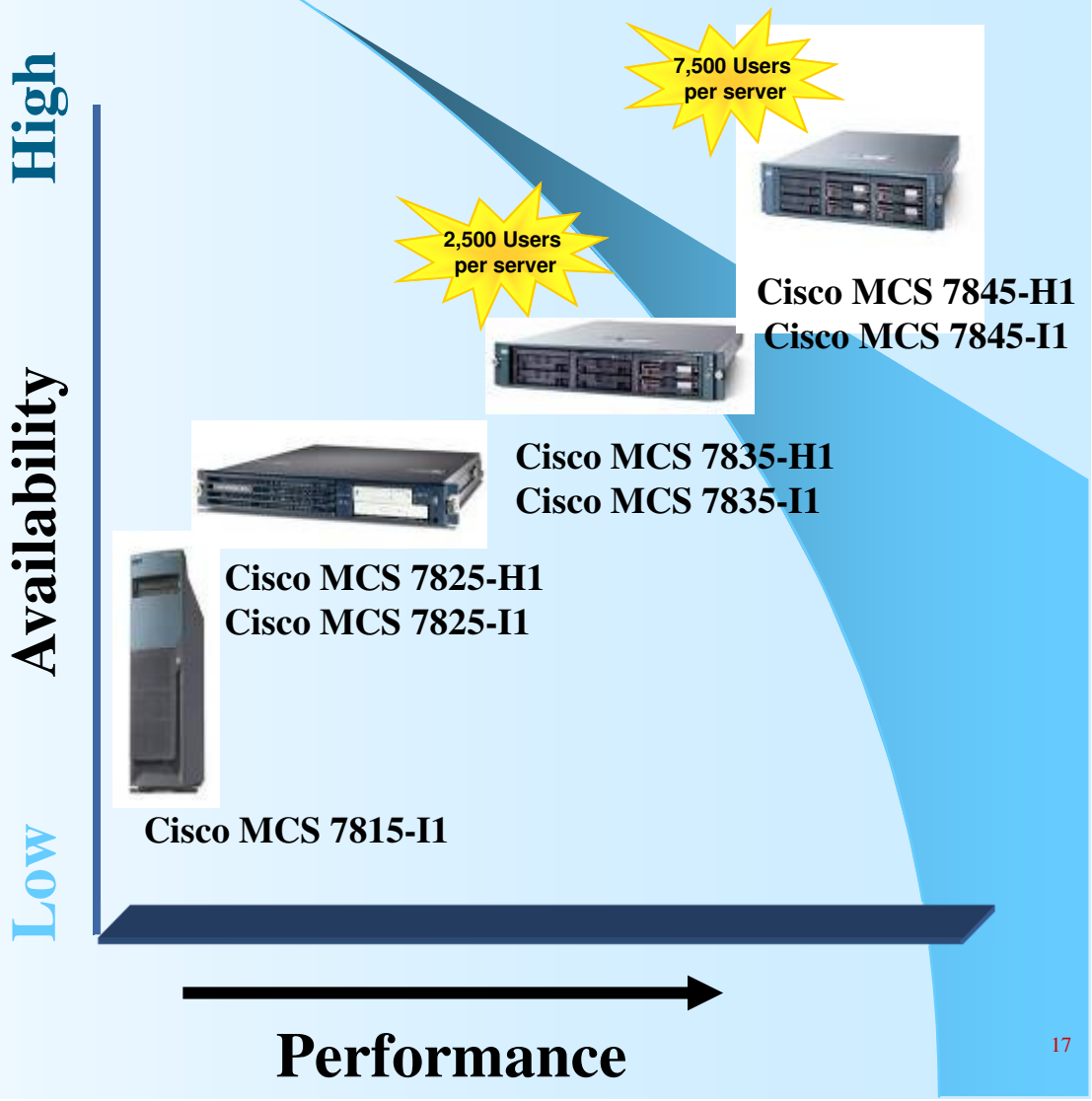
24/48 port 10/100
24/48 port 10/100/1000

Catalyst 3560

24/48 port 10/100
24/48 port 10/100/1000

Cisco Call Manager – 7,500 IP Phones in 2RU

- Allows up to 7,500 IP phones on a single server and up to 30,000 IP phones within a CallManager cluster
- Delivers the high performance and availability demanded by today's enterprise networks
- Represents a turnkey call processing solution that is easy to deploy and highly cost-effective
- Automatic failover in case of Call Manager failover



Cisco Digital Media System Components

Media Creation

Digital Media Encoder 1000

Digital Media Encoder 2000

Media Management

Program Manager

Category Manager

Interface Manager

Lineup Manager

Account Manager

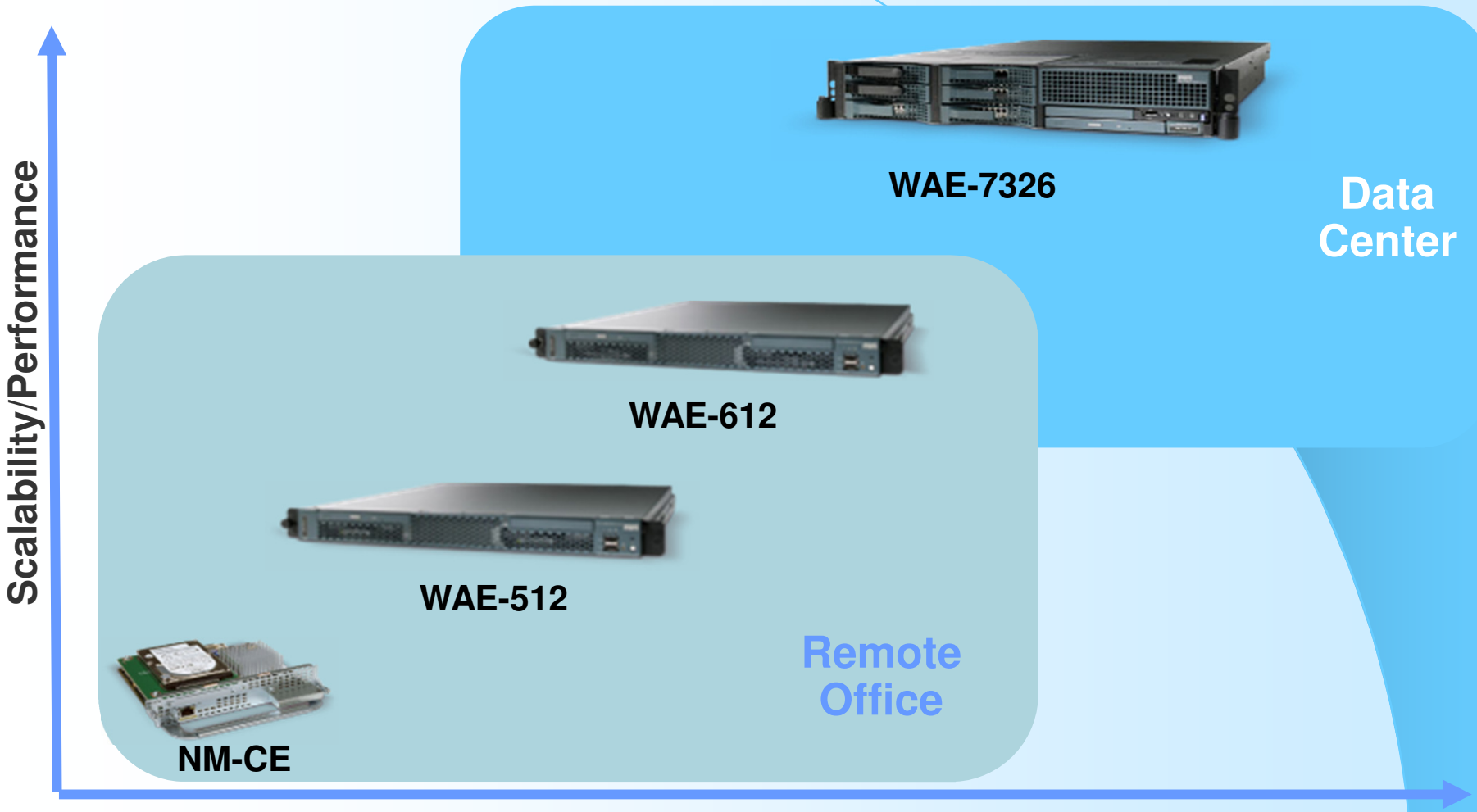
Deployment Manager

Digital Media Manager

Media Delivery

Cisco Video Portal

Cisco ACNS Platforms



Cisco Unified Personal Communicator

Built to be cross-platform

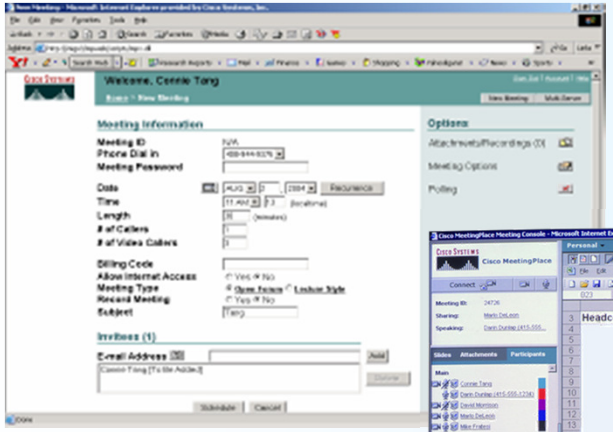
Native UI (Windows XP, Mac OS)

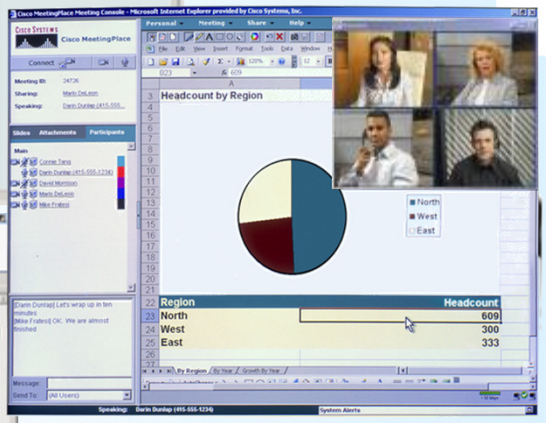
Protocols and Codecs:

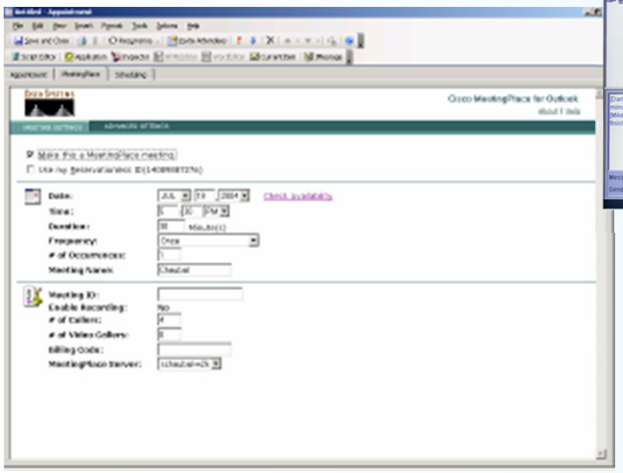
- Call Control: SIP and Cisco Unified CallManager CTI
- Voicemail Access: IMAP to Cisco Unity Connection
- Presence: SIP/SIMPLE
- Audio codecs: G.711u/a, G.729a
- Video codecs: H.263, H.264

MeetingPlace

Cisco MeetingPlace Web 5.3







Cisco MeetingPlace Audio Server 5.3

Cisco IPVC version 3.5plus

Cisco MeetingPlace Video Integration 5.3

Cisco MeetingPlace for Outlook 5.3
Cisco MeetingPlace for Notes 5.3 (Phase 2)

Improved Communications

- Provide one-touch access to district personnel and community resources
- Enable self-service such as:
  - School schedule
  - User-directed call routing
  - Lunch card balance inquiry
- Use your desktop or laptop to receive or originate calls from both school and home
- E-mail, fax, and voicemail capabilities in one in box for easy retrieval
- Full-featured voicemail for improved communications with parents and staff
- Use third-party applications for internal broadcast messaging, paging, and automated outbound dialing for parental notification

Improved Communication

- Enable face-to-face meetings without travel and cost
- Provide access to subject matter experts from around the world
- Ensure message is delivered consistently to entire district
- Provide rich, engaging communication medium for students, staff, and parents
- Provide centralized, ubiquitous access to every single media asset in the district

Improved Communications

- Enable interactive online meetings with
  - Chat
  - Whiteboarding
  - Video
  - Polling
  - Application-sharing
- See who is talking and in attendance
- Enables impromptu meetings with anytime conference bridges
- Advanced audio conferencing services allow for lecture only, recording, private breakout sessions, and more
- Provides centralized calendaring capabilities to make scheduling calls/conferences efficient

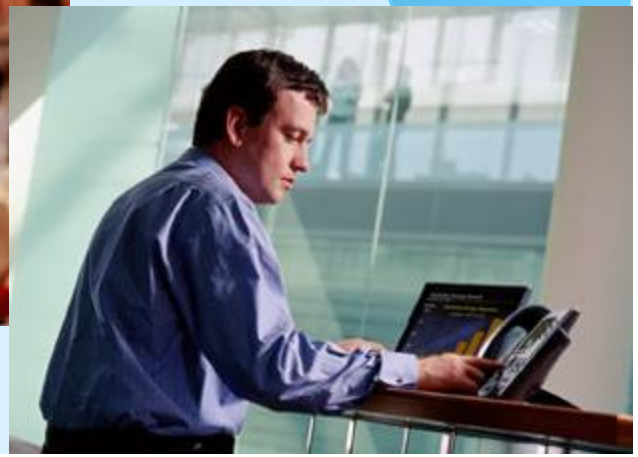
Improved Security

- Phones in every classroom provide one-touch access security and emergency services
- Know the exact location of call origin
- Provides emergency call routing instructions
  - Supports emergency call back
  - Alerts security personnel
  - Logs emergency calls
  - Deliver messages to phone displays for emergencies, amber alerts, and more
- Notify parents within minutes of security incident



Reduced Costs

- Easy moves, adds, and changes
- Reduce or eliminate toll charges between schools and districts
- Lower number and/or maximize number of dedicated phone lines
- Less infrastructure costs due to one network
- Improve productivity of staff through streamlined administrative processes
- Expand services without additional wiring runs



Reduced Costs

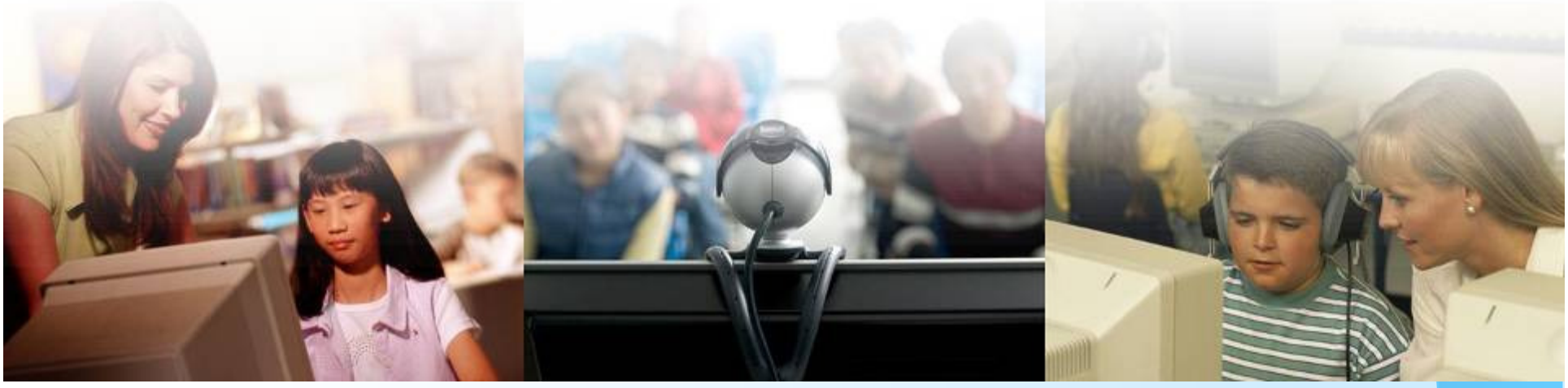
Eliminate costly ISDN videoconferencing lines

Centralize media resources for delivery over IP and eliminate storage and player costs.

Purchase digital rights to media versus multiple copies for district use

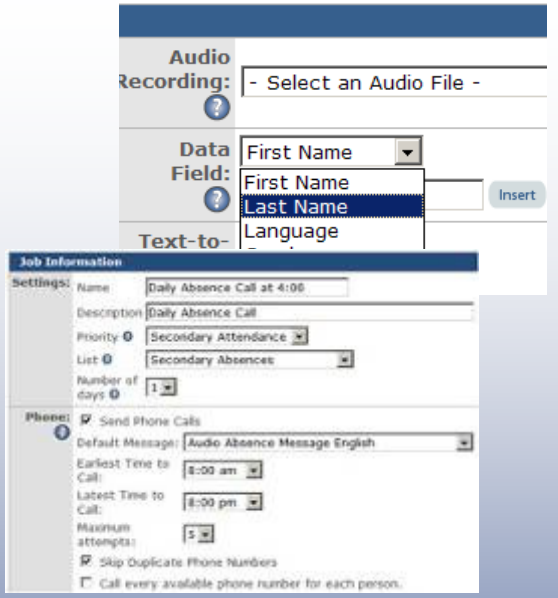
Reduce travel costs associated with meetings and trainings

Improve productivity by enabling more face-to-face meetings and best practice sharing without travel



Specialized Applications: SchoolMessenger

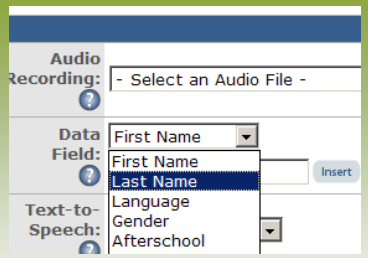
- Enables educators to broadcast phone, e-mail, and text messages to any number of parents
- Offers advanced text to speech and supports multiple languages
- Messages can be broadcast to all parents, or personalized for each parent
- Automated data population from over 140 different Student Information Systems
- Manage application from Cisco IP phone or Web
- Searchable, individual notification history reporting



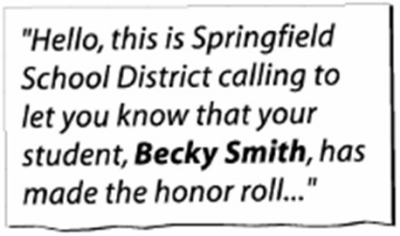
SCHOOLMESSENGER®

SchoolMessenger & Cisco UC

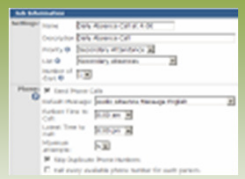
School staff goes into a Web page or Cisco IP phone to record the audio/text message



Integrates with student information systems to manage users and contact data



Places calls through Cisco CallManager to PSTN, to parent



Graphical job status can be accessed from IP phone or Web

SCHOOLMESSENGER®

InformaCast for Cisco UC

A powerful audio/text paging tool for any combination of Cisco IP phones, PCs, and Power over Ethernet (PoE) IP speakers, providing K-12 district wide management of paging, bells, and clocks from a single server.

BERBEE

Berbee InformaCast

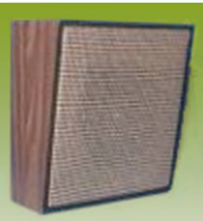
- Enables district staff to send voice and text messages to any individual Cisco IP Phone, a group of phones, or an IP-enabled loudspeaker
- One button paging throughout school from a phone or one-click paging from a PC
- Optional Bell Scheduler feature allows schools to schedule all passing bells for a district and change them all from a Web interface clock to a single server at the district office
- A message can be sent from district offices to individual or groups of schools, or from a principal to certain classrooms
- In an emergency, messages can be sent as a simultaneous, real-time broadcast to all necessary locations in the district

BERBEE

Berbee InformaCast & Cisco UC

School staff goes into a web page or Cisco IP phone to record the text/audio message.

Cisco IP Phones display the text messages sent by InformaCast®, while audio messages can be heard through the telephone's handset or speaker.



Existing overhead loudspeakers are connected to the IP network, giving school officials more options for delivering broadcast messages.

Loudspeakers can be heard both inside and outside the school building, which is a critical factor for enhancing student and staff safety during an emergency or security alert.

BERBEE®