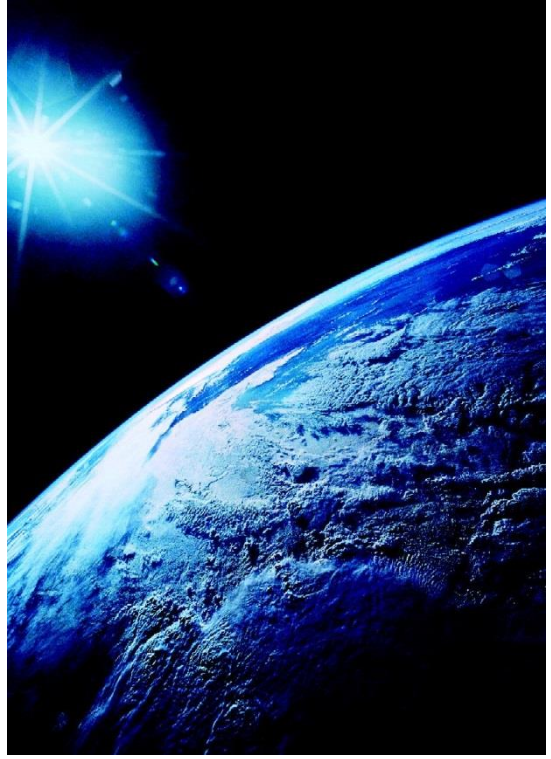
Cisco Connect

Praha, hotel Clarion
10. – 11. dubna 2013

Nástroje pro management multimediální sítě

T-COL2 / L2

Jiří Rott - Cisco



Agenda

Motivation

Medianet architecture framework

Media Monitoring

Perf.monitor, Mediatrace, IP SLA VO

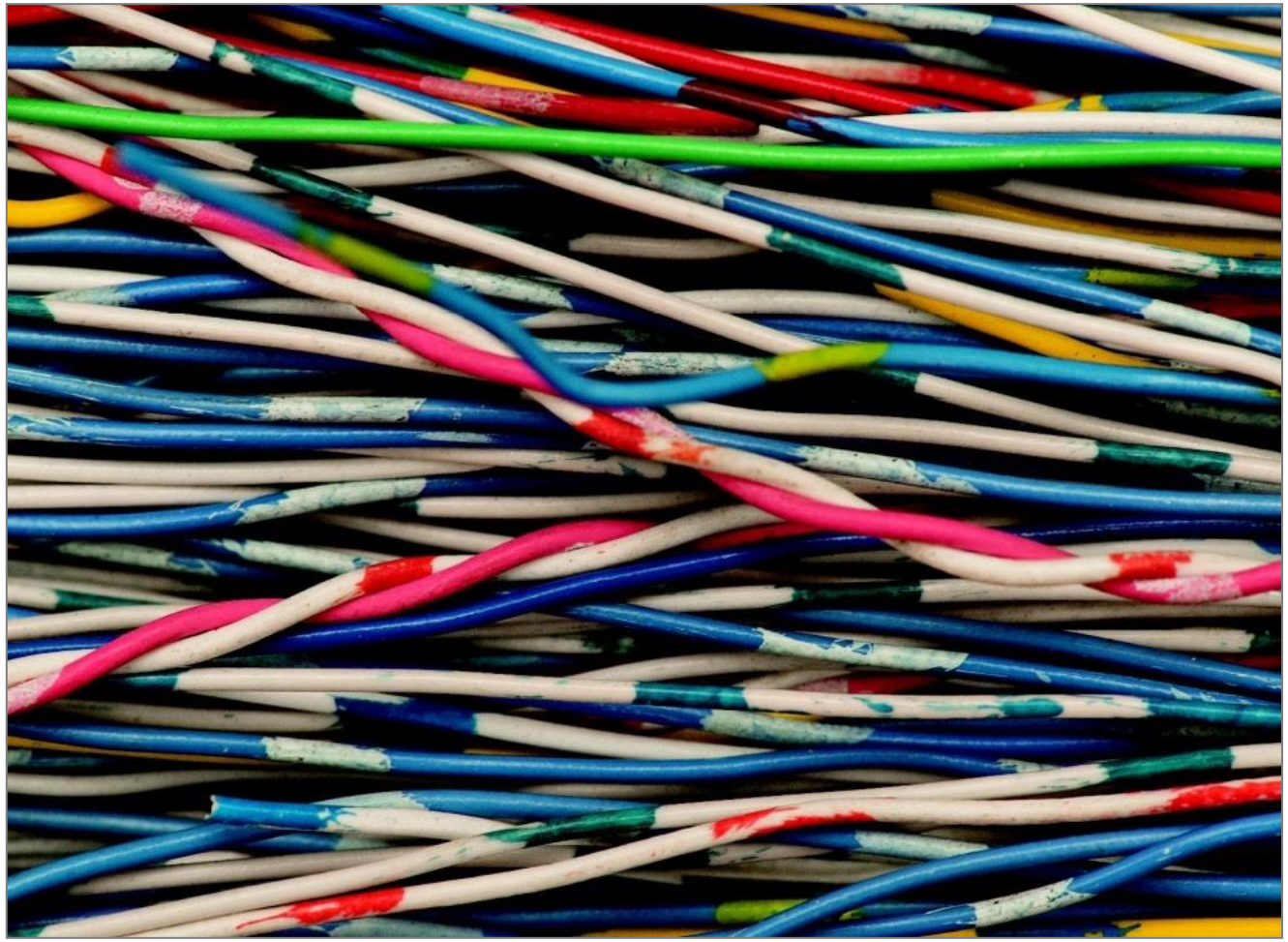
Media Awareness

Metadata

UC client support

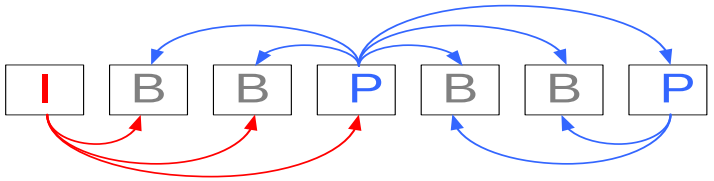
MSI, MSP

Resources

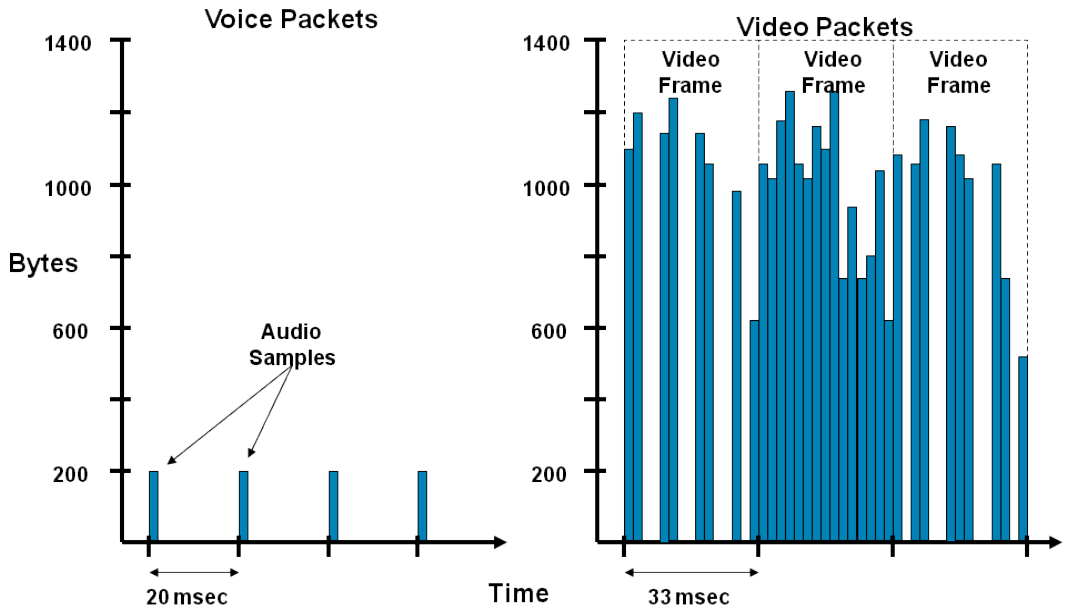


Video transport specific

Different flow profile
Variable bit flow - burstiness
Extreme sensitivity to packet loss (compression ratios to 300:1)

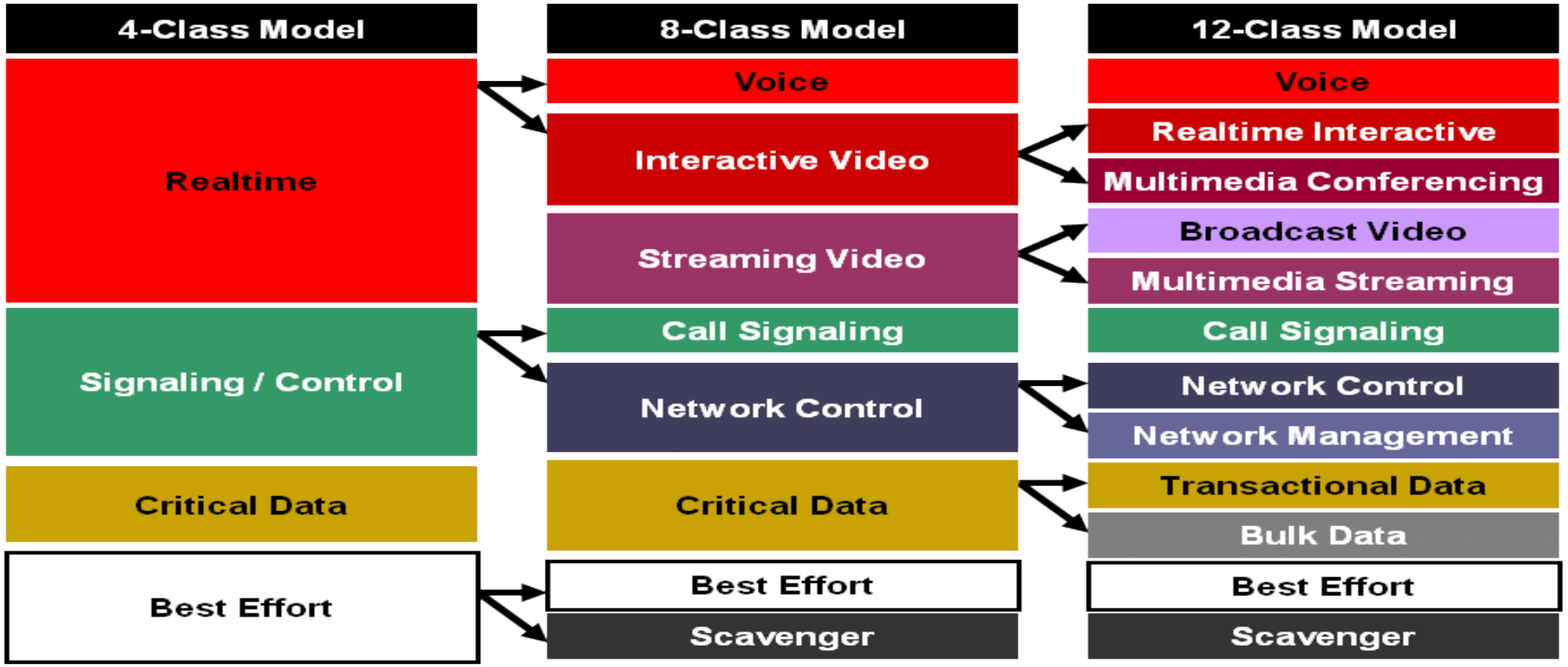


Application	Latency	Jitter	Loss (VoD)	Loss (Live)
Streaming Video	< 1000 ms	< 100 ms	< 0.1%	< 0.05%
Video Conferencing	< 150 ms	< 30 ms	NA	< 0.10%
TelePresence	< 150 ms	< 10 ms	NA	< 0.05%
Digital Signage	< 1000 ms	< 100 ms	< 0.1%	0%
IPTV	< 1000 ms	< 100 ms	< 0.1%	0%
Video Surveillance	< 1000 ms	< 100 ms	< 0.1%	< 0.05%

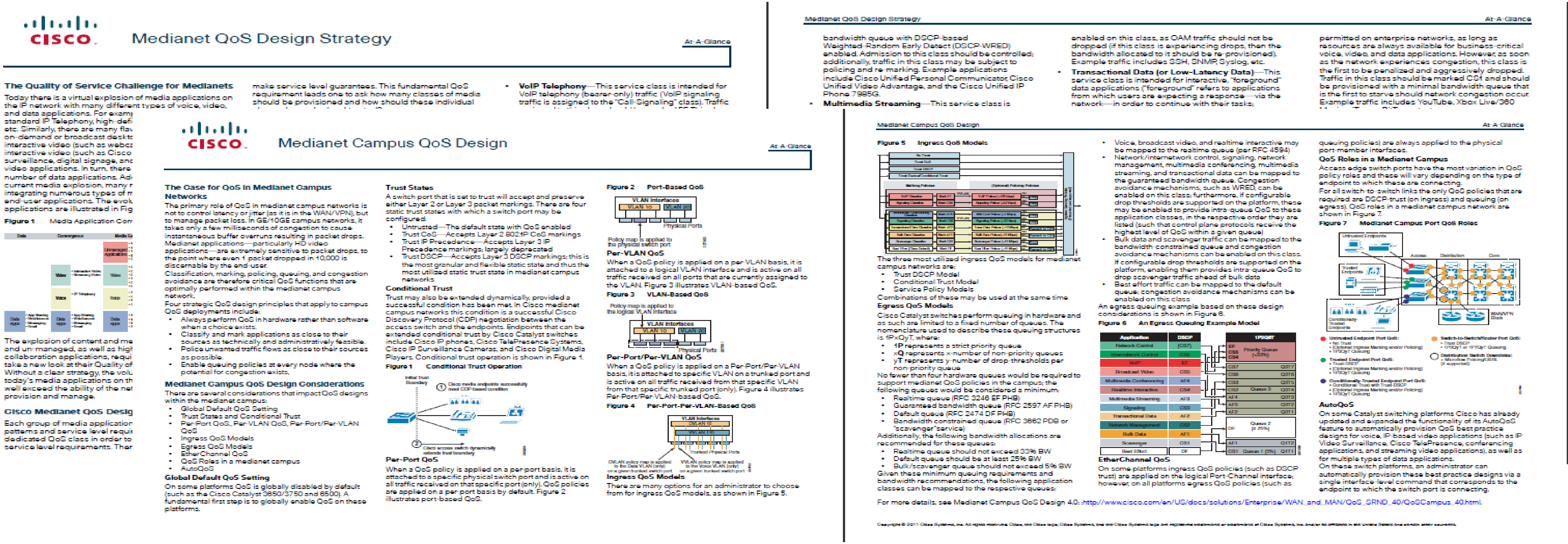


Quality guarantee?

1) QoS implementation (consistency)
   LAN – marking
2) CAC implementation (best RSVP)



QoS Strategie

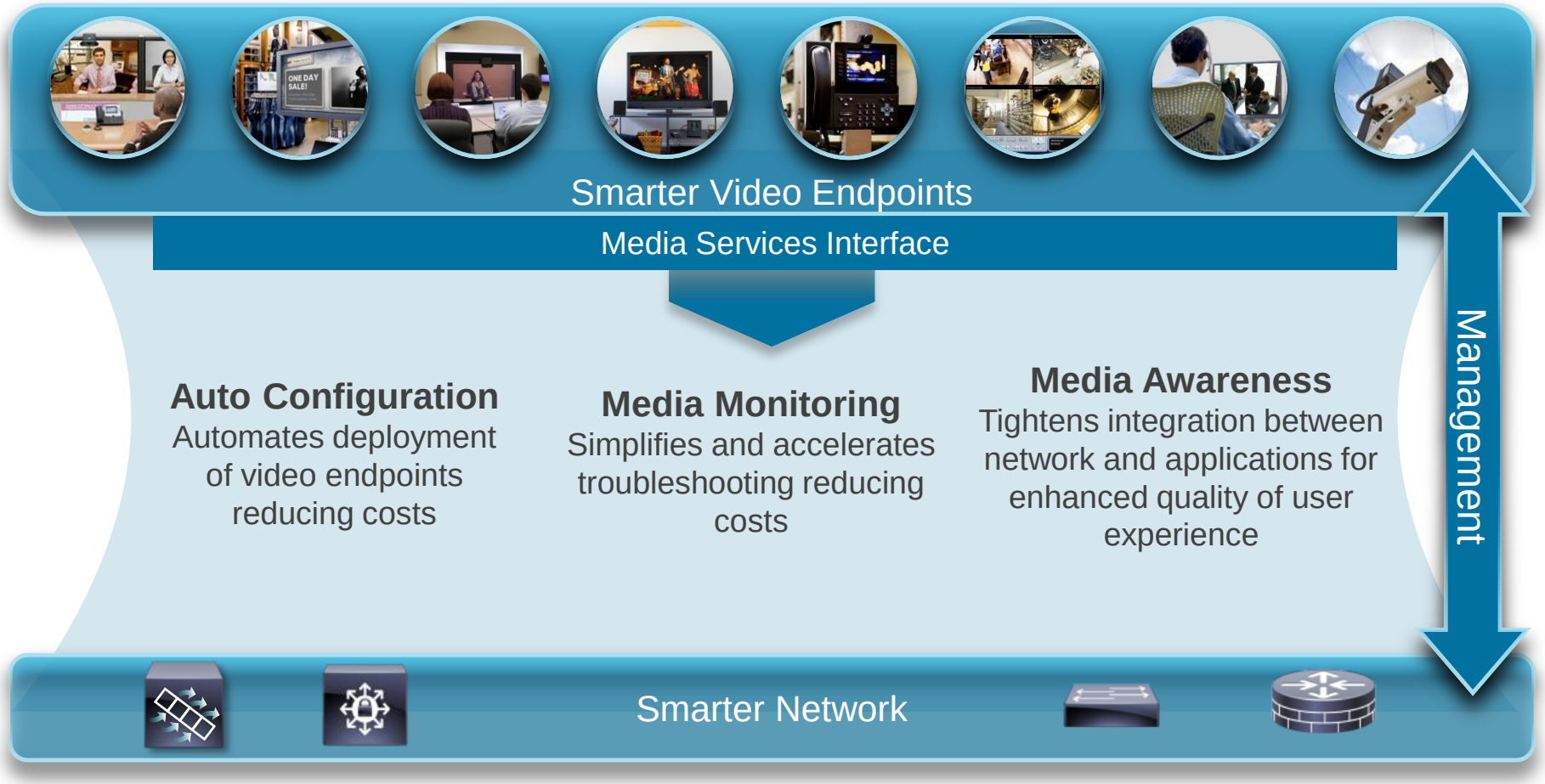


http://www.cisco.com/en/US/docs/solutions/Enterprise/Video/qosmrn.pdf

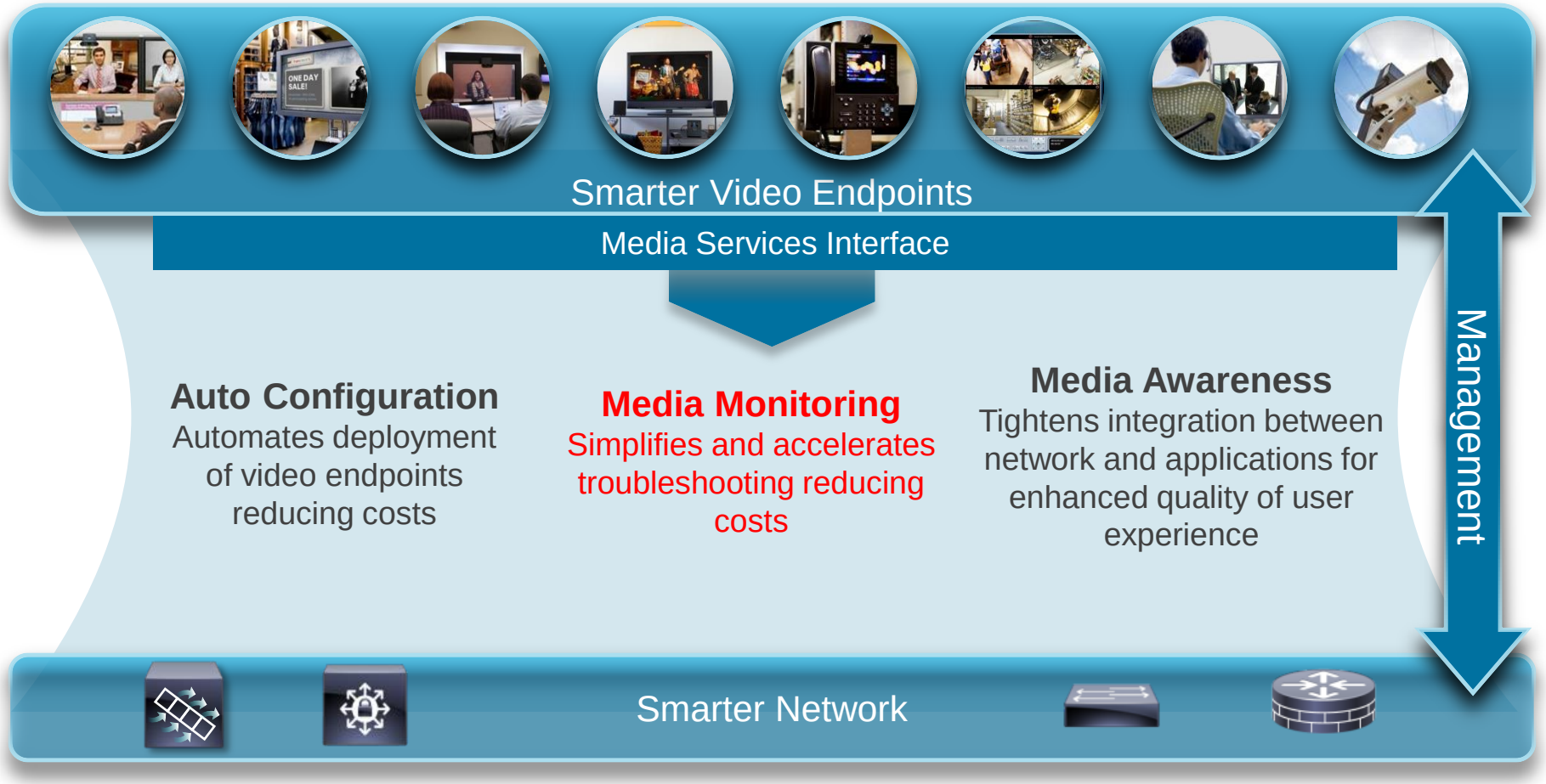
http://www.cisco.com/en/US/docs/solutions/Enterprise/Video/qoscampusaag.html

Medianet

How Medianet Helps?



How Medianet Helps?

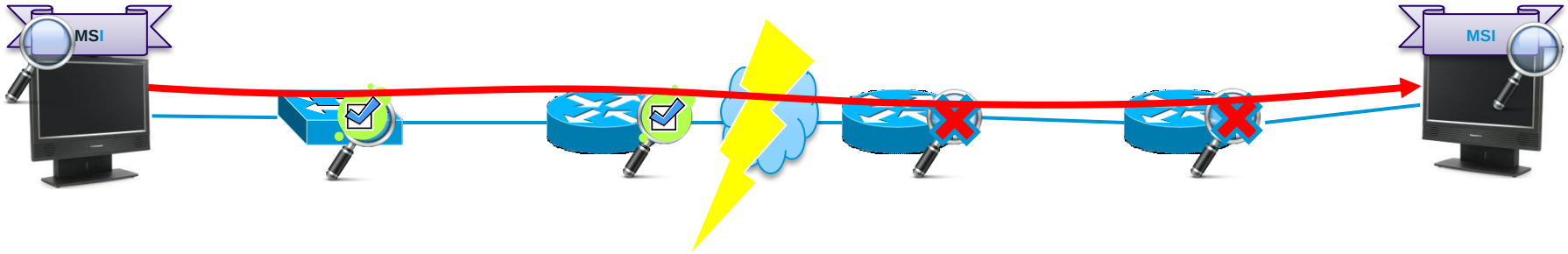


Performance monitor

IOS Performance Monitor

Router/Switch native RTP and TCP analysis

- Network nodes are able to discover & validate RTP, TCP and IP-CBR traffic on hop by hop basis
- À la carte metric (loss, latency, jitter etc.) selections, applied on operator selected sets of traffic
- Cross-network synchronized time windows for measurement
  - same 30 second (default) intervals measured
- Metrics can be tested against thresholds to trigger actions
- Multi-level Alarm Raise/Clear, SNMP Traps, Syslog, Embedded scripts, Automatic Mediatrace, PfR
- NetFlow and MIB interfaces



Perf-mon: flow records

Allows operator to select which metrics to collect

Based on Flexible NetFlow

Pre-packaged flow records

- ***default-rtp***
- ***default-tcp***

```
1861-AA0213#show flow record type performance-monitor default-rtp
flow record type performance-monitor default-rtp:
  Description:        VM default RTP record
  No. of users:       4
  Total field space:  98 bytes
  Fields:
    match ipv4 protocol
    match ipv4 source address
    match ipv4 destination address
    match transport source-port
    match transport destination-port
    match transport rtp ssrc
    collect routing forwarding-status
    collect ipv4 dscp
    collect ipv4 ttl
    collect transport packets expected counter
    collect transport packets lost counter
    collect transport packets lost rate
    collect transport event packet-loss counter
    collect transport rtp jitter mean
    collect transport rtp jitter minimum
    collect transport rtp jitter maximum
    collect interface input
    collect interface output
    collect counter bytes
    collect counter packets
    collect counter bytes rate
    collect counter packets dropped
    collect timestamp interval
    collect application media bytes counter
    collect application media bytes rate
    collect application media packets counter
    collect application media packets rate
    collect application media event
    collect monitor event
```

Perf-mon: simple inline configuration

Can apply directly on interface

Limited to single class


```
Interface FastEthernet0/0
 service-policy type performance-traffic inline input
  match  dscp cs5  ef af41
   flow monitor inline
    record default-rtp
   react 1 transport-packets-lost-rate
    threshold value gt 10.00
    alarm severity error
    action syslog
```

Metrics Available via Performance Monitor

IOS 15.1(3)T

Metric/Data Value	Protocol
transport rtp ssrc	RTP
application media packets counter (long)	All
application media bytes counter (long)	All
application media bytes rate	All
application media packet rate	All
transport packets lost counter	RTP
transport packets expected counter	RTP
transport packets lost rate	RTP
counter bytes rate	All
transport event packet-loss counter	TCP, RTP
transport round-trip-time	TCP
transport rtp jitter maximum	RTP
transport rtp jitter minimum	RTP
transport rtp jitter mean	RTP
application media packets rate variation	IP-CBR
application media event	-
counter packets dropped	All

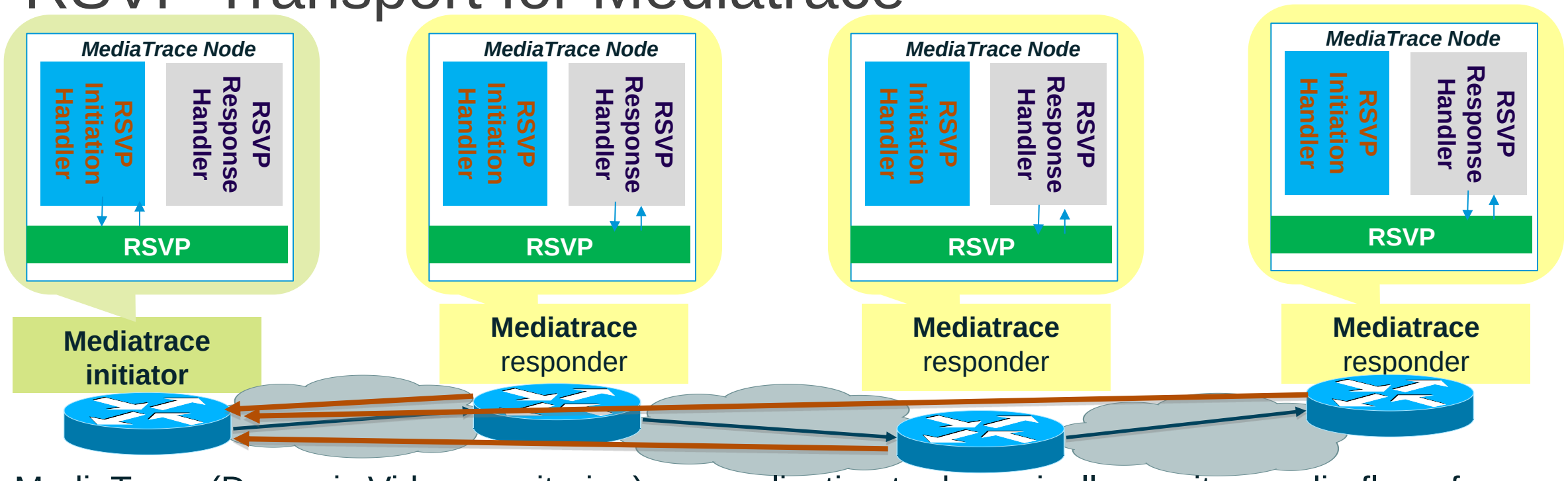
PM 2.0 - IOS 15.2(2)T extension

Additional audio/video metrics
More emphasis on TCP metrics

Metric/Data Value	Protocol
RTP payload type	RTP
IPv6 support	(all new and existing metrics)
Flexible NetFlow (FNF) field imports	all
TCP Max Segment Size	TCP
TCP min/max/avg Window Size	TCP
Out of order bytes	RTP
Out of order packets	RTP

Mediatrace

RSVP Transport for Mediatrace



MediaTrace (Dynamic Video monitoring), an application to dynamically monitor media-flows for Medianet uses ***RSVP*** as a ***transport protocol***

RSVP traverses same path as media

RSVP can provide route-change notification to Mediatrace if there is any re-routing of the flow on a RSVP-aware node

Note : Switch L2 mode add :**ip rsvp snooping**

Mediatrace components

Requestor

End video system, NMS, same node as initiator, remote router/switch

Initiator – include data

Responder – send data back to initiator

Different types of data requests

Hops – hop discovery

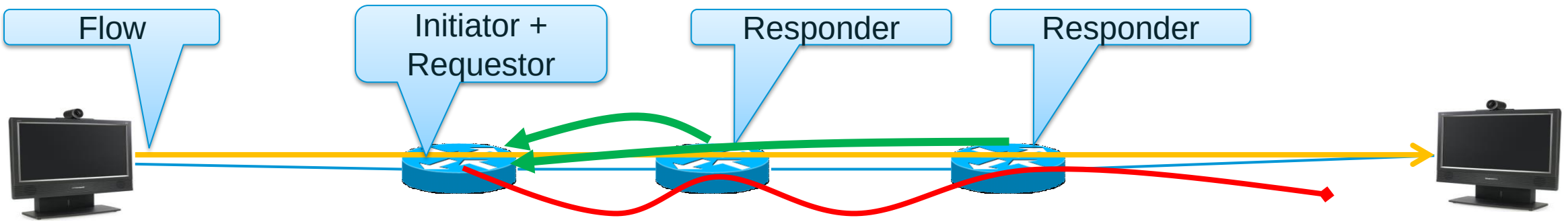
System – system information

Performance monitor – runs perf-mon, and collects data

Multiple configuration posibilities

Poll – simplest config , runs from IOS (wo level15)

Session – allow periodical repeated requests and history

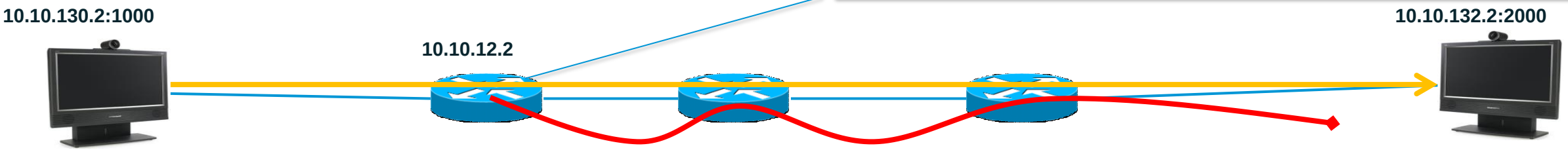


Mediatrace type 1

Mediatrace hops poll

- identify L2 and L3 nodes

```
initiator# mediatrace poll path-specifier source 10.10.130.2 destination
10.10.132.2 hops

Started the data fetch operation.
Waiting for data from hops.
This may take several seconds to complete...
Data received for hop 1
Data received for hop 2
Data fetch complete.
Results:
Data Collection Summary:
  Request Timestamp: 22:47:56.788 PST Fri Oct 29 2010
  Request Status: Completed
  Number of hops responded (includes success/error/no-record): 2
  Number of hops with valid data report: 2
  Number of hops with error report: 0
  Number of hops with no data record: 0
Detailed Report of collected data:
    Number of Mediatrace hops in the path: 2

    Mediatrace Hop Number: 1 (host=responder1, ttl=254)
      Reachability Address: 10.10.12.3
      Ingress Interface: Gi0/1
      Egress Interface: Gi0/2

    Mediatrace Hop Number: 2 (host=responder2, ttl=253)
      Reachability Address: 10.10.34.3
      Ingress Interface: Gi0/1
      Egress Interface: Gi0/2
```



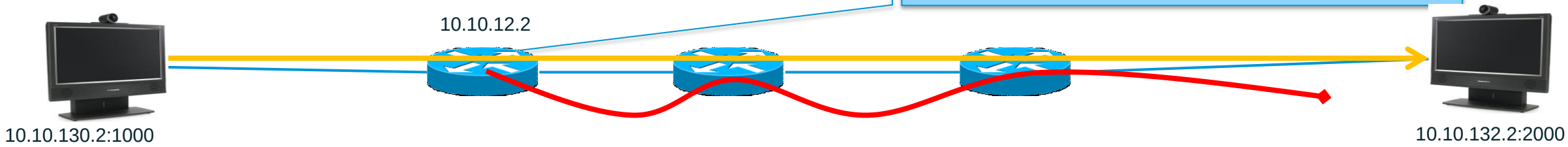
Mediatrace type 2

Preconfigured profile

mediatrace session- system profile

session 2, repeated after 60 sec

```
initiator#show mediatrace session stats 2
Session Index: 2
Global Session Id: 86197709
Session Operation State: Active
Operation time to live: Forever
Data Collection Summary:
  …
Detailed Report of collected data:
  Last Route Change Timestamp:
  Route Index: 0
    Number of Mediatrace hops in the path: 2

    Mediatrace Hop Number: 1 (host=responder1, ttl=254)
      Metrics Collection Status: Success
      Reachability Address: 10.10.12.3
      Ingress Interface: Gi0/1
      Egress Interface: Gi0/2
Mediatrace Hop Number: 2 (host=responder2, ttl=253)
      Metrics Collection Status: Success
      Reachability Address: 10.10.34.3
      Ingress Interface: Gi0/1
      Egress Interface: Gi0/2
      Metrics Collected:
        Collection timestamp: 23:55:04.237 PST Fri Oct 29 2010
        Octet input at Ingress (KB): 929381.572
        Octet output at Egress (MB): 1541.008502
        Pkts rcvd with err at Ingress (pkts): 0
        Pkts errored at Egress (pkts): 0
        Pkts discarded at Ingress (pkts): 0
        Pkts discarded at Egress (pkts): 0
        Ingress i/f speed (mbps): 1000.000000
        Egress i/f speed (mbps): 1000.000000

Note: data removed for readability
```

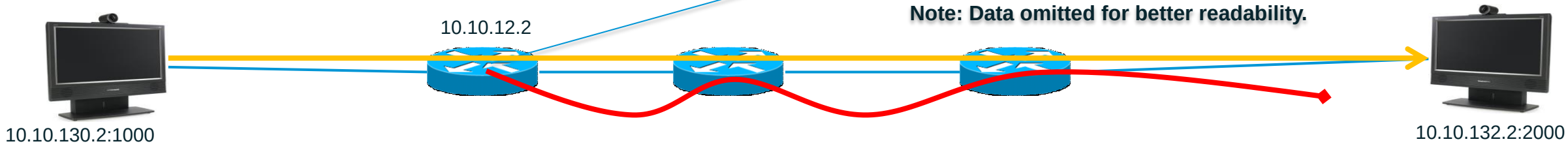


Mediatrace type 3

Preconfigured profil

mediatrace session-perf-mon

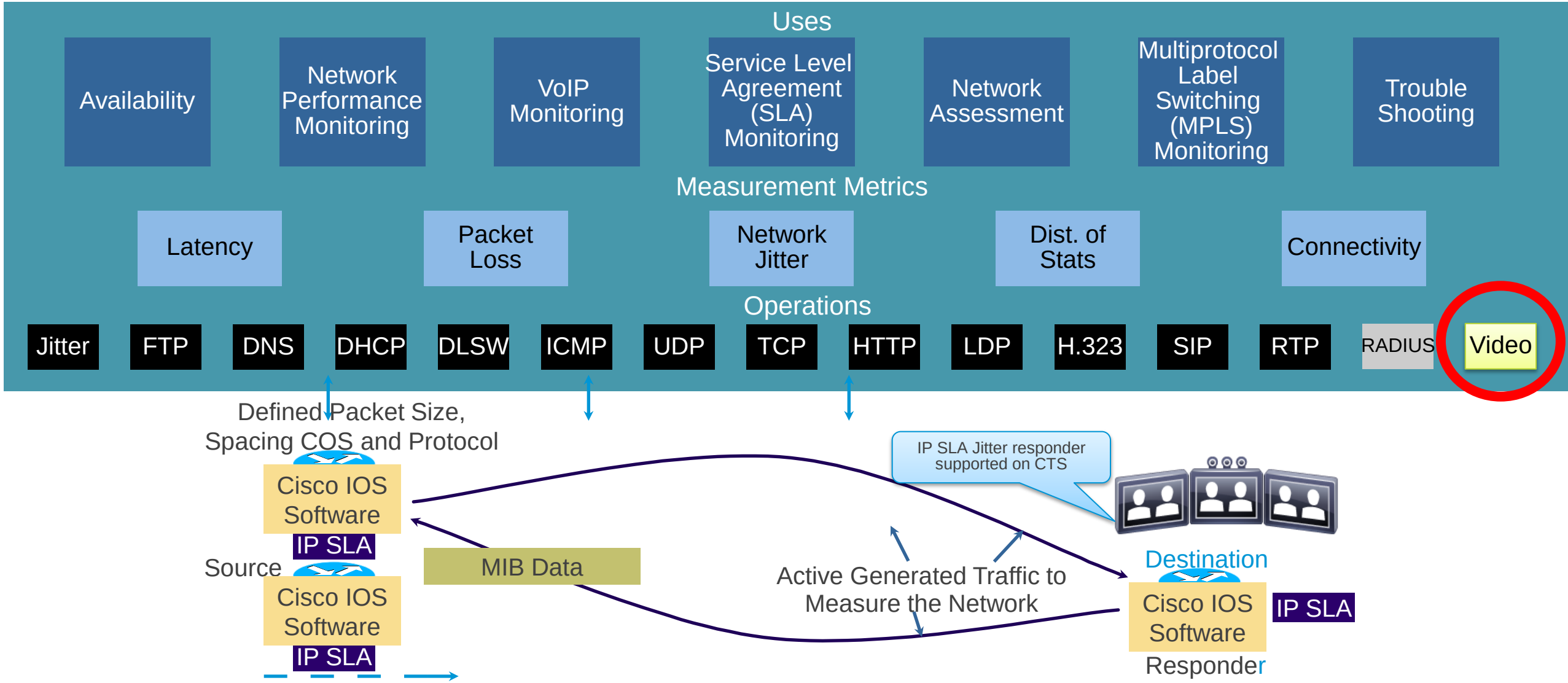
```
initiator#show mediatrace session stats 1
Session Index: 1
…

Mediatrace Hop Number: 2 (host=responder2, ttl=253)
      Metrics Collection Status: Success
      Reachability Address: 10.10.34.3
      Ingress Interface: Gi0/1
      Egress Interface: Gi0/2
      Metrics Collected:
        Flow Sampling Start Timestamp: 23:45:56
        Loss of measurement confidence: FALSE
        Media Stop Event Occurred: FALSE
        IP Packet Drop Count (pkts): 0
        IP Byte Count (Bytes): 6240
        IP Packet Count (pkts): 60
        IP Byte Rate (Bps): 208
        Packet Drop Reason: 0
        IP DSCP: 0
        IP TTL: 57
        IP Protocol: 17
        Media Byte Rate Average (Bps): 168
        Media Byte Count (Bytes): 5040
        Media Packet Count (pkts): 60
        RTP Interarrival Jitter Average (usec): 3911
        RTP Packets Lost (pkts): 0
        RTP Packets Expected (pkts): 60
        RTP Packet Lost Event Count: 0
        RTP Loss Percent (%): 0.00
```



Note: Data omitted for better readability.

IP SLA VO

IP SLA: Synthetic Traffic Measurements



IPSLA Video Operation Embedded Traffic Simulator

IPSLA VO support:

Platform	Sender Requirements	Responder Requirements	Starting from Image	License Requirements (Sender and Responder)
Cisco Catalyst 3K Series	No platform-specific requirement	No platform-specific requirement	12.2(58)SE2	IPBase/IPBase
Cisco Catalyst 4K Series	SUP-7E, SUP-7LE	SUP-7E, SUP-7LE, SUP-6E	15.1(1)G	IPBase/IPBase
Cisco ISR G2 Series	PVDM3 available on 2900, 3900 platforms	No DSP requirement; 1900, 2900, 3900, series	15.2(2)T	UCk9/IPbase

IPSLA VO profiles

Profile vs platform:

Platform/Profile	TelePresence	IP Television (IPTV)	IP Video Surveillance Camera (IPVSC)	Cisco Phone
Cisco Catalyst 3K Series	✓ * =modeled after an older version of codec	✓	✓ * =modeled after an older version of codec	✗
Cisco Catalyst 4K Series	✓	✓	✓	✗
Cisco ISR G2 Series	✓	✗	✓ !=using custom profile	✓

IPSLA VO custom profiles

Custom profiles:

Platform	Support for Custom Profile	Mechanism
Cisco Catalyst 3K Series		Custom Profile Generator
Cisco Catalyst 4K Series		
Cisco ISR G2 Series		Configure profile parameters using Cisco IOS CLI and MIBs

Custom profiles on ISR G2

Custom profiles parameters:

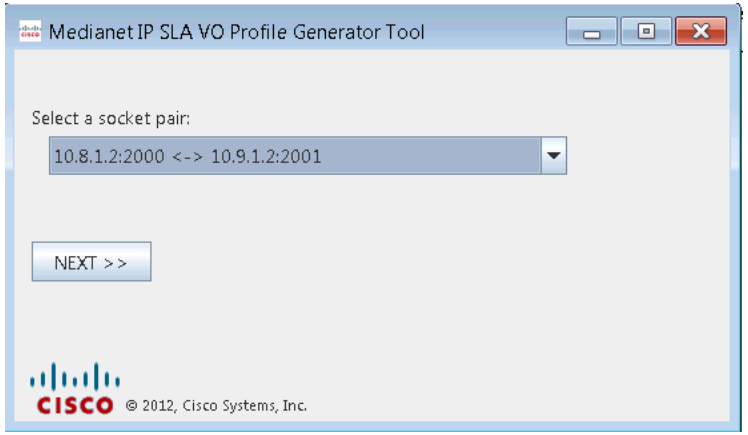
Mandatory Parameters	Endpoint type (CTS, CP-9900 or custom) Maximum bit rate (up to 4 Mbps) Frame rate (up to 30 fps) Resolution (up to 1080p) Codec (e.g. H.264 Baseline) Video contents
Optional Parameters	Rate-control averaging window size I-frame max size I-frame refresh interval RTP average size per packet Encoder jitter buffer control

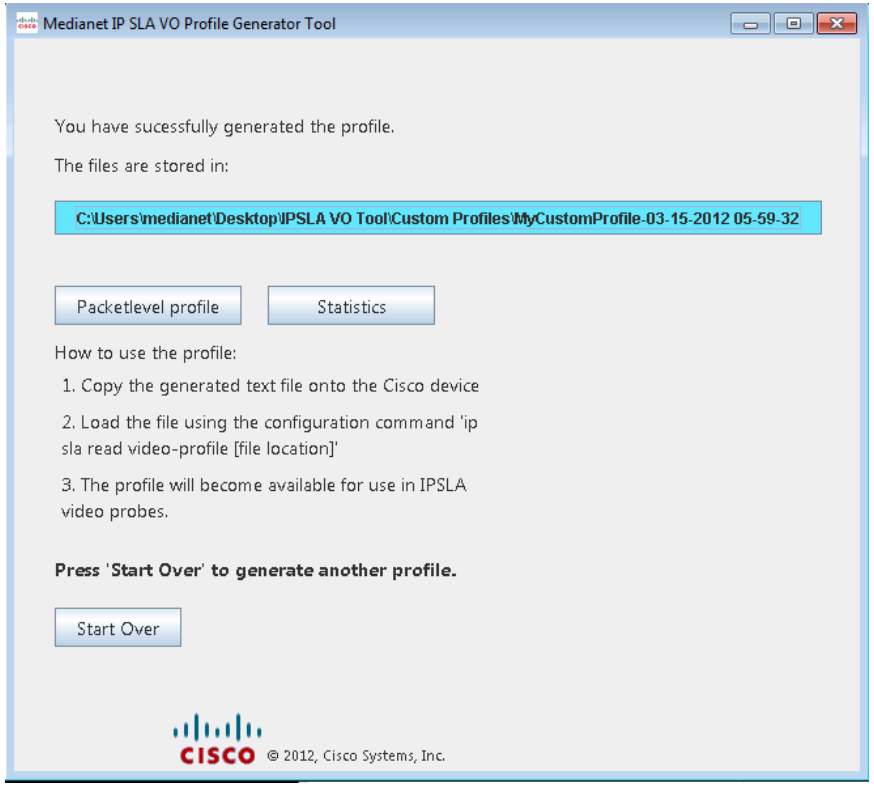
Customized profile IP SLA VO - 3k

IP SLA VO allow to generate video profile

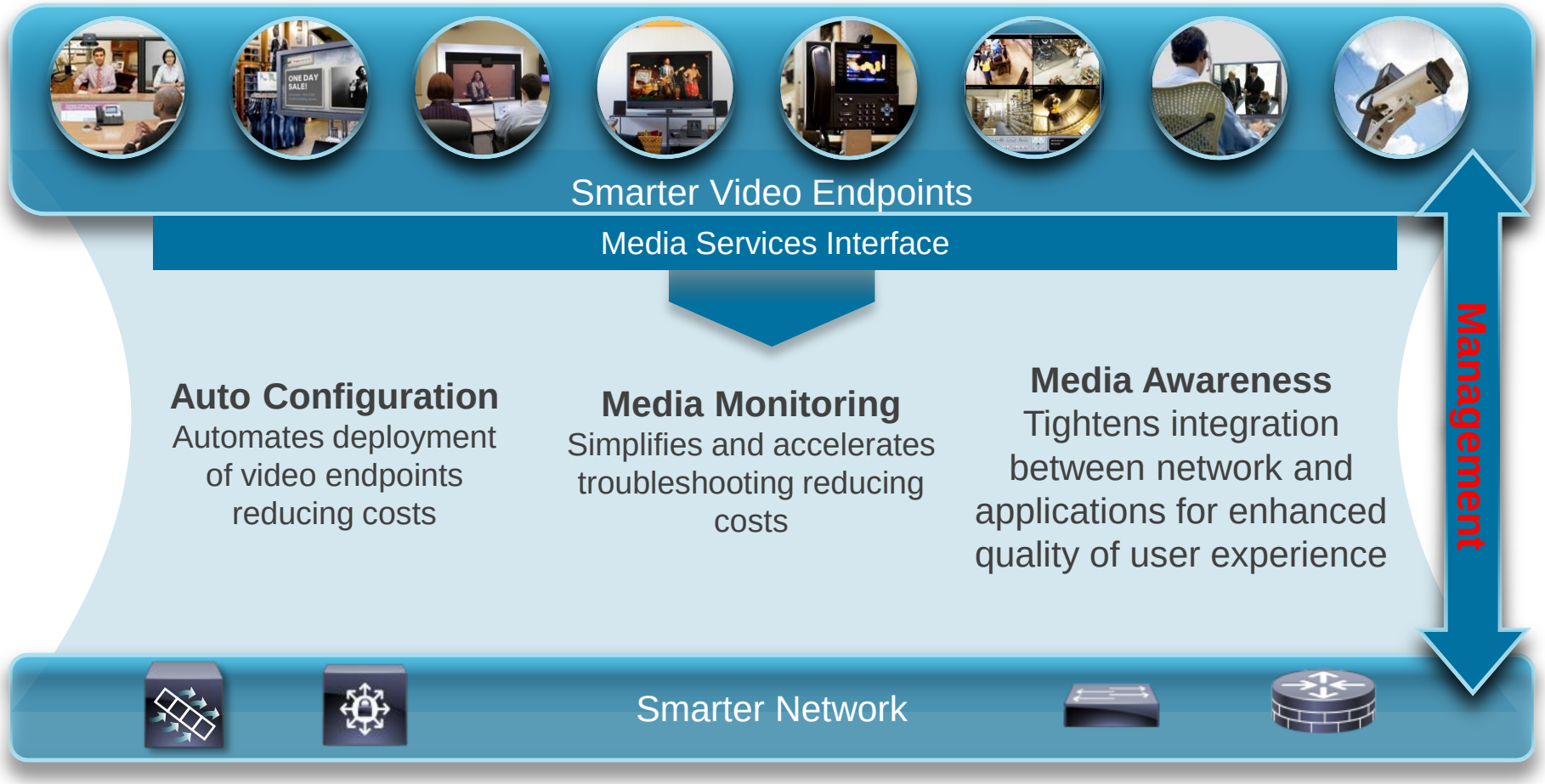
Procedure:

1) save .pcap data 9 (at least 30 sec)
2) download from http://www.cisco.com/web/solutions/medianet/knowledgebase/index.html#~design (part tools)
3) install ipslavo.exe
4) download .pcap and select socket pair
5) generate „text“ and „stat“ files
6) copy „text“ file into Cisco device
7) load file by „ip sla read video-profile“ command
8) use it as normal IP SLA VO profile





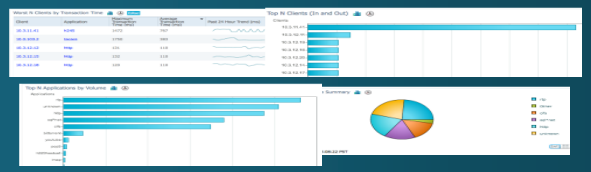
How Medianet Helps?



Management Solutions

Cisco Prime LAN Management Solution

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

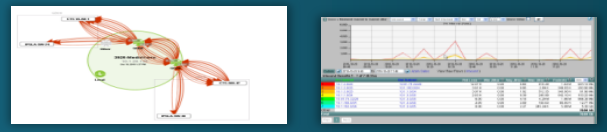


Cisco Prime Assurance Manager

- End-to-end proactive, network based monitoring, troubleshooting & analysis of application traffic
- Supports a variety of sources including performance monitor
- More info: **http://www.cisco.com/go/pam**

Cisco Prime Collaboration Manager

- Supports timely end-to-end visibility and isolation of video-related issues for TelePresence & Tandberg sessions
- Provides deeper network path visibility with mediatrace
- More info: **http://www.cisco.com/go/cpcm**



CDN Partner Tools

- Tools from other vendors supporting medianet features.
- More info: **http://developer.cisco.com/web/mnts/partners**

Cisco Prime Collaboration Manager

Network based Mediatrace Enablement (configuration)

Device Role	Configuration	Purpose
Mediatrace Initiator	username <username> priv 15 secret <username_enable_password> ! ip http server ip http authentication local ip http timeout-policy idle 60 life 86400 requests 10000 ! wsma agent exec profile wsma_listener_http wsma agent config profile wsma_listener_http ! wsma profile listener wsma_listener_http transport http	WSMA
	mediatrace initiator [source-interface| source-ip] <int|ip>	Mediatrace
Mediatrace Responder (Initiator is also a responder)	mediatrace responder	Mediatrace
Performance Monitor	service-policy type performance-monitor inline input flow monitor inline record default-rtp	Perf-Mon
IPSLA	IPSLA responder	IPSLA

Media Monitoring Interfaces

Performance Monitor

- Flexible NetFlow V9
- MIB
- REST for MSI

Mediatrace

- Web Services Management Agent (WSMA)
- REST for MSI
- MIB (new!)

IPSLA Video Operation

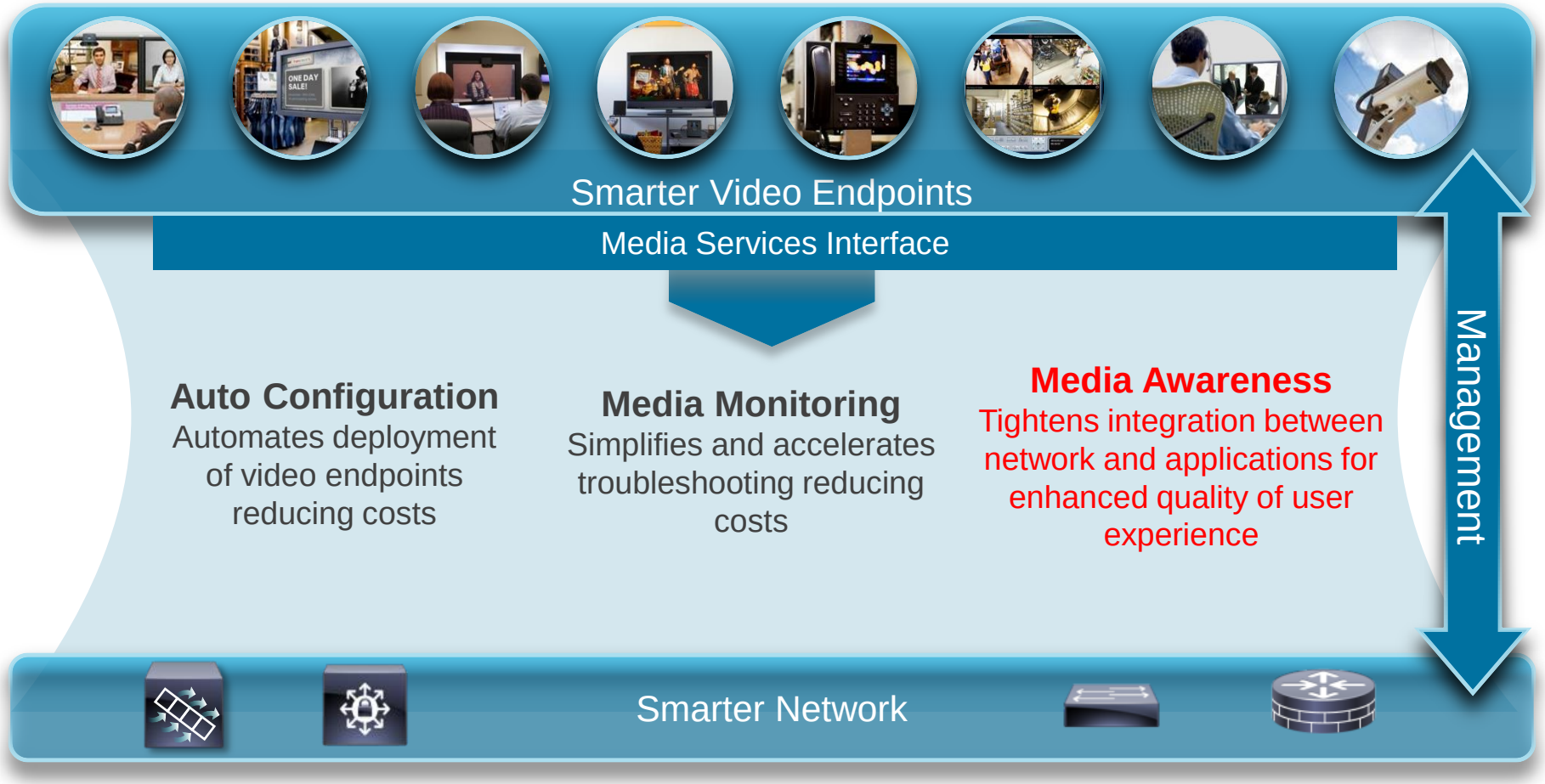
- MIB

Find more @ http://developer.cisco.com/web/mnets/resources

Medianet Systems Management IVT Program Guidelines:
http://developer.cisco.com/web/mnets/partners

Ukázka Cisco Prime Collaboration Manager

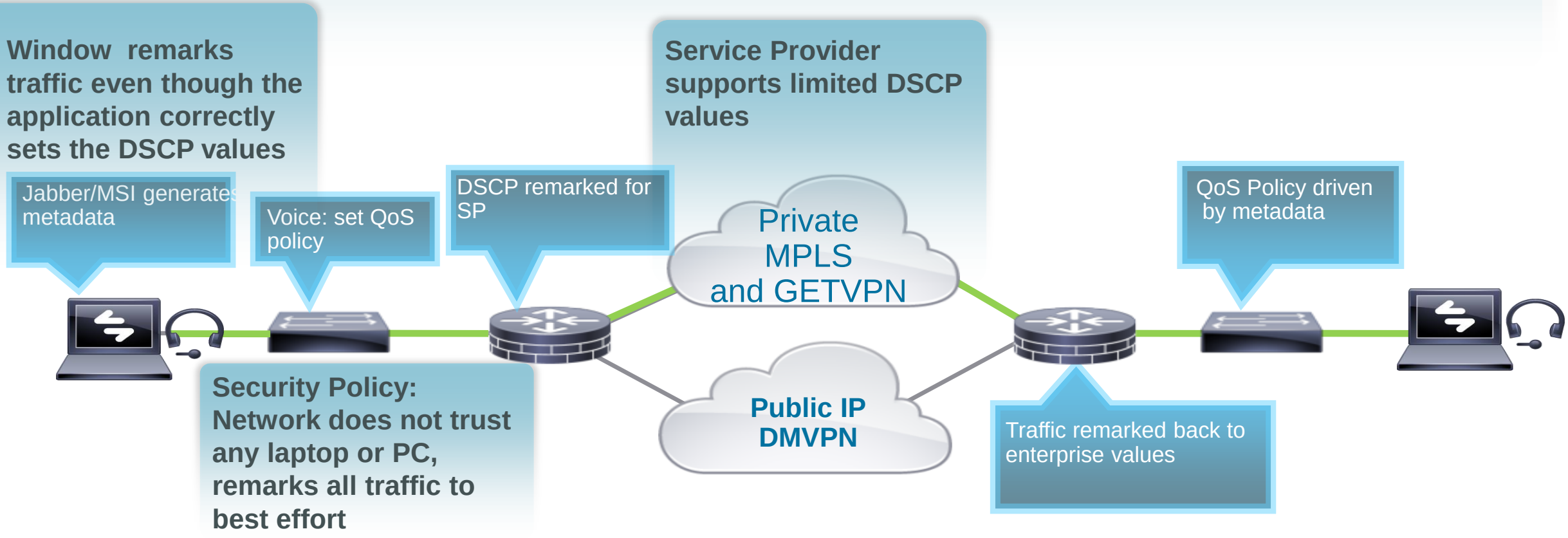
How Medianet Helps?



Media Awareness

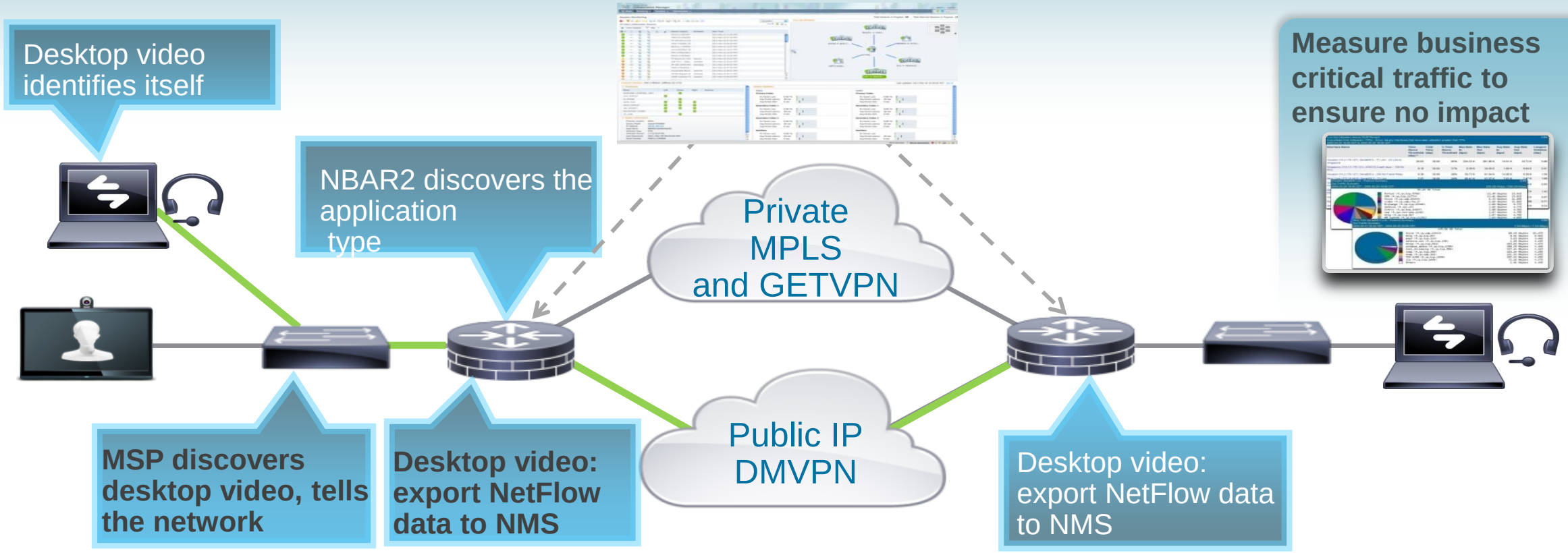
DSCP Values Remarked

- OS (e.g. Windows) remarks traffic
- Security Policy: Do not trust DSCP markings from general purpose computers
- Limited SP DSCP values



What Applications are running on your Network?

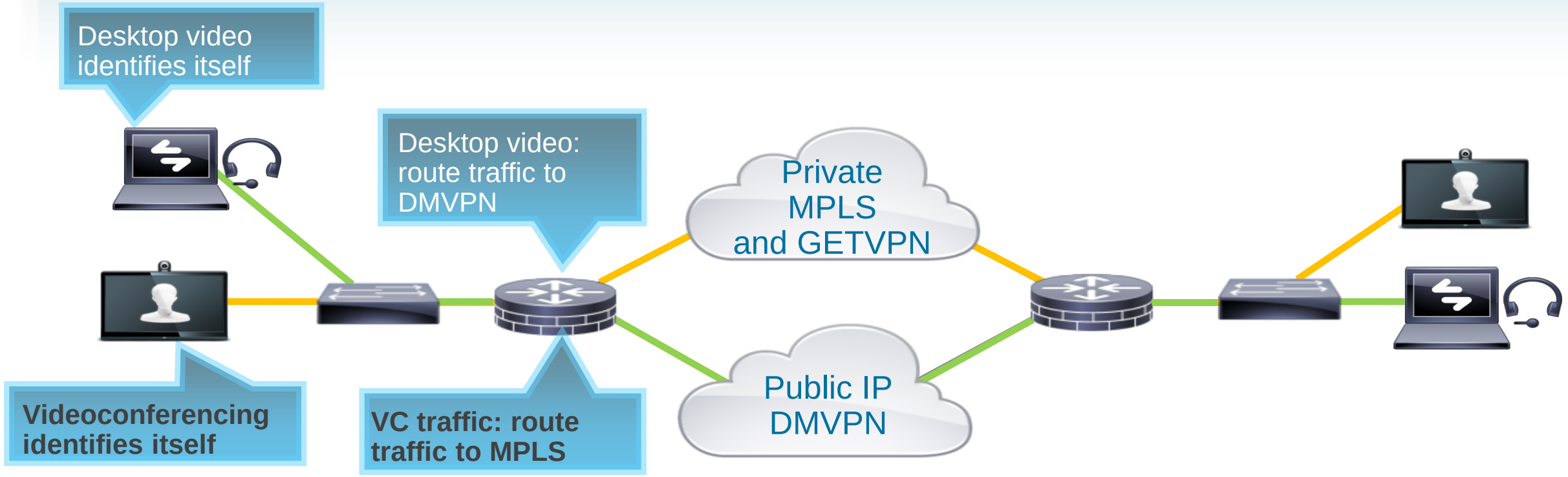
- Network discovers application type and start monitoring important traffic
- Application attributes exported via Flexible NetFlow that can be visualized by network management systems



Are you using your backup link?

Determination of path based on Metadata Attributes

- Videoconferencing traffic has stringent SLA -> MPLS
- Desktop video traffic is best effort ->DMVPN



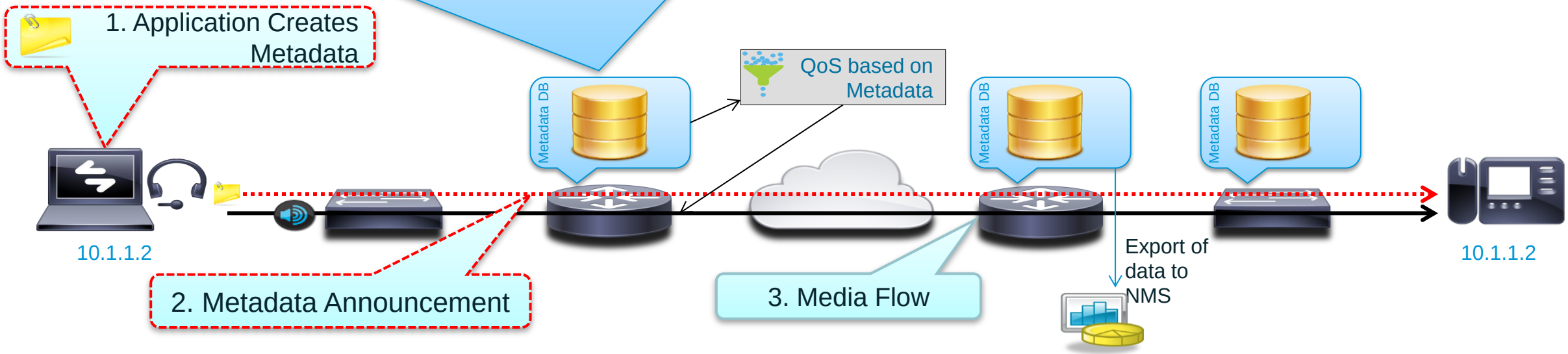
Application Awareness Methods

How?	Mechanisms	Technologies
Network figures it out	Implicit – Deep Packet Inspection (control signaling protocols for the establishment of sessions, packet headers and payload)	Network Based Application Recognition (NBAR/NBAR2) Media Services Proxy (MSP)
Endpoint/Application directly tells the network what type of applications	Explicit – Endpoint/Application signals to the network	Flow Metadata
Network administrator configures the network	Static configuration	ACLs

Introducing Medianet Flow Metadata

Flow Identifier | **Metadata**

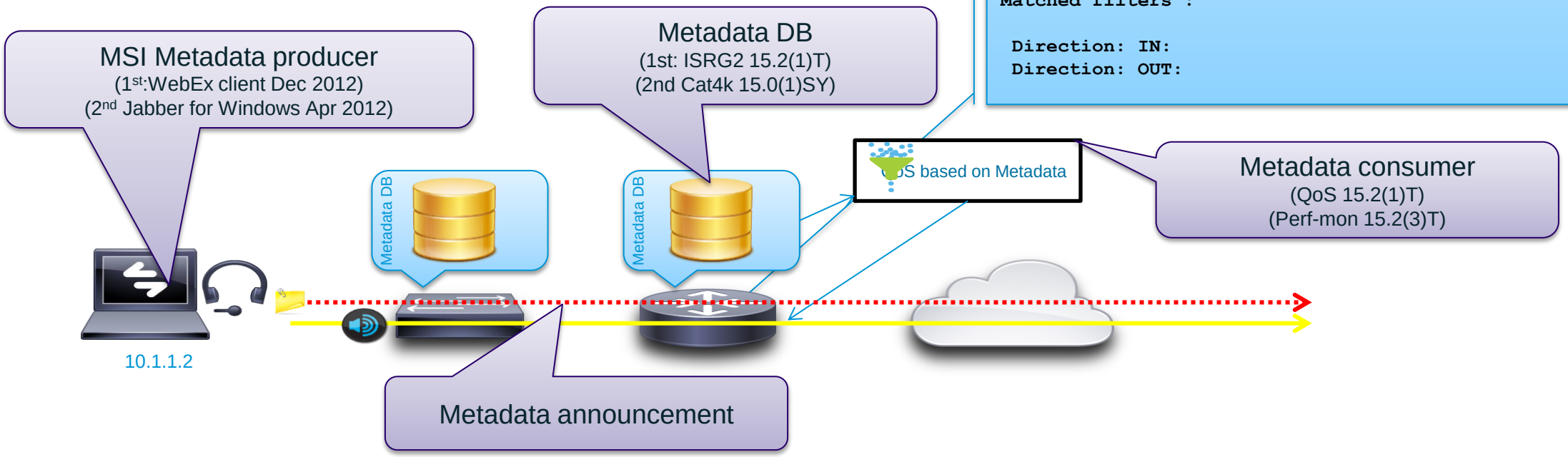
IP Src	IP Dst	Prot	L4 Src	L4 Dst	Application	Vendor	Dial From	Dial To	Caller ID
10.1.1.2	20.1.1.2	UDP	2000	4000	Video Conference (Audio)	Cisco	83922564	85268229	Albert Albatross



Medianet Flow Metadata

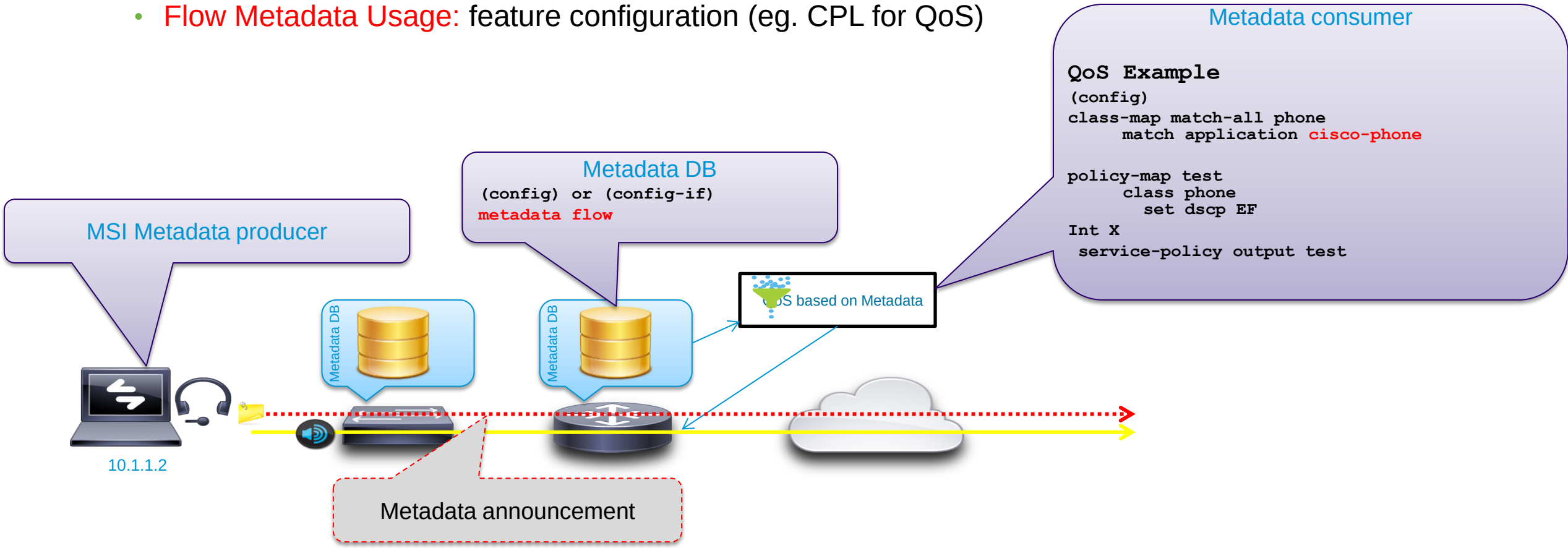
- **Metadata protocol**: announces flow parameters and attributes to network nodes along a path
- **Metadata flow DB**: maintains flow attribute information, and coordinates metadata producers/consumers.
  Producer: creates metadata information
  Consumer: utilizes metadata information
- Nodes that do not support metadata will pass it silently

```
FF2205-4507#show metadata flow local-flow-id 5

To               From            Protocol
64.102.38.183    10.1.1.2        UDP

SPort   DPort   Ingress I/F              Egress I/F
24594   16384   Vlan605                  n/a

Metadata Attributes :

Application Name              :   cisco-phone
Application Tag               :   218103889 (cisco-phone)
Application Category          :   voice-video
Application Sub Category      :   voice-video-chat-collaboration
Application Device Class      :   software-phone
Application Media Type        :   audio
End Point Model               :   Jabber for Windows
Unknown Identifier  (147)     :   [ 00 00 00 05 ]
Unknown Identifier  (148)     :   [ 00 00 00 02 ]
Application Vendor            :   Cisco Systems, Inc.
Application Version           :   Jabber 9.0.0

Matched filters :

 Direction: IN:
 Direction: OUT:
```



Enabling Flow Metadata

- Producer: MSP (network) or MSI (endpoint)
- Flow Metadata Processing: '`metadata flow`' in IOS config
- Flow Metadata Usage: feature configuration (eg. CPL for QoS)



Metadata – Show Commands

Detailed information about a Flow with attributes

```
router#sh metadata flow local-flow-id 2
To              From            Protocol SPort   DPort   Ingress I/F        Egress I/F
2.2.2.2         1.1.1.1         UDP      3000    30001   Ethernet1/0        Ethernet1/1

Metadata attributes :
Application Vendor          :   Cisco Systems
End Point Model             :   CTS 3000
Application Name            :   rtp
Application Tag             :   218103869 (rtp)
Bandwidth                   :   4000
Application Media Type      :   video
SDP Session ID              :   97388383462821
Mime Type                   :   H.264
Payload Type                :   96
Clock Frequency             :   22050
SSRC                        :   56
Global Session Id           :   8D44C3FAF803-11E0-91F0-00E0184DFDEA-00000038-00000000
```

Metadata attributes

IOS 15.1(1)SG

match application value	Description
cisco-phone	Cisco IP Phones and PC-based Unified Communicators
citrix	Citrix
h323	H323 protocol
jabber	Jabber Protocol
rtp	Real time protocol
rtsp	Real Time Streaming Protocol
sip	Session Inititation Protocol
telepresence-control	telepresence-control stream
telepresence-data	telepresence data stream
telepresence-media	telepresence media (voice/Video)
vmware-view	VMWARE view
webex-data	WebEX Data
webex-meeting	WebEX Meeting
webex-streaming	WebEX Streaming
xmpp-client	XMPP Client

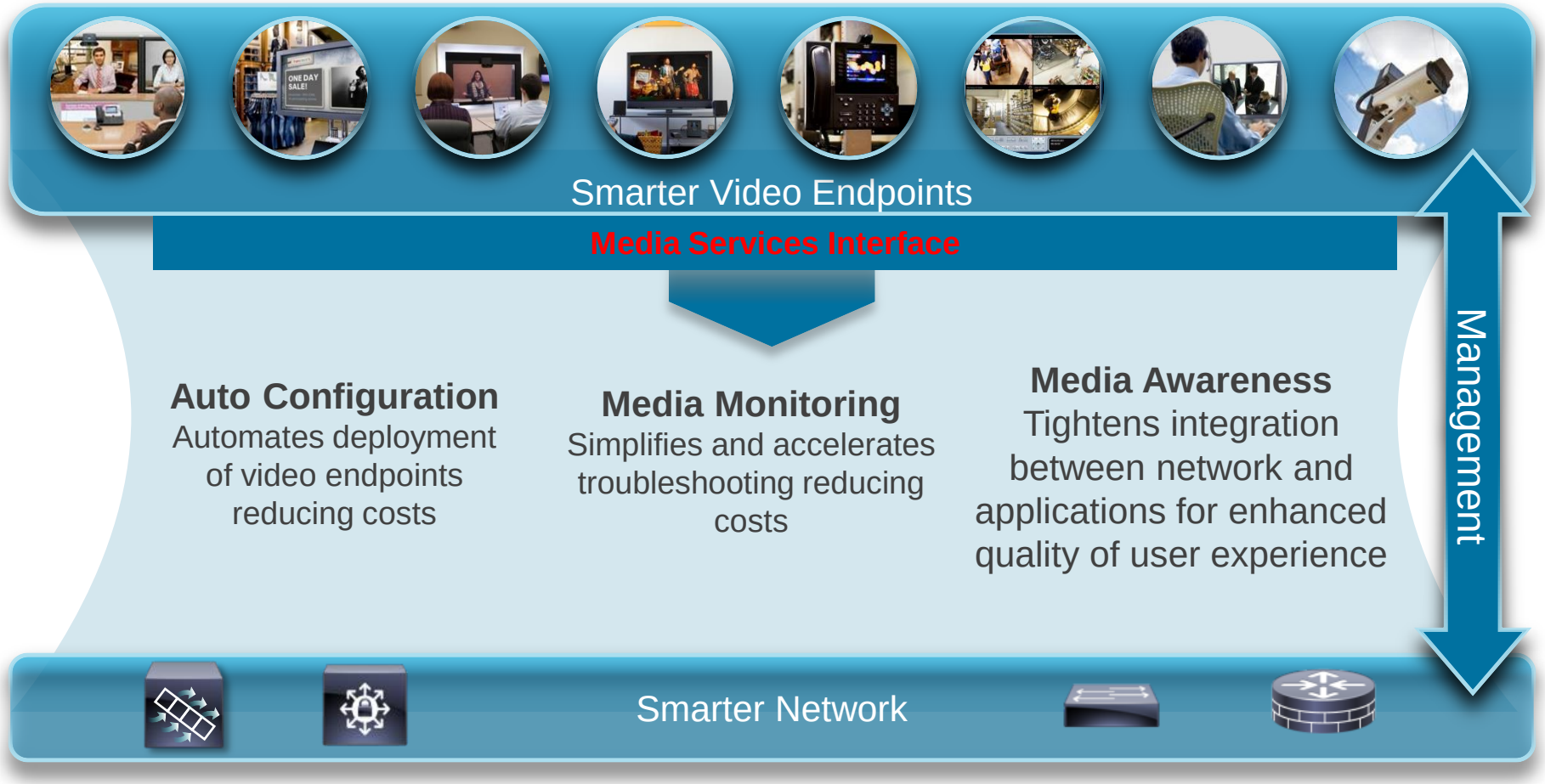
match application vendor value
Axis Communications AB
Cisco Systems, Inc.
Polycom, Inc.
Robert Bosch GmbH
Sony

Metadata attributes – cont.

match application attribute	values
category	business-productivity-tools voice-video
device-class	desktop-conferencing desktop-virtualisation physical-phone room-conferencing software-phone surveillance
media-type	audio control data video voice-video
sub-category	remote-access-terminal voice-video-chat-collaboration

match metadata	values	Description
cac status	admitted un-admitted	RSVP CSC status – eg: to assign different DSCP in QoS
called-uri	WORD (string)	Called entity in SIP/H323 calls
calling-uri	WORD (string)	Calling entity in SIP/H323 calls
device-model	WORD (string)	Device-ID of sender (eg: “phone-model”)
global-session-id	WORD (string)	String identifying all flow of a call-segment (eg: audio + video flows between endpoint and MCU)
multi-party-session-id	WORD (string)	String to identify all flows of a conference call

How Medianet Helps?

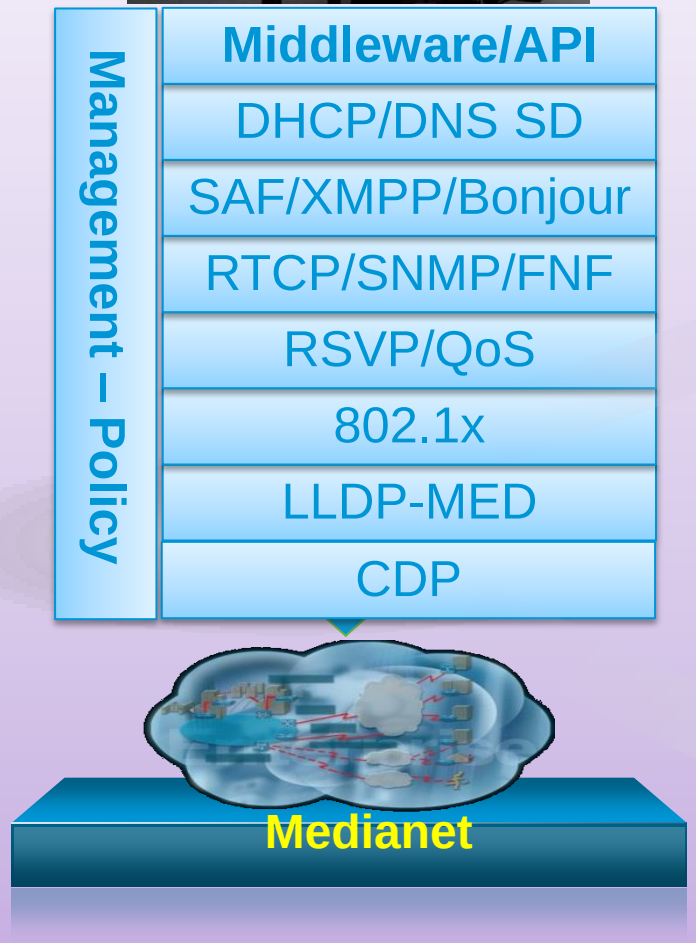


UC client support
(Media Service Interface)

Media Service Interface

Media Services Interface (resides at the video endpoint):

- API
- Middleware
- Host Stacks / Protocols



Media Services Interface Deliverables

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

Platform Portability Layer:
Win, Mac, embedded Linux, mobile OS

MSI on PCs

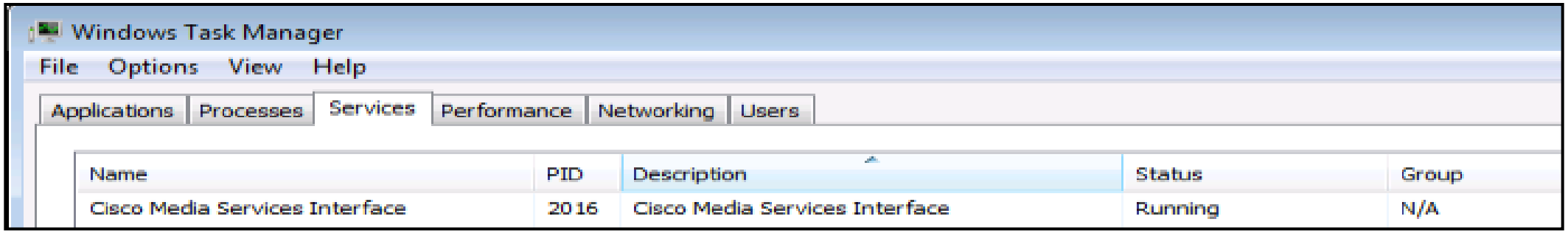
PC based Applications
(WebEx, Jabber for Windows)

- Separate download on CCO
  (yes, it's really 'MSI.msi'!)
- Needs Administrator Rights
- Runs as Windows Service
- Shared by all MSI-aware applications
  MSI services enabled (eg. CDP)

Embedded Applications
(EX, C Series, CTS)

- Included in application SW install

```
3945-BB0206-sw#show cdp neighbors fast0/6 detail

-------------------------

Device ID: MEDIANET-SITE

Entry address(es):
  IPv6 address: FE80::E499:2FBE:56A3:663A(link-local)
  IP address: 10.4.9.12
Platform: MSI on Windows,
Capabilities: Host
Interface: FastEthernet0/6,
Port ID (outgoing port): Local Area Connection
Holdtime : 165 sec
Version :
Microsoft Windows Vista Business Edition (build 6000)
64 bit
```

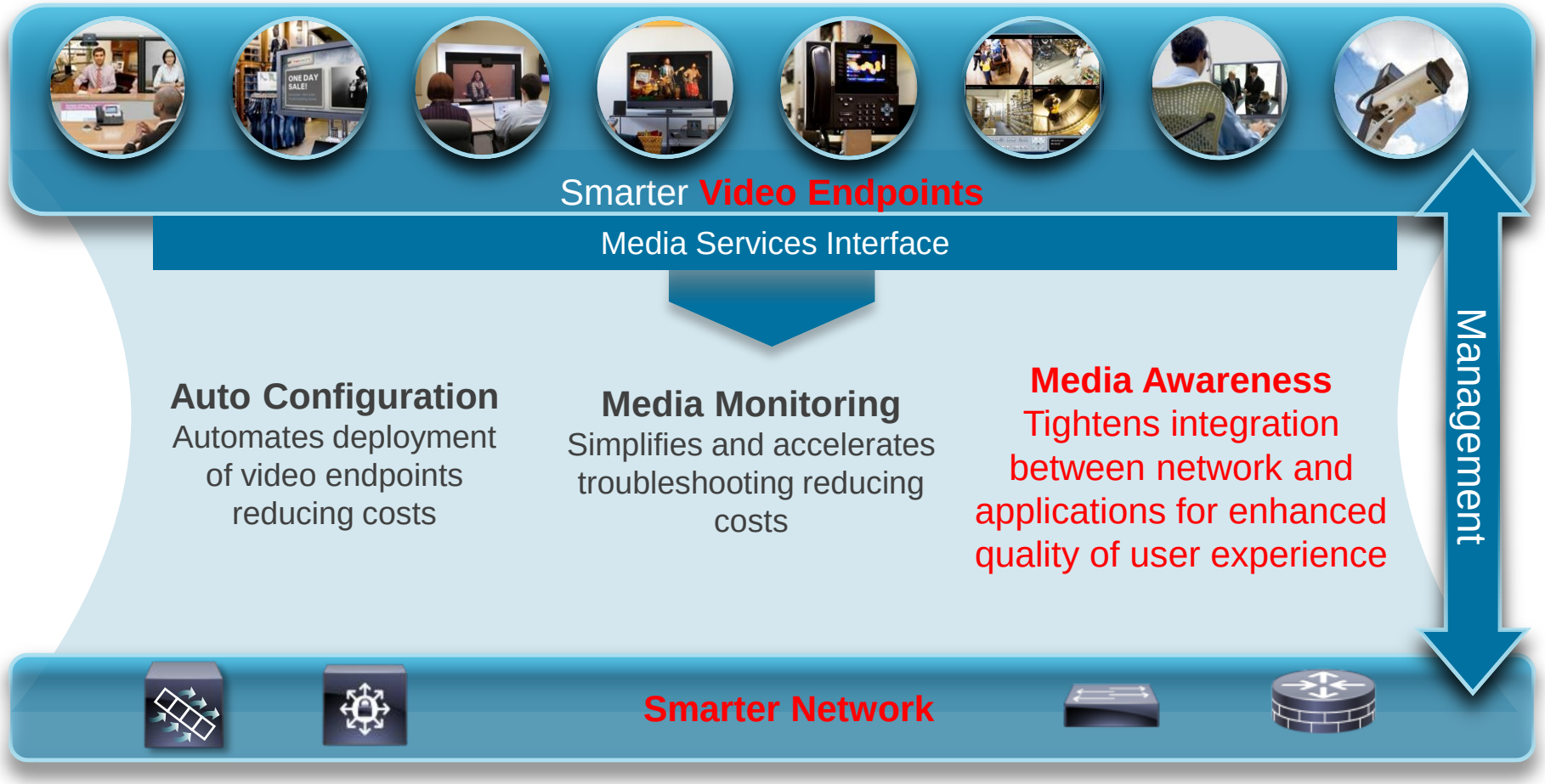


Endpoint and Network Points of Measurement

Metric	Metric	Routers/Switches	MSI
Layer 2	VLAN	☑	☒
	MAC address	☑	☒
IP	IP Address(s)	☑	☑
	DSCP	☑	☑
Transport	RTP - Loss	☑	☑
	TCP – Loss	☒ (only loss event)	☑
	TCP Round Trip Time	☑	☑
	RTP Jitter	☑	☑
Media	Frame Discards	☒	☑
	Frame Repairs	☒	☑
	Frame IDR Count	☒	☑

Ukázka
MSI, Metadata

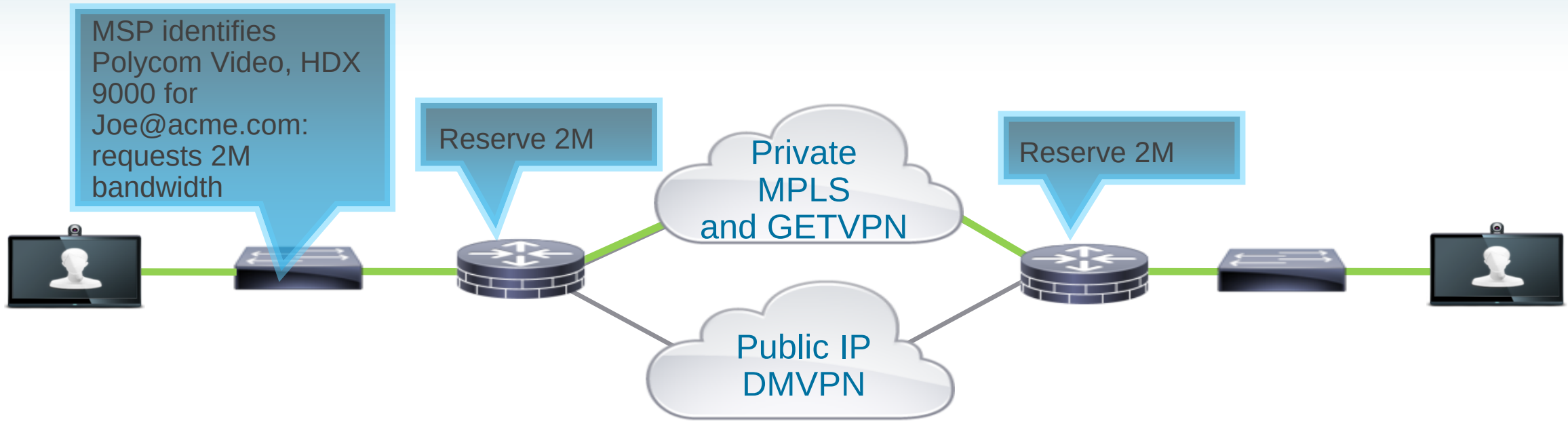
How Medianet Helps?



Media Service Proxy

Ensuring QoE
Network Discovers the Application and Reserves Bandwidth

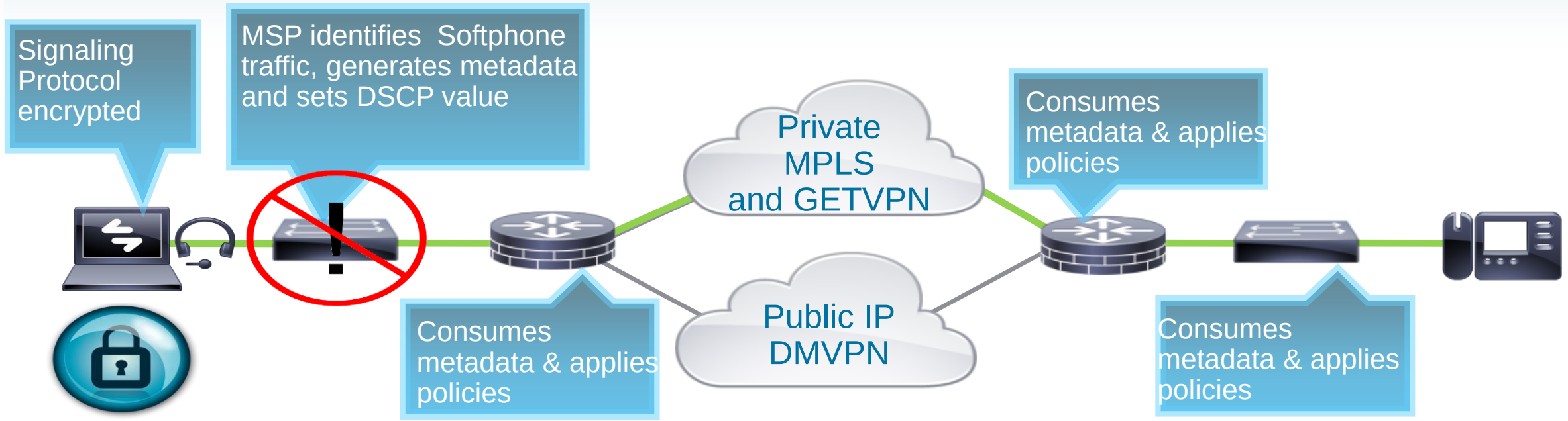
- MSP discovers Polycom Videoconferencing traffic
- MSP reserves network resources on behalf of the Polycom endpoint



Ensuring QoE

Network Discovers the Application and Assigns the DSCP values

- MSP identifies VoIP flows via SIP/SDP, H.225/H.245
- What if control signaling protocols are encrypted? Signals need to be visible!

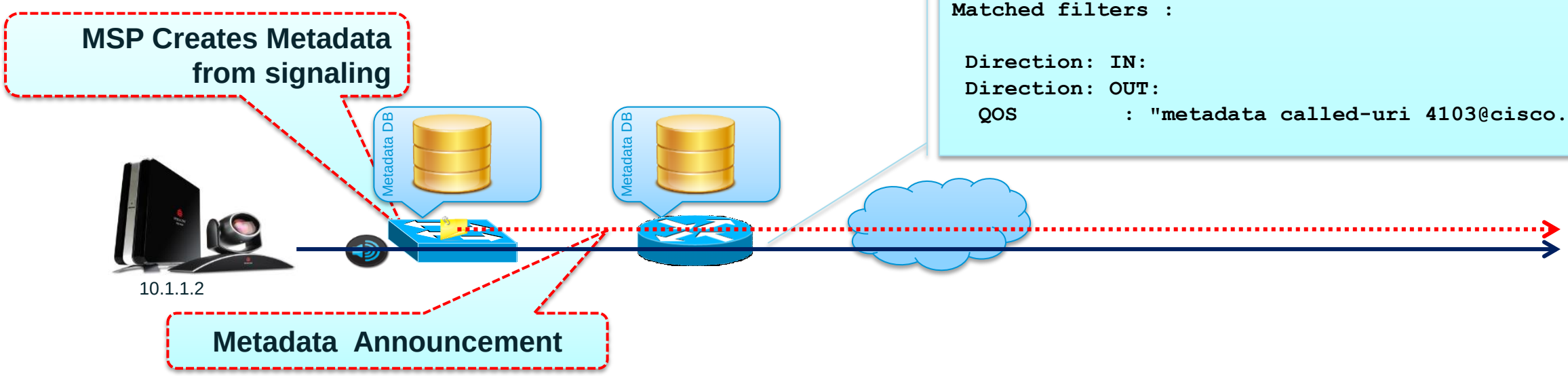


Metadata for non-MSI Devices

Devices that do not support MSI may be provided supplementary services by Media Services Proxy (MSP)

MSP generates metadata from gleaning of signaling (SIP, H.323, RTSP, mDNS, etc)

```
3945-BB0208#show metadata flow local-flow-id 10

To              From            Protocol SPort   DPort
10.4.10.12      10.1.1.2        UDP      49222   14094

Ingress I/F                Egress I/F
GigabitEthernet0/1         GigabitEthernet1/0

Metadata Attributes :

Called URI                      :   4103@cisco.com
Calling URI                     :   vputtasu.6000@cisco.com
Application Name                :   rtp
Application Tag                 :   218103869 (rtp)
Bandwidth                       :   256
SDP Session ID                  :   352800100
SIP User Name                   :   vputtasupolycom
Mime Type                       :   H264
Payload Type                    :   109
Clock Frequency                 :   90000

Matched filters :

 Direction: IN:
 Direction: OUT:
  QOS          : "metadata called-uri 4103@cisco.com"
```

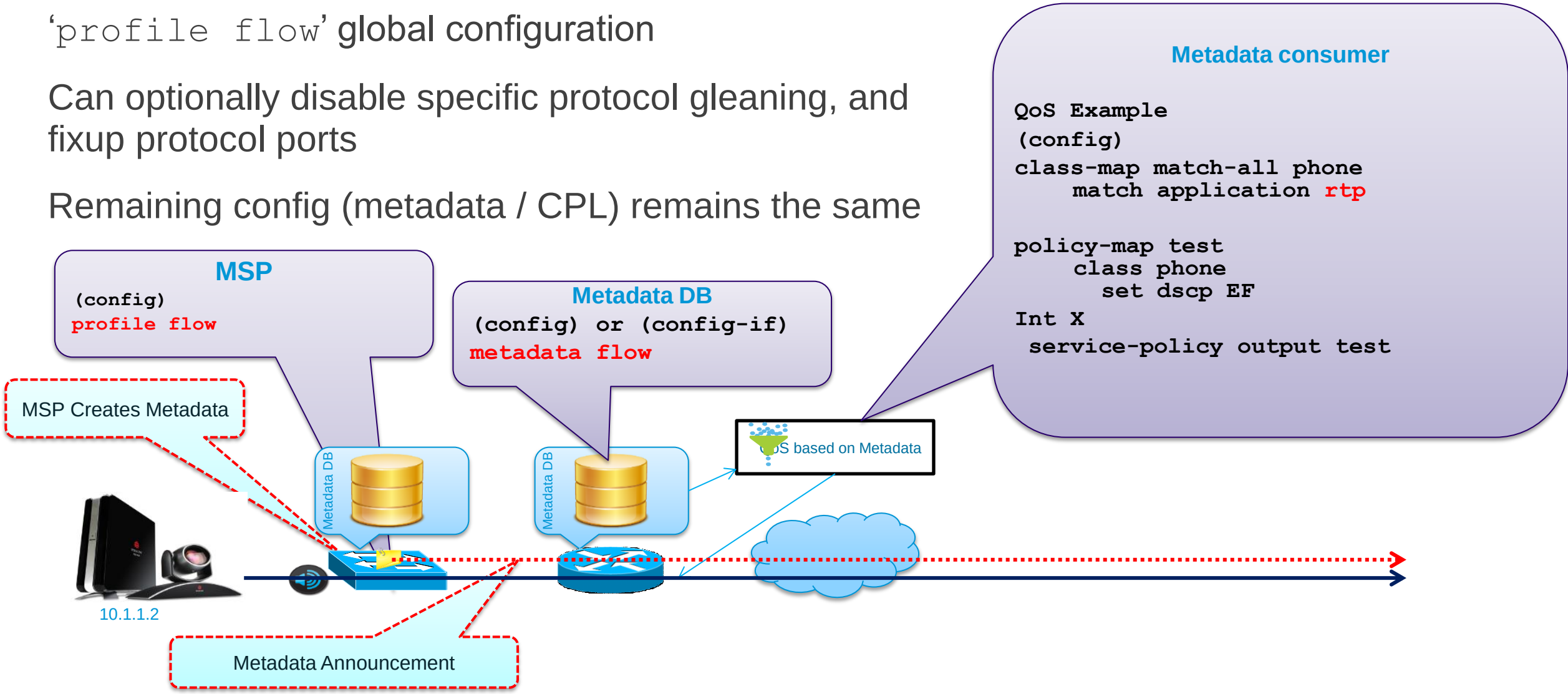


Enabling MSP

'profile flow' global configuration

Can optionally disable specific protocol gleaning, and fixup protocol ports

Remaining config (metadata / CPL) remains the same



Compare and Contrast: MSI & MSP

Capabilities	MSI	MSP	Considerations
Auto discovery of the endpoint and auto configuration of the switch port	☑	☑	Limited to protocols (SIP, H323, mDNS, CDP, LLDP, SIP, DHCP) supported by MSP – surveillance cameras & collaboration endpoints
Location awareness on endpoints/ applications (learned from the network)	☑	☒	
Auto discovery of services by application	☑	☒	
Performance Monitoring on endpoint	☑	☒	Network can independently monitor traffic
Dynamic troubleshooting on endpoint – Mediatrace	☑	☒	
Identify the flow and apply the appropriate policies (e.g. QoS, monitoring, routing, etc.)	☑	☑	MSP recognizes the type of flow by gleaning a limited set of signaling protocols (RTSP, SDP, SIP, H.225, H.245) and they have to be visible to MSP
Application specific information sharing with the network	☑	☑	MSI can share any attributes with the network whereas MSP is limited to what is available from the signaling protocols
Resource reservation	☒	☑	MSP can reserve bandwidth on behalf of the endpoint
3rd Party support	☑	☑	MSI licensing will be available in Q3CY2012

Metadata Producers

- Metadata producers create metadata announcements
  - Metadata producers may be anywhere along the flow path
    - Generally better to be at the source, or near the source

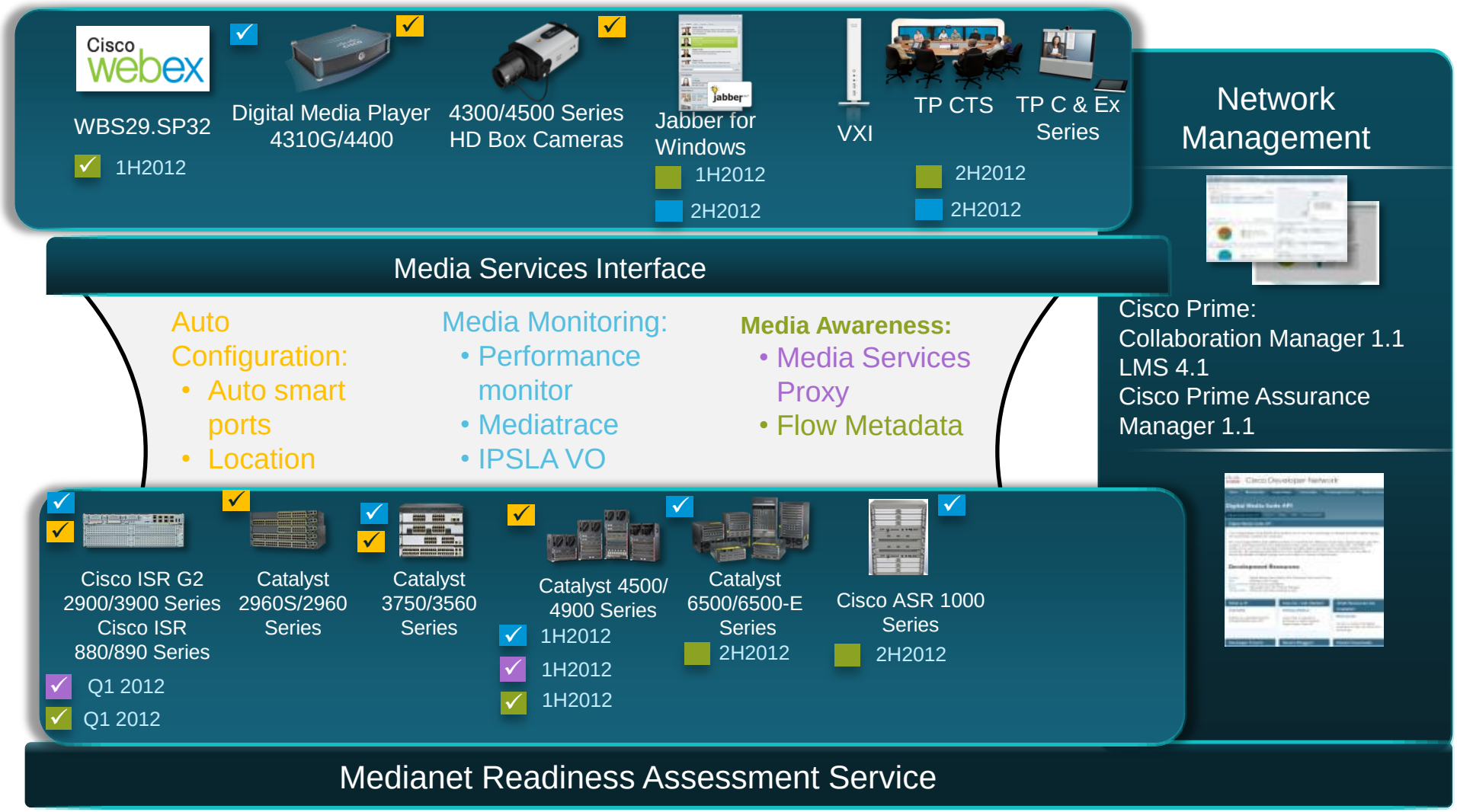
Producers	Notes	Platform/Release
MSI (application)	Direct application integration at source of flow, before flow even starts	WebEx, FR29SP32, Q1CY12 VXC, Q2CY12 CTS, Q3CY12 Tandberg, TC6/TE6, Q3CY12
NBAR (routers)	DPI used to create metadata attributes then share downstream	ISRG2 15.2(4)M Q3CY12 ASR1k,
MSP (routers & switches)	Light-weight DPI to create metadata attributes. Used locally or downstream	ISRG2 15.2(3)T Q2CY12 Catalyst 4k 15.1(1)SG Q3CY12

Metadata Consumers
What can use Metadata

Consumer	Function	Platform/Release
QoS / C3PL	QoS services (match, remark, WRED, shape etc)	ISRG2 15.2(3)T Q2CY12 ASR1k XE3.7 Q3CY12 Cat4k 15.1(1)SG Q3CY12 Cat6k/Sup2T MA2 Q4CY12
Flexible NetFlow (FNF)	Reporting of metadata attributes	ISRG2 15.2(4)M Q3CY12
Performance Monitoring		ISRG2 15.2(3)T Q2CY12 ASR1k XE3.7 Q3CY12
Policy Based Routing	Determination of path based on metadata attribute	ISRG2 Q4CY12

Medianet support

Medianet Feature Availability



Autoconfiguration

Media Monitoring

Media Awareness

Media Services Proxy

Datasheet: http://www.cisco.com/en/US/prod/collateral/routers/ps10536/data_sheet_c78-612429.html

Conslusion

Medianet is a solution that includes components within the end systems, network and management

Medianet features assist in service validation, troubleshooting, and accelerate video application deployment

Planning, Pre-Deployment

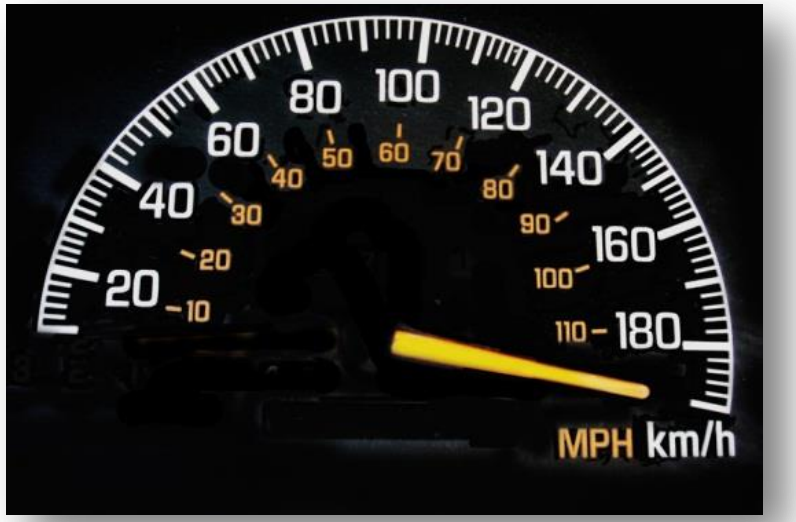
- IPSLA VO, Performance-Monitor

Troubleshooting

- Performance Monitor, Mediatrace, CPCM, IPSLA VO

Scalable Control and Policy

- Media Service Proxy, Auto Smart Ports, Metadata, MSI



Kde najít informace?

Additional Medianet Resources

- **Medianet on Cisco.com:** **Part of SRND!**
  http://www.cisco.com/go/medianet

  Autoconfiguration
  http://www.cisco.com/go/autoconfiguration

  Media Monitoring
  http://www.cisco.com/go/mediamonitoring

  MSI
  http://www.cisco.com/en/US/solutions/ns340/ns857/ns156/ns1094/media_services_interface.html

- **Medianet Knowledge Base**
  http://www.cisco.com/web/solutions/medianet/knowledgebase/index.html

- **Medianet Support Forum**
  https://supportforums.cisco.com/community/etc/medianet

- **Medianet Blogs**
  http://blogs.cisco.com/tag/medianet/

- **Cisco Developer Network for Medianet**
  http://developer.cisco.com/web/mnets

Prosíme, ohodnoťte tuto přednášku.

Děkujeme za pozornost.