Cisco Medianet
Enabling Business Video for Enterprise
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Systems Engineer, Cisco Systems Thailand
Video Use Cases

- Faster Decisions
- Share Expertise
- Drive Change & Alignment
- Improve Protection
- Extend Reach
- Expert-on-Demand
- Personalize Ads

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Business Video
Increasing demands on the network

Streaming Media
- Bandwidth
- Concurrent Sessions
- Latency, Jitter, Loss
- Dynamic Sessions
- Multicast

Telepresence
- Bandwidth
- Concurrent Sessions
- Latency, Jitter, Loss
- Dynamic Sessions
- Multicast

Video Surveillance
- Bandwidth
- Concurrent Sessions
- Latency, Jitter, Loss
- Dynamic Sessions
- Multicast

Desktop Collaboration
- Bandwidth
- Concurrent Sessions
- Latency, Jitter, Loss
- Dynamic Sessions
- Multicast

- Video Surveillance
- Video on Demand
- Telepresence
- Video Surveillance
- Collaboration
- Web Cam
Challenges Deploying Video

**Endpoint Deployment**
- Need for high-skilled personnel to deploy endpoints
- On-going support of endpoints is a challenge

**Quality of Experience**
- High expenditures with troubleshooting
- Don’t know where the problem is most of the time
- Cannot replicate problems

**Lack of Visibility**
- Inability to assess impact of video, voice and data applications on the network
- High-bandwidth upgrade costs
- Inability to verify service level agreements
Network Role in Scaling Video Services

TelePresence
Unified Communications
Desktop Video Streaming
Digital Signage + Enterprise TV
Video Surveillance

User Experience: Traffic Differentiation, QoS
Interoperability: Formats, Networks, Devices
Management: Session Visibility & Impact, Policy
Call Control: Discovery, Setup & Admission

Enterprise Network
What is Medianet?

Medianet is an end to end architecture for a media-optimized network. Medianet allows the deployment, scalability and optimization of quality of experience of rich media solutions into the organization.

**Network Aware**: Easy to deploy and administrate. Detect and respond to changes in devices, connection and service availability.

**Endpoint aware**: Easy deployment. Automatic Detection and Configuration of endpoints.

**Media Aware**: Deliver the best experience. Detection and optimization of different types of media and application,
Cisco’s Medianet Architecture

An end-to-end IP architecture that enables pervasive and immersive rich media experiences

- **Smarter Network**
  - Medianet technology embedded into routers & switches
  - e.g. Media Monitor

- **Cloud Services**
  - Enable SP2B, B2B & B2C

- **Medianet Architecture**

- **Smarter Endpoints**
  - Medianet technology embedded into endpoints
  - e.g. Media Services Interface

- **Shared Media Services**
  - Shared networked resources
  - e.g. Media eXperience Engine, Video conferencing on Cisco ISRG2

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Automated Video and Voice
Introducing: Medianet Enhancements, MXE, and Management

Quality of Experience
- Planning
- Auto Configuration
- Visibility and Monitoring
- Optimization
- Rapid Problem Resolution

Any to Any Video Adaptation

Automation and rapid problem resolution in the network to deliver application quality of experience, particularly video
Automated Video and Voice: What’s New?

Endpoints / Users

Network Elements

Network Management

Cisco Prime: Collaboration Manager 1.0

Cisco Developer Network Tools

Medianet Readiness Assessment Service
### Automated Video and Voice: Benefits

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
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<tbody>
<tr>
<td>Best quality of experience</td>
<td>Intelligence embedded in the network ensures quality delivery of any multimedia application.</td>
</tr>
<tr>
<td>Reduced cost and time</td>
<td>Save IT troubleshooting time and apply focused investment to resolve application choke points.</td>
</tr>
<tr>
<td>Scaling applications</td>
<td>Enable any-to-any video delivery with greater speed and efficiency.</td>
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</table>
A remote expert joins a TelePresence session between the VP of sales and the customer ad-hoc via TelePresence.

Hmmm… Mediatrace is identifying the bottleneck to be in the link between NY and London.
PS6

Show a couple of cloud/island in between the two TP sessions.
Show a build that m

Prashanth Shenoy (pushenoy), 11/03/2011
Network Designed for Video
With a Dynamic, Adaptable Network

PAIN POINTS
- Scale video to any device
- Bandwidth vs. video quality
- Timely detection/recovery of quality issues

CISCO SOLUTIONS
- Dynamic network offers greater visibility and faster troubleshooting
- Scalable, deployable and measurable

Media Services Interface - endpoint, application detection and autoconfiguration
Optimize video conferencing
Network visibility and rapid problem resolution with Media Monitoring
Monitoring, analysis, troubleshooting for video collaboration

Medianet Readiness Assessment
Without a Medianet

- Manual process to discover, configure, and track devices

With a Medianet

- Endpoints and Switches discover each other
- Switches provide pre-defined configurations and policies
- Endpoints request the necessary resources and policies

Solution Description

- Cisco Medianet Auto Configuration automates the network to learn about new video endpoints and application as they connect to the network
- Cisco Media Services Interface enables applications to consistently leverage intelligent network services to improve the quality of video experience

Customer Benefits

- Simplifies the deployment, moves, adds and changes of rich media and endpoints
- Reduces ongoing operational costs
- Automatically tracks assets
- Adds network intelligence to video endpoints and applications
Media Services Interface
A New Concept

Today’s Structure:

TCP/IP
Today's Structure:

Media Services Interface
(resides at video endpoint):
- API
- Middleware
- Host Stacks / Protocols

<table>
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<tr>
<th>Management - Policy</th>
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<tr>
<td>Middleware/API</td>
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<td>CDP/LLDP</td>
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<td>DHCP/DNS-SD</td>
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<td>SAF/XMPP</td>
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<tr>
<td>RSVP/QoS</td>
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<td>IPSLA VO</td>
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<tr>
<td>802.1x</td>
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<tr>
<td>SNMP/Syslog</td>
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</tbody>
</table>

Media Services Interface Deliverables

- MSI Reference implementation
- API SDK
- Simulation - Test environment
- Support - Documentation

Cross-OS Protocol Library

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Auto-configuration
Enable video delivery with greater speed and efficiency

- Automate network configuration – Auto Smartports
- Location awareness – Applications automatically learn from the network

Camera with MSI: send ‘device type’ = ‘Camera’ via CDP
Switch provides civic & geo location info to endpoint – CDP: location = bldg 24/room 5

How many IP cameras do I have installed in Bldg 24

Cisco Prime LMS

WAN

IP Surveillance Manager
Without a Medianet

- Lack of visibility into network conditions with video
- Inability to pinpoint problems for up to days

With a Medianet

- Before event IPSLA VO tests with realistic synthetic traffic
- Performance monitoring monitors network conditions in real time
- Media Trace collects critical information hop by hop for faster problem resolution

Solution Description

Cisco Medianet Media Monitoring
- Enhances visibility into the network
- Provides complete operational control of the network
- Validates network capacity and configuration in advance
- Supported platforms: ISR G2, ASR, Cat 2K, 3K & 4K

Customer Benefits

- Reduces time and costs to resolve video problems
- Analyzes real-time traffic without needing probes
- Helps with video application planning pre-deployment or pre-event
Media Monitoring
Monitoring and Troubleshooting Problem Statement

- What path?
- What / where is the problem?
- Pre-deployment assessment / network validation?
- Accounting, auditing & billing

Private
MPLS &
GETVPN

Dropping
packets

Adding jitter

Public
IP
DMVPN

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Optimizes Network Resources for Video

**Without a Medianet**

- Lack of network intelligence requires extra bandwidth and poor quality for multiple applications

**With a Medianet**

- Intelligent Technologies with a Medianet can
  - Select the best route
  - Dedicate a path
  - Gain Traffic Visibility
  - Optimize bandwidth
  - For different, concurrent video streams

**Solution Description**

- Medianet optimizes video delivery through performance, acceleration and best route selection
- Medianet enables multiple video types concurrently across the network

**Customer Benefits**

- Ensures Quality of User Experience
- Uses available resources
- Optimizes Bandwidth rather than over-provisioning it
Enables Video to Any Device, Anywhere

Without Medianet

- Either 3rd party to complete or time consuming configuration

With Media eXperience Engine and VideoStream

- The network seamlessly makes the conversion

Solution Description

Ubiquitous video playback on a multitude of devices, providing the scaling, device configuration, transcoding and transrating services through the network.

Supported on Media eXperience Engine, Cisco Wireless AP with 802.11n

Customer Benefits

- Lower costs of operations
- Enhanced user Quality of Experience (QoE)
- Improved productivity and employee mobility
Without ISR G2 Video Conferencing

- Multiple video streams traverse the WAN to a central MCU
- Video is mixed by a centralized MCU controlled by Cisco Unified Communications Manager
- Non-optimal use of limited WAN Bandwidth

With ISR G2 Video Conferencing

- Video is mixed by the ISR G2 DSPs controlled by CUCM and CUCME
- Keeps traffic local in the branch if all participants are located in the branch
- Ad-hoc and MeetMe conferences

Solution Description

- Built-in video conferencing service on ISR G2 facilitates ad-hoc video conference calls local to branch offices
- Enables video as another branch service that is integrated into the Cisco ISR G2

Customer Benefits

- Enhances effectiveness of ad-hoc video communications for branch offices
- Keeps video traffic local, optimizes the branch video experience and reduces WAN bandwidth burden
Management Solutions

Cisco Prime LAN Management Solution

- Simplifies the configuration and management of endpoints
- Medianet “plug-in” provides workflows for provisioning autoconfiguration and location settings and tracking of medianet endpoints
- More info: http://cisco.com/go/lms

Cisco Prime Collaboration Manager

- Supports timely end-to-end visibility and isolation of video-related issues for TelePresence sessions, endpoints, and the network
- Provides deeper network path visibility, down to the granularity of video flow statistics, wherever Medianet-capable devices are deployed in the network
- More info: http://www.cisco.com/go/cpcm

CDN Partner Tools

- Tools from other vendors supporting medianet features.
Cisco Prime Collaboration Manager
Simplifies operations for video collaboration services

• Intuitive user experience:
  • End-to-end visibility and status of all video collaboration sessions
  • Delivers immediate overview of critical issues

• Quickly troubleshoot:
  • Isolate problems between network path and endpoints
  • Improve overall service levels and end-user video experience

• Provides a complete inventory of all video related assets:
  • Endpoints, network devices, service infrastructure – control costs, plan for and validate upgrades
Medianet 2.2 Products

**Applications**

- **Digital Media Player 4310G**
  - Location: 5.2.2 or later
  - Auto-registration: 5.2.3 or later

- **Digital Media Player 4400**
  - Auto-registration: 5.2.3 or later

- **4300/4500 Series HD Box Cameras**
  - Auto-Smartports: 2.0.0 or later

- **WebEx**
  - Media Monitoring
  - WBS27.FR26 or above

**Platforms**

- **Integrated Services Routers**
  - 2900 & 3900 Series
    - Autoconfiguration
      - 15(0).1M or later
      - Needs switch blade with 12.2(55)EX or higher
    - Performance Monitor, mediatrace
      - 15.1(3)T or later
    - Universal Image with Advanced IP feature license

- **Integrated Services Routers**
  - 880/890
    - Performance Monitor, mediatrace
      - 15.1(3)T or later
    - Universal Image with Advanced IP feature license

- **Catalyst 3750 & 3560 Series**
  - Autoconfiguration
    - 12.2(55) SE or later
    - LAN Base feature set or higher
    - Performance monitor, mediatrace, IPSLA VO
    - 12.2(58)SE or later
    - IP Base feature set or higher

- **Catalyst 4500E Sup Engine 6-E, Catalyst 4500 Sup Engine 6L-E, Catalyst 4900M, 4948E & 4948E-F Series**
  - Autoconfiguration
    - 12.2(54)SG1 (ASP)
    - 15.1(1)SG or later (ASP, location)
    - IP Base feature set or higher

- **Catalyst 4500E Supervisor Engine 7-E**
  - Autoconfiguration
    - XE 3.3.0 SG or later
    - IP Base feature set or higher

- **Catalyst 6500 & 6500 –E Series**
  - Performance monitor, mediatrace
    - 15.0(1)SY or later
    - IP Services feature set or higher

- **Catalyst 2960S and 2960 Series**
  - Autoconfiguration
    - 12.2(55) SE or later
    - LAN Base feature set or higher

**Management**

- **Cisco Prime LAN Management Solution**

**Services**

- **Cisco Developer Network Partners for Systems Management**

**Medianet Readiness Assessment**

- **Cisco Prime Collaboration Manager**

- **Cisco Prime LAN Management Solution**

- **Medianet Readiness Assessment**

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Enterprise Medianet Architecture

Smarter Endpoints
- WBS27.FR26
- Digital Media Player 4310G/4400
- 4300/4500 Series HD Box Cameras

Media Services Interface

Medianet Capabilities: Autoconfiguration and Media Monitoring

Smarter Network
- Cisco ISR G2 2900/3900 Series
- Catalyst 2960S/2960 Series
- Catalyst 3750/3560 Series
- Catalyst 4500/4900 Series
- Catalyst 6500/6500-E Series
- 5508 Wireless LAN Controller 1140 & 3500/Aironet 1260 AP

Medianet Readiness Assessment Service

Cisco Prime LAN Management Solution
Cisco Prime Collaboration Manager
Medianet Use Cases

- Auto Configuration of video endpoints
- Ongoing support and operations

“For the first time ever, we can trace every call end to end. Medianet helps turn our video monitoring from reactive to proactive, providing better troubleshooting and fault isolation capabilities, thus enabling higher SLA to our users.”

Plamen Nedeltchev, Distinguished IT Engineer and Principal Architect for Borderless Networks
Cisco IT Program

“Auto configuration will drastically reduce our deployment time, simplify the setup process, and enable more efficient coordination with our network team as we deploy thousands of endpoints.”

- Deon Chatterton,
- Cisco Security Systems & Technology Group
Cisco Medianet Architecture Guarantee

Quality of Experience: Predictable Quality on Any Device

Any to Any: Seamless Experience

Simplicity: Ease of Use

Plug and Play: Speed & Reliability

Scalability, Reliability, Availability: Video at Scale
Additional Resources

- http://www.cisco.com/go/medianet
- http://www.cisco.com/go/designzone
  Design zone for video
  Cisco Developer Network for Medianet
- http://www.youtube.com/watch?v=6YE7mbc-Arc
  Autoconfiguration demo
Thank you.