



# Cisco Unified Communications Solution over IPv6



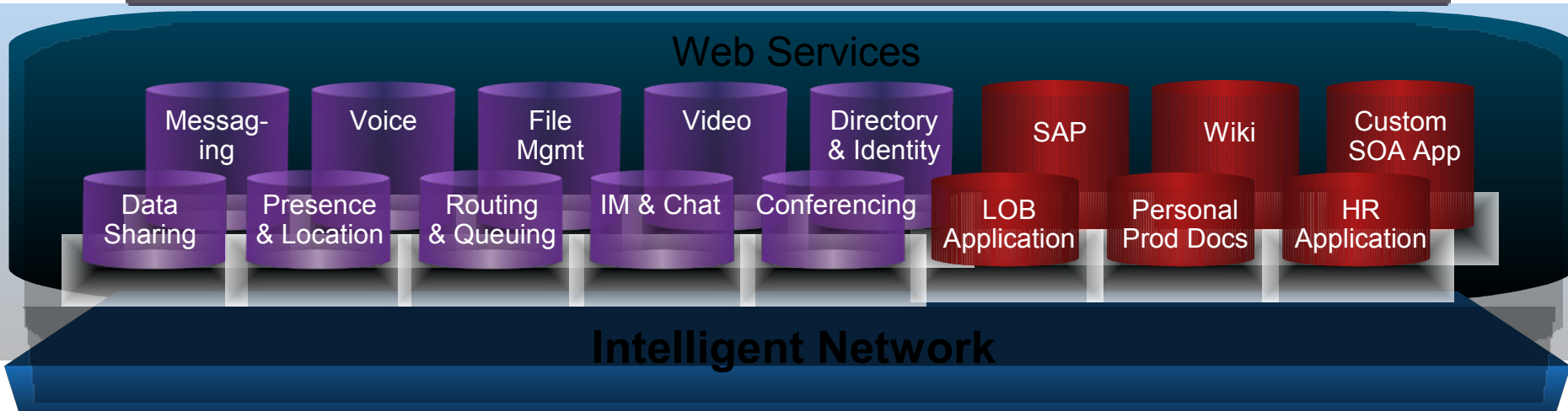
**Tobias Neumann**  
**Consulting System Engineer**  
**Unified Communications & TelePresence**  
**European Markets**  
**tneumann@cisco.com**  
**CCIE, CCIE Voice**



# Why Deploy IPv6

- IPv6 deployment is primarily driven by IPv4 address space exhaustion
- The number of applications, devices and services requiring IP addresses is rapidly increasing as the world becomes more and more IP centric
- As of March 2008, a daily updated report projected that the Internet Assigned Numbers Authority (IANA) pool of unallocated IPv4 addresses would be exhausted in Q1 2011, with the various Regional Internet Registries using up their allocations from IANA in Q2 2012
- A number of governments are starting to require support for IPv6 in new equipment.
  - The European Commission has formulated an action plan for a fast adoption of IPv6 by member countries
  - The U.S. Government has specified that the network backbones of all federal agencies must be capable of deploying IPv6 by June 2008.
  - The Peoples Republic of China has a 5 year plan for deployment of IPv6 called the *China Next Generation Internet*.
- IPv6 has a number of key benefits in comparison with IPv4.....

# Cisco Collaboration Architecture



# Cisco Unified Communications

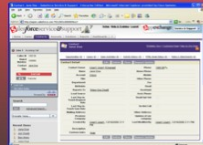
## Workspaces



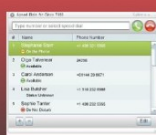
## Business Applications



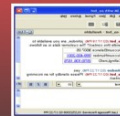
Sametime



Business Mashups



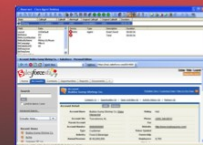
Widgets



Expert Advisor

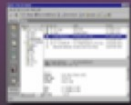


OCS



Agent Desktop

## Applications



Cisco Unity Messaging



Unified MeetingPlace Conferencing



Unified Customer Contact



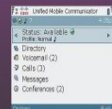
Unified Video Advantage



Unified Workspace Licensing



Unified App Environment



Mobile Communicator

## Services



Cisco Unified Presence



UCM



HUCS



WebEx Connect

## Infrastructure



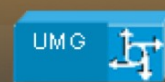
Routing



Switching



Network Mgmt



Messaging Gateway



QoS



Security/Policy



Session Border Control

# IPv4 and IPv6 – Icons and Terminology



## IPv4 Only

Device communicates with and understands IPv4 addresses only



## IPv6 Only

Device communicates with and understands IPv6 addresses only



## Dual Stack – IPv4 and IPv6

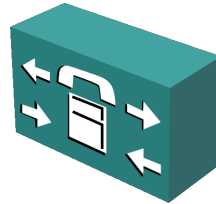
Device communicates with and understands both IPv4 and IPv6 addresses



## IPv6 Aware

Device communicates with IPv4 addresses, but can receive and understand IPv6 addresses embedded in Application PDUs – Typically used by applications which use IPv4 to transport IPv6 information

# Cisco Unified Communications over IPv6



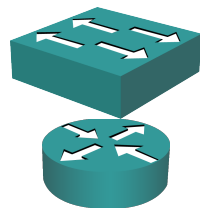
Cisco Unified Communications Manager 7.1 (Call Control and Services)



Cisco Integrated Services Router (Voice Gateways and Media Resources)

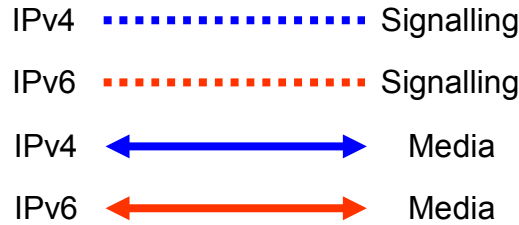
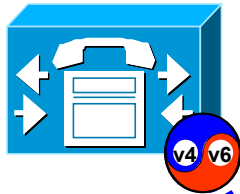


Cisco Unified IP Phones



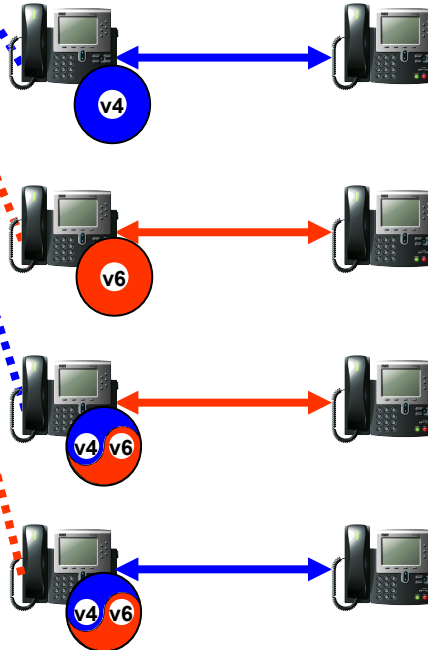
Cisco Network Infrastructure & Services (DHCP, HRSP,...)

# IPv6 – CUCM Phone Signaling & Addressing Options

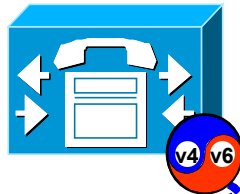


Only SCCP based  
Phones support  
IPv6 today:

- 7906G, 7911G
- 7931G
- 7941G, 7941GE
- 7942G, 7945G
- 7961G, 7961GE
- 7962G, 7965G
- 7970G, 7971G-GE
- 7975G



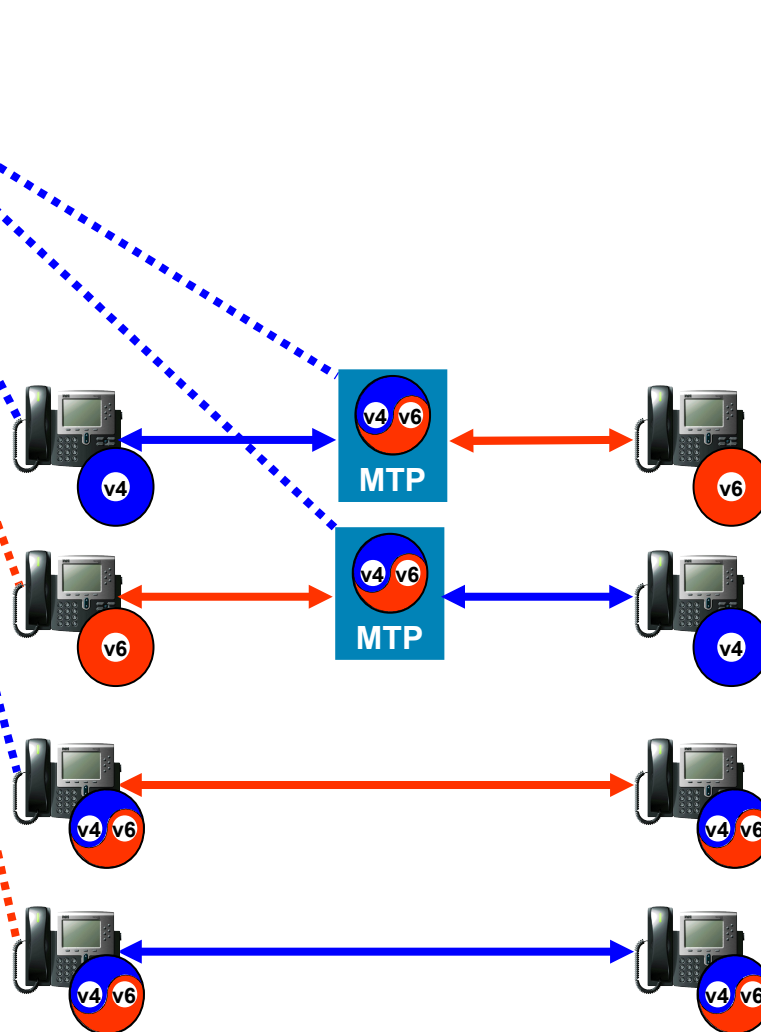
# IPv6 – CUCM Phone Signaling and Media Options



- IPv4 ⋯ Signalling
- IPv6 ⋯ Signalling
- IPv4 ↔ Media
- IPv6 ↔ Media

IPv6 is supported by the following SCCP based Phones :

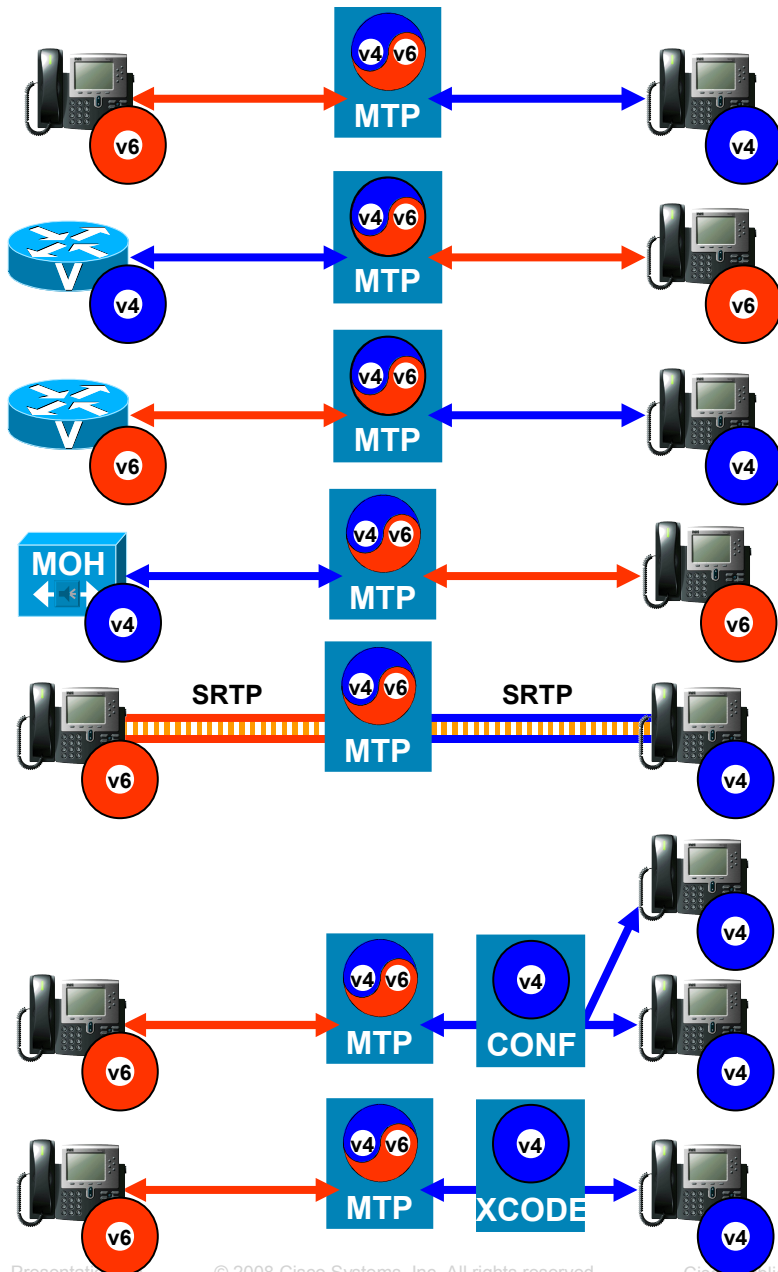
7906G, 7911G  
 7931G  
 7941G, 7941GE  
 7942G, 7945G  
 7961G, 7961GE  
 7962G, 7965G  
 7970G, 7971G-GE  
 7975G



For IP Addressing Mode mismatches between Phones - CUCM inserts an MTP for IPv4 ↔ IPv6 conversion

Dual Stack Phones use the Cluster-wide “IP Addressing mode for Media Preference” to select addressing mode (IPv4 or IPv6) for media between phones.

# IPv6 – Media Termination Points (MTPs)



**MTPs for IP Address Translation**  
 IOS H/W (NM-HDV2 with PVD M2, PVD M DSPs) and IOS S/W MTPs support IPv4  $\leftrightarrow$  IPv6 Media Translation for devices with mismatched media address settings

**Unicast MOH** supports IPv4 only  
**Annunciator** supports IPv4 only  
 Both Unicast MOH and Annunciator require an MTP to convert IPv4 RTP streams to IPv6

IPv6 devices do not support Multicast MOH

**Encrypted Media**  
 IPv4  $\leftrightarrow$  IPv6 MTPs transparently pass SRTP streams

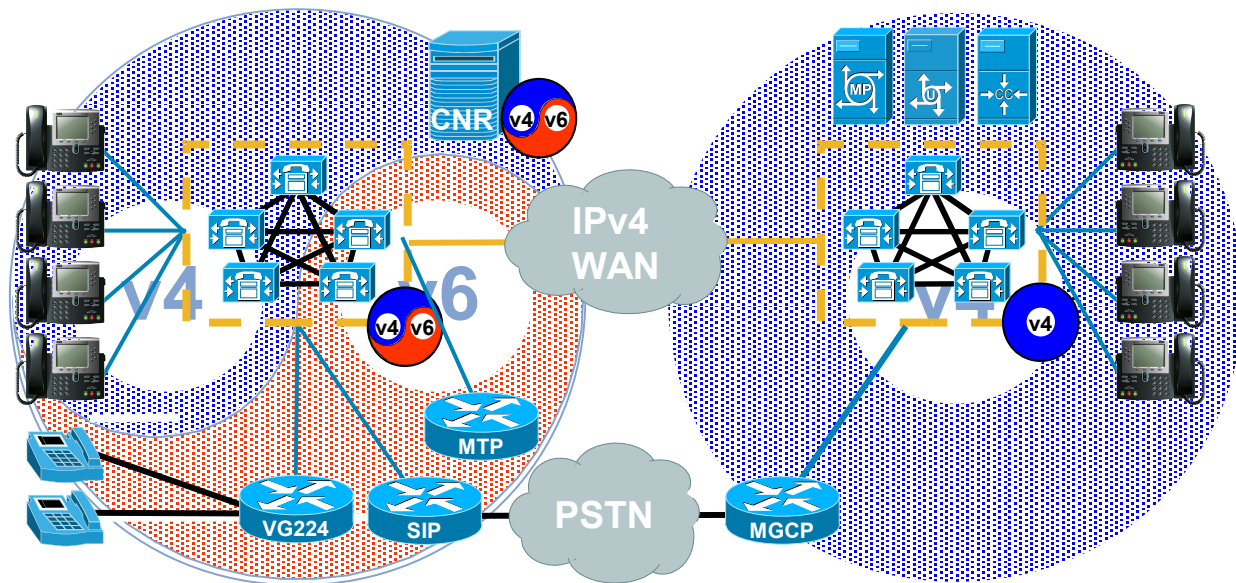
**Conferencing** resources support IPv4 only  
**Transcoding** resources support IPv4 only  
 Both Conferencing and Transcoding resources require MTPs for IPv6 media streams

# Cisco Unified Communications over IPv6

## Deployment Guidelines

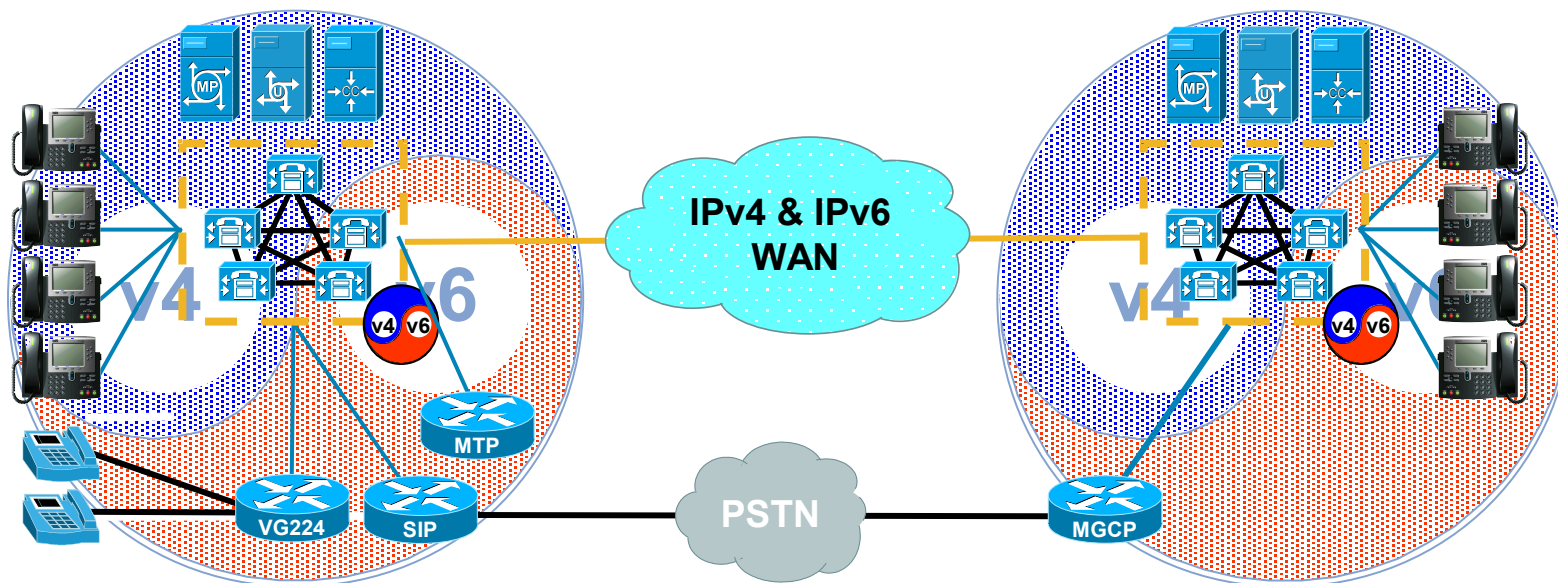


# IPv6 Deployment Options – Separate Dual Stack Cluster



- Single Site Deployment Model
- Separate Dual Stack CUCM cluster connected to production IPv4 only cluster
- IPv4 Trunk between clusters
- IPv4 or Dual Stack Phones and Gateways
- IPv4 WAN between clusters
- Dual Stack IP Phones – Addressing Mode set to IPv4 and IPv6
- Signaling Preference IPv6
- Cluster-wide Media preference (IPv6)
- No IPv6 video, No IPv6 applications

# IPv6 Deployment Options – Multiple Dual Stack Clusters



- Multi Site Distributed Call Processing Deployment Model
- Multiple Dual Stack CUCM clusters connected via a Dual Stack WAN
- IPv4 or Dual Stack Phones and Gateways
- IPv4 and IPv6 WAN between clusters
- Dual Stack IP Phones – Addressing Mode set to IPv4 and IPv6
- Inter Cluster SIP trunks – Dual stack, Delayed Offer, ANAT Enabled
- Signaling Preference IPv6
- Cluster-wide Media preference set to IPv6
- Locations based Call Admission Control
- No IPv6 video, No IPv6 applications

# Cisco Unified Communications over IPv6



## Submission to the German IPv6 Contest





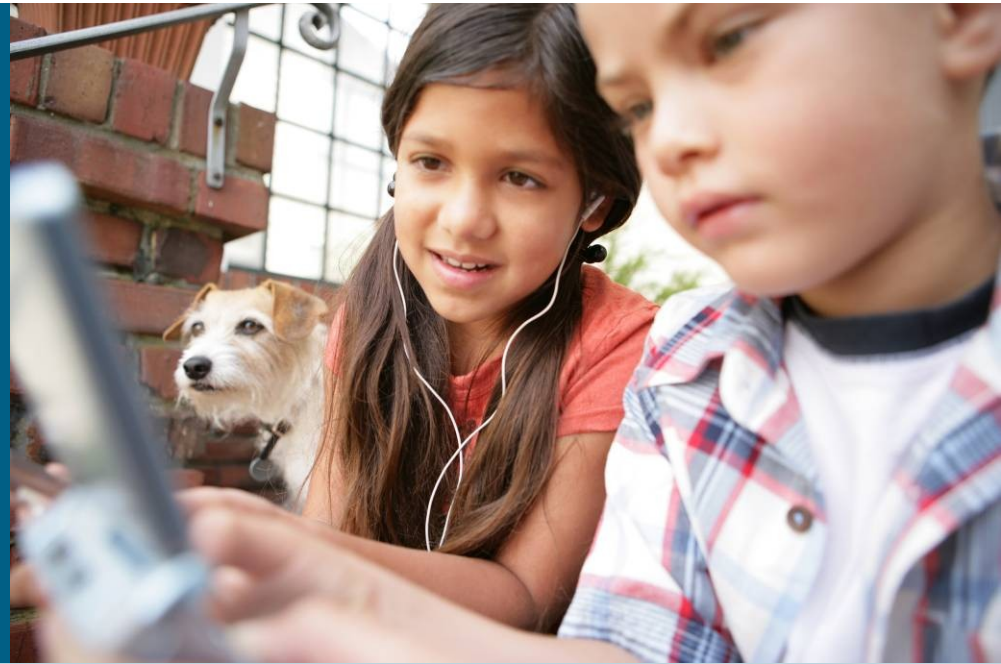
# Summary



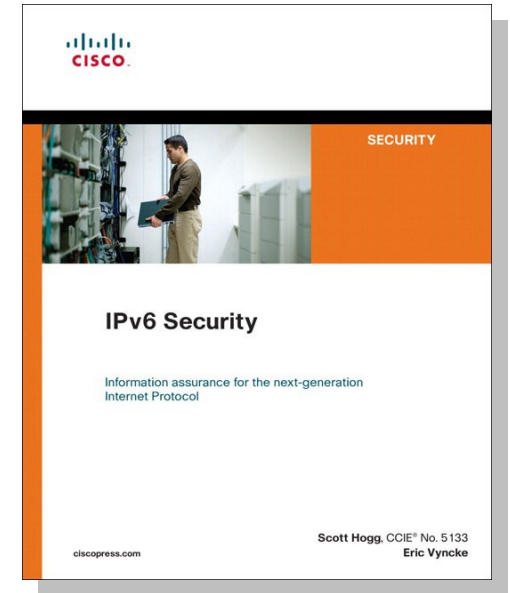
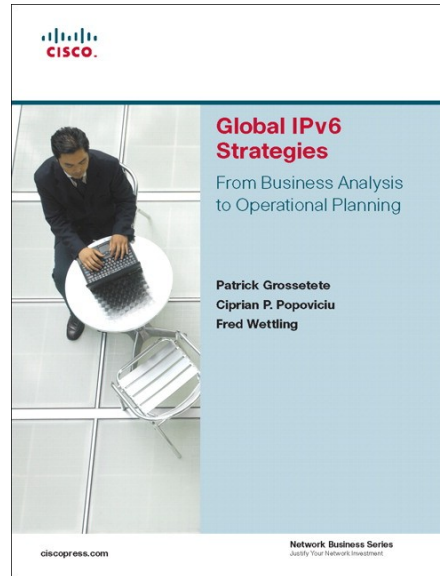
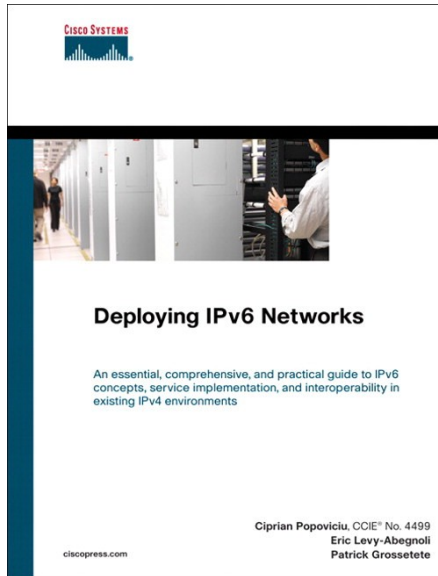
# Cisco Unified Communications over IPv6 for UC - Summary

- **IPv6 features are available today with CUCM 7.1(2)**
- **Deploy and understand IPv6 in a lab environment first**
- **Review your IPv6 design with your Cisco SE or Partner before production roll-out**
- **See “IPv6 and UC Whitepaper” for Guidance**

# Q and A



# References





**CISCO**