IP Video Technologies—Deploying Video on Your Network

Session 2011
Applications by Interactivity and Audience Size

- Telemedicine
- Business Meetings
- Customer Support
- Briefings
- Corp. Comm.
- Training
- Kiosks
- Surveillance
- Desktop TV

Types of Meetings

- High Interactivity: Discussion, Conferencing
- Low Interactivity: Training, Briefing, Speech

Reach

- Low Reach: Conference, Streaming
- High Reach: Discussion, Conferencing
### Applications by Delivery Models

<table>
<thead>
<tr>
<th>Applications</th>
<th>Broadcast Video</th>
<th>Video on Demand</th>
<th>Videoconferencing</th>
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<tbody>
<tr>
<td>Training</td>
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<tr>
<td>Customer Support</td>
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### Evaluating Return on Your Video Network Investment

- **Examine costs**
  - Moving people vs. data

- **Measure costs over time**
  - Cost per incident and number of incidents vs. deployment costs

- **Identify success factors**
  - Payback of 50% or more
  - Effectiveness and productivity

- **Cost of waiting**

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**Application Examples**

- **Training for field**
  - Streaming media
  - 3,053% ROI over four years
  - More effective than CD-ROM

- **Business meetings for sales**
  - Videoconferencing
  - 1,429% ROI over four years
  - Increased yearly sales by 15%

- **Consider your own business**
How Do You Deliver Network Video?

**Broadcast Video (Scheduled)**
One-Way, One-to-Many (Push Model)
Bandwidth: One Stream to Unlimited Users (IP Multicast)

**Video-on-Demand (VOD)**
One-Way, Point-to-Point (Pull Model)
Bandwidth: One Stream per User

**Videoconferencing (VC)**
Live Two-Way, Small Groups
Bandwidth: One+ Streams per User

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**Agenda**

- **Video Conferencing** Architecture and Deployment Considerations
- **Broadcast Video** Architecture and Deployment Considerations
- **Video on Demand** Architecture and Deployment Considerations
- **Q&A**
Video Conferencing Agenda

- Video Conferencing Architecture
- Deployment Considerations
  - QoS and Admission Control
  - Cisco Gateway Services
  - Cisco MCU Services
  - Dial Plans
- Deployment Scenario Walk Through
Video Conference Architecture

a Typical H.323 Terminal

- Video I/O Equipment
- Audio I/O Equipment
- User Data Applications (T.120, etc.)
- System Control User Interface

Video Codec
- H.261, H.263
- Audio Codec
- G.711, G.722, G.723, G.728, G.729
- Recovery Path Delay
- H.225.0 Layer
- Local Area Network Interface

System Control
- H.245 Control
- Call Control
- H.225.0
- RAS Control

UDP + RTP = Transport Layer

- UDP provides checksum and length
- RTP end-to-end network transport functions:
  - Payload type identification—voice, video, compression
  - Sequence numbering
  - Time stamping

RTP Timestamp

4 Bytes

Synchronization Source (SSRC) ID

4 Bytes
Video Conference Architecture

H.323 Components

Cisco IP/VC Videoconferencing Products

Display

Corporate LAN

MCM H.323 Gatekeeper/Proxy

Intranet Extranet

VPN

PSTN

MCM H.323 Gatekeeper/Proxy

H.323 Terminals

H.323 Desktop

IP/VC 3510 MCU

IP/VC 3520 Gateway

IP/VC 3530 Video Terminal Adapter

H.320 Room System

(over ISDN)

H.320 Desktop

(over ISDN)

Speech Only

(over POTS)

MCM H.323 Gatekeeper/Proxy

H.320 Group System

Cisco IOS® Router MCM

Multimedia Conference Manager

MCM Gatekeeper

• Address resolution
• User authorization
• Zone bandwidth management

MCM Proxy

• Accounting
• QoS
• Security
Video Conference Architecture
Call Signaling and Flow

VC Deployment Considerations

Quality of Service and Admission Control

- QoS for video conferencing means providing:
  - Low packet loss (< 1%)
  - Low latency (< 150 ms each way)
- Bandwidth provisioning—remember to add for RTP/UDP overhead ~12% above codec rate
QoS Models

- **Priority model** IP precedence/diff.-serv.
  
  Packet is marked; IP precedence, ToS (Layer 3) IEEE 802.1p (Layer 2)

  Many endpoints support ToS marking today or can be marked through Cisco MCM/proxy or with access lists

- **Reservation model**—IETF RSVP protocol
  
  Signaling of service request through network

  Use MCM/proxy to make request since most endpoints do not support yet

• **Admission control:**

  Deterministic decision on a call-by-call basis, before call establishment, on whether the required NETWORK resources are available to guarantee QoS to the new call; protects established calls from quality degradation
Admission Control with Cisco IOS MCM Gatekeeper—Call Across WAN

**May I Call 2111 With a Bandwidth of 384 k?**

### Yes You Can!

Admission Control Via Zone Bandwidth in the Cisco IOS MCM Gatekeeper

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**May I Call 2111 With a Bandwidth of 384 k?**

### No, Not Enough Bandwidth

Admission Control Via Zone Bandwidth in the Cisco IOS MCM Gatekeeper
Cisco IP/VC 3520 and 3525 Gateways

- Connects H.320 circuit-switched networks to H.323 IP networks
- Ties into existing H.320 conferencing networks
- Video, audio and T.120 data calls up to 384 kbps
- Supports PRI, BRI, and V.35 interfaces

Specifications

<table>
<thead>
<tr>
<th>Multiple Interfaces</th>
<th>PRI, BRI and V.35 Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal Audio Quality</td>
<td>G.711/g.723 or G.711/g.728 Audio Transcoding; Echo Cancellation Standard</td>
</tr>
<tr>
<td>Selectable Conference Bandwidth</td>
<td>Gateways Initiate or Receive Calls At 128 kbps and 384 kbps</td>
</tr>
<tr>
<td>Choice of Incoming Call Routing</td>
<td>Interactive Voice Response (IVR), Direct Inward Dialing (DID), Multiple Subscriber Number (MSN), Default Destination, or TCS4</td>
</tr>
</tbody>
</table>
Service Prefix

- Defines a service available on a Cisco MCU or Cisco Gateway
- Defines a data rate, the number of parties, etc.
- Defined as a technology prefix in the MCM

Cisco 3520 Services Definition Table
Call Routing

- Default extension
- TCS4 (E.164 address appended to dial-in phone number)
- MSN or DID (Multiple Subscriber Number or Direct Inward Dialing)
- IVR (Interactive Voice Response)

WAN Call Parameters

- Call Routing Parameters
- Default Extension
- Registered E.164 Address
- Phone Number of Attached ISDN Line
- Informative Parameter
Cisco 3510 MCU Function

A Point-to-Point VC Does Not Require a Cisco MCU

Three or More Participants in a VC Does Require a Cisco MCU

Cisco IP/VC 3510 Multipoint Control Unit

- Enables videoconferences between multiple locations
- Configure conference bandwidth from 128 kbps to 1.5 Mbps
- Up to 15 sessions per unit
- Scales easily by combining multiple units
- Supports call-in or call-out operation
Cisco IP/VC 3510
Multipoint Control Unit

Specifications

| Conference “Port” Capacity and Bandwidth | 15 at 128 kbps, 9 at 384 kbps, 7 at 512 kbps, 5 at 768 kbps, 3 at 1.5 Mbps |
| Scale Ports Managed by One Cisco MCU | Maximum of 48 Ports (for 128-kbps Conferences) on 4 Boxes |
| Full H.323 Standards Support | H.261 (Video), G.711 (Audio), T.120 (Data) |
| Automatic Video Switching | Voice Activated—Shows the Current Speaker |
| Optional Chair Control | Direct Control of Video During the Conference |

Cascading Cisco MCUs

Cascade MCUs to Increase the Total Number of Participants Per VC Session
Cisco 3510 MCU

**Multipoint Control Unit**

**Multipoint Controller**
- Negotiation between terminals
- Controls conference resources

**Multipoint Processor**
- Processing of audio and video signals

Stacking Cisco MCUs

- Stack Cisco MCUs to increase the number of simultaneous VC sessions
Choosing Conference Type (Service)

- The conference type is needed in order to dictate the media types (audio or audio/video) that are used for a specific Cisco MCU service.
- Choose a conference type which will suit all endpoints that will participate.
  
  The conference nature is dictated by the following parameters:
  1. Maximum frame rate
  2. Maximum video bit rate
  3. Picture format
  4. Maximum number of participants

Cisco 3510 Services Definition Table

<table>
<thead>
<tr>
<th>Entry</th>
<th>Description</th>
<th>Prefix</th>
<th>Frame Rate</th>
<th>Video Bit Rate(K)</th>
<th>Number of Parties</th>
<th>Picture Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low Quality</td>
<td>68</td>
<td>7.5</td>
<td>110</td>
<td>5</td>
<td>CIF</td>
</tr>
<tr>
<td>2</td>
<td>Med Quality</td>
<td>61</td>
<td>7.5</td>
<td>320</td>
<td>5</td>
<td>CIF</td>
</tr>
<tr>
<td>3</td>
<td>High Quality</td>
<td>62</td>
<td>30</td>
<td>320</td>
<td>5</td>
<td>CIF</td>
</tr>
<tr>
<td>4</td>
<td>Super Quality</td>
<td>63</td>
<td>30</td>
<td>720</td>
<td>3</td>
<td>CIF</td>
</tr>
<tr>
<td>5</td>
<td>Full Room</td>
<td>64</td>
<td>30</td>
<td>110</td>
<td>14</td>
<td>CIF</td>
</tr>
<tr>
<td>6</td>
<td>Dynamic Rate</td>
<td>65</td>
<td>7.5</td>
<td>-</td>
<td>5</td>
<td>CIF</td>
</tr>
</tbody>
</table>
Conference Organizer’s Actions (Prior to a Conference)

1. Choose conference type (service)

2. Construct a unique conference password as follows:
   2. <Prefix> <a unique ID>
   2. For example: 6211,
   2. where 62 is the conference type prefix, and 11 is the unique ID

3. Notify all conference participants of the conference password and when the conference will be held. If some users are to join via Gateways, they need to know a Gateway number.

Joining the conference:

1. LAN endpoints dial the conference password
   (A VTA user should dial the same way as a LAN participant.)

2. WAN/ISDN, dial a Gateway number; follow IVR instructions and enter the conference password followed by a hash mark
Cisco 3510 MCU Conference Capabilities

All Terminals Dial the Same Service Followed by the Unique ID!

Inviting a Participant

Enter the Invitee Number
Locking Participant’s Video

Indicates Locked Participant Video

Joining Different Conferences

Conference I
All Dialing: 6212

Conference II
All Dialing: 6211

Conference III
All Dialing: 6213

Cisco Gateway

Cisco 3510 MCU

Cisco 3530 VTA

H.320 Terminal

ISDN

PSTN

POTS
Dial Plan

- Number of zones prefixes expected
  Must be unique across all zones

- Number of service prefixes
  May need to be unique across all zones

- Number of endpoints
  Must be unique within the zone and not start with any numbers used for zone or service prefix

- Use local or global address books to make dialing easier

Video Conferencing Deployment Scenario Walk Through

- Customer with H.320 ISDN conferencing systems deployed today migrate to IP conferencing

  The reason for moving to IP-based video conferencing:
  
  Make video conferencing available in more areas of the campus
  
  Reduce expenditures for ISDN and bridging services
Install H.323 endpoints assigning each an E.164 and alias—use IP/VC 3530 to convert system to H.323 support.
Video Conferencing Deployment Scenario Walk Through

Install IPVC-3525 Gateway

Install Cisco IP/VC-3510 MCU
Video Conferencing Deployment
Scenario Walk Through

Add a WAN Site

Zone Prefix 408

1111

IP/VC 3530

VTA

2222

IP/VC 3530 Gateway

88

IP/VC 3550 MCU

99

GK

IP WAN

Zone Prefix 212

GK

3333

PRI (408)333-4321

ISDN

(415)222-1234

Broadcast Video

Architecture
Broadcast Video Agenda

- Two models for live video broadcast
- Sightpath/real architecture for live
- IP/TV architecture for live
- IP/TV deployment considerations
- Deployment scenario walk through

Two Models for Live Video Broadcast

Unicast Replication

Video Server

IP Multicast

Video Server

Router

Video Splitter
Cisco Content Engine

- NetAware installation
- Zero maintenance, zero administration
- 10/100 Ethernet
- 20 to 100 simultaneous users
- Transparent to end user
- 15-GB media storage for up to 150 hours of MPEG-1 video (expandable to 30 GB)
Cisco Content Engine (Cont.)

- Self registering:
  Receives IP address from DHCP server
  Homes to host studio
- Self organizing:
  Registers with other content engines
  Assesses network connections
- Includes real G2 server
- NTSC/PAL video decoder

Live Video Broadcast using IP/TV to IP Multicast Program

Cisco IP/TV 3415
Cisco IP/TV 3400 Servers

- Cisco IP/TV 3411 Control Server
- Cisco IP/TV 3415 Starter System
- Cisco IP/TV 3422/3423 Broadcast Server
- Cisco IP/TV 3431 Archive Server

Cisco IP/TV Components

- **Cisco IP/TV Server**
  Captures, Stores, and Transmits Programs According to Content Manager’s Instructions

- **Cisco IP/TV Viewer**
  Presents Program Listings to Users and then Displays Selected Program in Separate Viewing Window

- **Cisco IP/TV Content Manager**
  Manages the Entire IP/TV Application; Sends Instructions to Servers and Program Information to Viewers
Cisco IP/TV 3422/3423 Broadcast Servers

- Captures and broadcasts real-time and prerecorded content
- Ideal for live and scheduled broadcasts using IP multicasting
- Receives content from a variety of sources including cameras, satellite and cable feeds, DVDs, or ASF, AVI, MPEG digital files
- Offers a full range of video formats: MPEG-1, MPEG-2, MPEG-4 and H.261 for a variety of bandwidth and quality requirements

Cisco IP/TV 3411 Control Server

- Ensures high-quality video delivery
  - Controls amount of bandwidth used
  - Distributes content to remote servers
  - Provides programming information to clients
  - Balances server load
  - Directs users to best server
- Centrally manages all aspects of video delivery and distribution
Real-Time Transport Protocols

- Proprietary protocols for streaming
  Real Networks, Microsoft, and others (primarily unicast)
- IETF standards track protocol: RTP/RTCP
  Conferencing (H.323) and streaming (Cisco IP/TV and Apple QuickTime)

RTP/RTCP

- Real-time transport protocol
  Carries the data (media)
- Real-time transport control protocol
  Carries control info among all session members
- Specified in RFC 1889
RTP Session and RTCP

For Each IP/TV Program, There Is a Separate RTP Session and RTCP for Each Media

IP/TV Deployment Considerations

- Video quality and codecs
- Bandwidth control and QoS
- Program announcements
- Capturing live events
Higher Quality Requires More Bandwidth

**Business**
- 128 to 512 Kbps: H.261, H.263, MPEG-4
- 14 to 56 Kbps

**E-Learning**
- Up to 8 Mbps: MPEG-1, MPEG-2, MPEG-4, H.261, H.263

**Dial-up**
- 14 to 56 Kbps

Video Compression Standards

<table>
<thead>
<tr>
<th>Application</th>
<th>Recommended Bandwidth</th>
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<tbody>
<tr>
<td>MPEG-4 Over WANs</td>
<td>28.8 to 400 K</td>
</tr>
<tr>
<td>H.261 Low Motion</td>
<td>100 to 400 K</td>
</tr>
<tr>
<td>MPEG-1 VHS Quality</td>
<td>.5 to 1.5 M</td>
</tr>
<tr>
<td>MPEG-2 DVD Quality</td>
<td>1.5 to 10 M</td>
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</tbody>
</table>
MPEG-1 and MPEG-2

Bandwidth Controls and QoS

- Use preferences to set limits on the amount of bandwidth to be used for scheduled programs
- Enable QoS for stream over WAN
  RSVP via QPM or IP/TV 3.1
  IP Precedence via registry setting or 3.1
Program Announcements

- Two methods for clients to get program announcements
  
  Standard method HTTP—get from content manager of program guide
  
  Optional method—enabling sdr listener on client to receive SAP multicast announcements

Capture the Event

- The impetus for creating a training event is often a live training event
- Configure IP/TV to record the live event as MPEG file
- Use post production to edit, transcode event for reuse
Customer Wants to Multicast Company Meeting to All Employees... Live

Install Cisco 3415 and Test Clients on Local Subnet, Enable Multicast Features on Switch
Live Broadcast Video Deployment Scenario Walk Through

Enable IP Multicast on Router and Test

Cisco 3415 Starter System

WAN

Live Broadcast Video Deployment Scenario Walk Through

Setup up Client for Network Install with Default Configuration to Your Content Manager; Schedule Live Program

Cisco 3415 Starter System

WAN
Video on Demand
Architecture

VOD Agenda

- IP/TV VOD Architecture
- Content Distribution VOD Architecture and Deployment Considerations
- Deployment Scenarios Walk Through
Localizing Content Versus Remote

Video Server

Satellite or Cable TV
Camera
Taped Presentations

IP/TV Broadcast and Archive Server Cluster A
IP/TV Broadcast and Archive Server Cluster B
IP/TV Broadcast and Archive Server Cluster C

IP/TV Viewerset 1
IP/TV Viewerset 2
IP/TV Viewerset 3
IP/TV Viewerset 4

Cisco IP/TV Product Family

Cisco IP/TV Video Solutions

WAN
RTSP (Real-Time Streaming Protocol)

- RTSP functions as a network remote control for IP/TV servers
- Text-based in style of HTTP
- Uses SDP to describe media
- Uses RTP for real-time media transport
- RFC 2326

Cisco IP/TV Components Interacting for OnDemand Programs

1. Viewer receives a list of OnDemand programs from the content manager
2. Viewer makes OnDemand request to content manager
3. Content manager redirects Viewer to least busy Server
4. Viewer makes OnDemand program request of server

5. Server sends OnDemand program to viewer via unicast

6. Status and control messages are sent between server and viewer
Content Distribution Manager

- Web-integrated management
- Control over:
  - Devices, media, and channels
  - Replication
  - Content requests
- Device settings:
  - IP addresses
  - Proxies and firewalls
- Import media:
  - Drag and drop
  - File Transfer Protocol (FTP)
  - Web-server directory

Content Distribution Manager (Cont.)

- File replication:
  - Fault-tolerant transfers
  - From MPEG to shockwave
- Channel distribution
- Tracks usage statistics
- Alternate media delivery
- Bandwidth control
- 1 and 7 U rack mount
- 30 or 180 GB storage
Cisco Content Engine

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- Zero maintenance, zero administration
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- 20 to 100 simultaneous users
- Transparent to end user
- 15-GB media storage for up to 150 hours of MPEG-1 video (expandable to 30 GB)

Cisco Content Engine (Cont.)

- Self registering:
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  Homes to host studio
- Self organizing:
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  Assesses network connections
- Includes Real G2 server
- NTSC/PAL video decoder
How It Works: Set Up

Corporate Headquarters

Remote Office or Partner

Standard Web Server

Content Distribution Manager

Management Console

Corporate WAN or Internet

Firewall

CDM Installed at Central Site

Content Engine(s) Installed at Remote Site(s)

How It Works: Import Media

Corporate Headquarters

Remote Office or Partner

Standard Web Server

Content Distribution Manager

Management Console

Corporate WAN or Internet

Firewall

Content Engine 507

Desktop PCs

Import Media

Thumbnail and URL Generated

http://Studio.SightPath.com/jim.mpg

Drag and Drop
How It Works: Create Web Pages

- Corporate Headquarters
- Remote Office or Partner
- Standard Web Server
- Content Distribution Manager
- Corporate WAN or Internet
- Firewall
- Desktop PCs

Create HTML
Embed Thumbnail and URL Link

How It Works: Replication

- Corporate Headquarters
- Remote Office or Partner
- Standard Web Server
- Content Distribution Manager
- Corporate WAN or Internet
- Firewall
- Desktop PCs
- Content Engine 507

Media Replica
Media Is Replicated from CDM to Content Engine(s)
How It Works: Web Browsing

Corporate Headquarters

- Standard Web Server
- Content Distribution Manager
- Media Replica

Remote Office or Partner

- Content Engine 507
- Corporate WAN or Internet
- Firewall

User Requests Web Page

Management Console

How It Works: Redirection

Corporate Headquarters

- Standard Web Server
- Content Distribution Manager
- Media File

Remote Office or Partner

- Content Engine 507
- Corporate WAN or Internet
- Firewall

www.Cisco.com

Media Replica

CDM Redirects Request to the Closest Content Engine

Media Is Requested from the CDM

Management Console

Desktop PCs
How It Works: Media Playback

Media Is Played Back from the Content Engine to the Desktop

User Interface for Replication Bandwidth Controls
Replication Using Cisco Content Distribution (SODA Mesh)

- All elements are aware of all other elements
  Routing tables are calculated
  Replication can occur studio-to-appliance or appliance-to-appliance
  Replication is fault tolerant

Non-Cisco Content Distribution Replication

- 1 hour of video at 1.5 Mb/s
- All devices have T1 connections
  Time to replicate = (1 hr x 1.5 Mb/s x 14 devices)/T1 = 14 hours
Cisco Content Distribution Replication (SODA Mesh)

- 1 hour of video at 1.5 Mbps
- All devices have T1 connections
  
  Appliance-to-appliance replication occurs immediately after start of file receipt (not after replication is complete)
  
  Time to replicate = 
  \[
  \frac{1 \text{ hr} \times 1.5 \text{ Mb/s} \times 14 \text{ devices}}{750 \text{ kbps}} = 2 \text{ hours}
  \]

Deployment Considerations

- File formats
- Capacity planning
- File sizes
- Bandwidth and time for replication
- Playback format (PC, NTSC, or PAL)
- Alternate media delivery
- Content channels
Video File Formats

- QuickTime—Apple
- AVI—Audio Video Interleaved; Microsoft
- MPEG-1 and 2—Elementary and Systems; Streams
- ASF—Advanced Streaming Format; Microsoft
- RTP file formats

Audio File Formats

- AIFF—Audio Interchange File Format; Apple
- Wave—Microsoft
- ASF—Advanced Streaming Format; Microsoft
- MPEG Layer II—ISO standard
Capacity Planning

- Video service capacity need
  No. active users x bandwidth of content

- Storage requirements for content
  Data rate is in bits per second (bps) x 60 second per minute x number of minutes ÷ 8 bits per byte ÷ 1,000,000 bytes per MB

- Time needed for replication

### Video File Sizes

<table>
<thead>
<tr>
<th>Data Rate (Kbps)</th>
<th>File Size for 1 Minute (MB)</th>
<th>File Size for 1 Hour (MB)</th>
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<tbody>
<tr>
<td>28</td>
<td>0.2</td>
<td>12.6</td>
</tr>
<tr>
<td>64</td>
<td>0.05</td>
<td>28.8</td>
</tr>
<tr>
<td>128</td>
<td>1.0</td>
<td>57.6</td>
</tr>
<tr>
<td>500</td>
<td>3.8</td>
<td>225.0</td>
</tr>
<tr>
<td>1000</td>
<td>7.5</td>
<td>450.0</td>
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<tr>
<td>3000</td>
<td>22.5</td>
<td>1350.0</td>
</tr>
<tr>
<td>6000</td>
<td>45.0</td>
<td>2700.0</td>
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</table>
Sample Times to Replicate

<table>
<thead>
<tr>
<th>Encoding Rate @ Tx Speed</th>
<th>60 Seconds</th>
<th>5 Minutes</th>
<th>1 Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 kbps @ 128 kbps</td>
<td>26 Seconds</td>
<td>2 Minutes</td>
<td>26 Minutes</td>
</tr>
<tr>
<td>300 kbps @ 128 kbps</td>
<td>2.3 Minutes</td>
<td>11.75 Minutes</td>
<td>2.3 Hours</td>
</tr>
<tr>
<td>1 Mbps @ 1.5 Mbps</td>
<td>39 Seconds</td>
<td>3.2 Minutes</td>
<td>39 Minutes</td>
</tr>
<tr>
<td>2 Mbps @ 1.5 Mbps</td>
<td>1.3 Minutes</td>
<td>6.5 Minutes</td>
<td>1.3 Hours</td>
</tr>
</tbody>
</table>

NTSC or PAL Video Out

- Integrated MPEG decoder in the appliance
- Decodes media files to video and audio
- Centralized web VTR/VCR controls
- Applications
  - Kiosk
  - Video wall
  - Point-of-sale
NTSC or PAL Video Out Application

Corporate WAN or Internet

Firewall

Centralized Management Console

Content Engine 507

Splitter

Desktop PCs

Lobby

Showroom

Cashier

Video Out Controls
Alternate Media Delivery

- **Feature description**
  
  Provides the ability to link to another URL when requested media is not available
  
  URLs provided on a per file basis
  
  Used when appliance not on site and media not replicated yet
  
  URL can link to:
  
  - Customer error HTML page—“Media Not Available Please call Joe Smith at Extension 230”
  
  - Other media such as low resolution video or PPT
  
  - Any other place that a URL provides direction

- **Benefits**
  
  Provides an elegant web environment for all users—dial up and site path enabled
  
  Allows user to customize solution to better meet his needs

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Alternate Media Delivery

- **Diagram**

  - Media is requested from CDM
  
  - CDM determines that client is outside of coverage zone
  
  - CDM redirects request to another URL (either local or across the Internet)
  
  - Alternate media is served to the client
Content Channels

- Group media into channels
- Assign appliances to channels
- Benefits
  - Enables targeted distribution
  - Enables service offerings where media needs to be segmented
  - Lowers cost by eliminating inefficient use of bandwidth and disk space
  - Reduces security issues

Q&A
Planning a Video Network

- Identify video technologies to address your application requirements
- Enable your network for IP multicast for live video broadcasts
- Match your network bandwidth with your application quality needs
- Ensure quality of service
- Use content distribution for VOD
Please Complete Your Evaluation Form

Session 2011

Empowering the Internet Generation