Instant Messaging, Presence and Collaboration

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Agenda

- An Introduction to Presence
- Presence in Cisco Unified Call Manager
- Cisco Unified Presence Server
- Presence Enabled Applications
  - Cisco IP Phone Messenger (IPPM)
  - Cisco Unified Personal Communicator
  - Using CUPS with Microsoft LCS
What is Presence Awareness

- **What is “Presence”?**
  Information about a person’s willingness and availability to communicate

- **Examples of presence in action today**
  IM “Buddy List” status indication
  “Busy” tone on traditional phone
  Contact Center Agent status

- **Publish / Subscribe / Notify**
  A Person can publish presence information to other users via a Presence Service.
  Users of the Presence Service can subscribe to receive Notification of Status Change of a Person
A Quick Review on SIP.....

- **The Session Initiation Protocol** (SIP) is an application layer control (signaling) protocol for:
  - creating
  - modifying and
  - terminating

  multimedia sessions with one or more participants

- SIP is defined in a number of RFC documents with the core document being RFC3261-5 plus many more!!!!!

**REQUEST FOR COMMENTS:** Through the Internet Society, engineers and computer scientists may publish discourse in the form of an RFC memorandum, either for peer review or simply to convey new concepts, information, or (occasionally) engineering humor. The Internet Engineering Task Force (IETF) adopts some of the proposals published in RFCs as Internet standards.
SIP Methods from RFC 3261

- **INVITE**—A user or service is being invited to participate in a multimedia session
- **ACK**—Confirms that a client has received a final response to an INVITE request
- **BYE**—Terminates an existing session; can be sent by any user agent (in a multiparty session)
- **CANCEL**—Cancels pending requests; does not terminate sessions that have been accepted
- **OPTIONS**—Queries the capabilities of servers
- **REGISTER**—Registers the user agent with the registrar server of a domain
SIP Payloads

- During a Session setup a SDP (Session description protocol) Payload will be used to negotiate the Media.
- SDP is just one example of a SIP Payload, different SIP applications can use different Payloads.

SIP INVITE To:5000@lab.net From 6000@lab.net

SDP Payload defined/Negotiates the Media (e.g., CODEC and EVENTS)
QUESTION:
So how do I do presence with SIP?

The Answer is SIMPLE! (Literally)

**SIP for Instant Messaging and Presence Leveraging Extensions**

- SIMPLE uses the SIP Framework defined in RFC3261-65 and others to provide SIP extensions to allow Presence and IM applications to use SIP.

- SIMPLE was based on work completed in
  - RFC 2778 A Model for Presence and Instant Messaging
  - RFC 2779 Instant Messaging / Presence Protocol Requirements
IETF SIMPLE Working Group

This working group focuses on the application of the Session Initiation Protocol (SIP, RFC 3261) to the suite of services collectively known as instant messaging and presence (IMP).

- A Presence Event Package for the Session Initiation Protocol (SIP) (RFC 3856)
- A Watcher Information Event Template-Package for the Session Initiation Protocol (SIP) (RFC 3857)
- An Extensible Markup Language (XML) Based Format for Watcher Information (RFC 3858)
- Indication of Message Composition for Instant Messaging (RFC 3994)
- Timed Presence Extensions to the Presence Information Data Format (PIDF) to Indicate Status Information for Past and Future Time Intervals (RFC 4481)
- RPID: Rich Presence Extensions to the Presence Information Data Format (PIDF) (RFC 4480)
- CIPID: Contact Information in Presence Information Data Format (RFC 4482)
- A Data Model for Presence (RFC 4479)
- A Session Initiation Protocol (SIP) Event Notification Extension for Resource Lists (RFC 4662)
- An Extensible Markup Language (XML) Based Format for Event Notification Filtering (RFC 4661)
- Functional Description of Event Notification Filtering (RFC 4660)
RFC2778: How does presence work? (1)
Starting with a Person.....

- A Person (PRESENITY) may use multiple communication services/devices
- The status of these devices can PUBLISHED to a presence Service.

PERSON “A”

Desk Phone  Smart Phone  IM Application  RFI Tag!!!! (Rich Presence)
RFC2778: How does presence work? (2) Publishing Status of Devices

A Person will **PUBLISH** their **PRESENTITY** using their SIP Address of record (AOR) Example= **jsmith@cisco.com**

They will publish the status of communication Services/Devices to the **PRESENT SERVICE** using their **PRESENTITY**

**RFC 3903:** A registration will have proceeded the **PUBLISH**
RFC2778: How does presence work? (3) Introducing the WATCHER

- A WATCHER can SUBSCRIBE (for a period of time) to receive updates on status changes for the PRESENITY

- There are two kinds of WATCHERS. SUBSCRIBERS POLLERS/FETCHERS

- A Watcher can (and most likely will) also have a Presentity
RFC2778: How does presence work? (4)

Events requiring NOTIFICATION

- On a Change of status the **PRESENITY** is updated on the Presence Server.
- The Presence Server will Notify all the subscribers of the **PRESENITY**
RFC2778: How does presence work? (4)

SIP Payload for events

Off-Hook Status Event

The Payload of a NOTIFY will carry a XML document using the PIDF Schema (Presence Interchange Data Format) owned by a PERSONA (RFC 4479/4480).

This is an XML document format detailing the updated status of PRESENITIES owned by a PERSONA.
RFC2778: How does presence work? (5)
What if I don’t want somebody to see me?

Applying Policy to Presence Information
How does presence work? Federation of Presence Servers

- The interconnection of Presence Servers is possible. This is called **FEDERATION**.

- **FEDERATION** could be between Presence server in an organisation, between organisations or to public Presence services.
How does Instant Messaging work? Using RFC3428 SIP MESSAGE Method

- RFC3428 details the SIP Message Method which can be used for Instant message services over SIP
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Cisco Unified Call Manager Presence

Presence with Call Manager Endpoints

- Presence Information can be displayed as Busy Indication Icons / Busy Lamps on Call Manager Endpoints
- Presence can be shown on Speed dials and also is available in Call list depending on model of endpoint.
- States include BUSY, IDLE and UNKNOWN

*BLF in Call lists required Enterprise parameter “BLF for Call Lists” to be enabled
Cisco Unified Call Manager Presence
Controlling Access with Presence Groups

- Restrictions to Presence Access can be provided with Presence Groups

- Trunks use Calling Search Spaces for Presence Subscription Restrictions
Cisco Unified Call Manager Presence

So is Call Manager a Presence Server?

- Call Manager will allow you to subscribe to the status of a Directory Number (Line)

  ![SUBSCRIBE](image)

- A Presence Server will allow you to subscribe to a Person and receive aggregated status across one or multiple devices.

  ![SUBSCRIBE](image)
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Cisco Unified Presence Server 1.0
Feature Content

- IP Phone Messenger
  Integrated IM capability within Cisco IP Phones

- Unified Personal Communicator Feature Server
  Data store, Presence aggregator, Application interface, Routing engine for Unified Personal Communicator

- SIMPLE Network Interface
  IETF Standard interface to pass/receive Presence information

- Click To Dial / Phone Monitoring interoperability with Microsoft LCS 2005 / Office Communicator
  CSTA to CTI gateway to support functionality of MOC
Cisco Unified Presence Server
Overview of CUPS Appliance

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM

Microsoft LCS

Other Presence application can use SIP/SIMPLE Interface (example: IBM Sametime)
Cisco Unified Presence Server

Overview of CUPS Appliance

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM
Cisco Unified Presence Server
Sync Agent replication from Call Manager DB

Cisco Unified Call Manager 5
- Call Manager Database
  - Licensing
  - CTI Manager
  - Call Control

Cisco Unified Presence Server
- Sync Agent

AXL SOAP

Tomcat

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM

Web Browser
Cisco Unified Presence Server
Licensing and User Activation on CUPS

- CUPS uses Call Manager Device Units to activate users on the Server
- Additional Units are required for some configurations

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM
Cisco Unified Presence Server

SIP Routing using the SIP Proxy Server

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM
Cisco Unified Presence Server

Presence Engine maintains reach-ability information

- Call Manager Database
- Licensing
- CTI Manager
- Call Control

- Cisco Unified Call Manager 5
- AXL SOAP

- Sync Agent
- Tomcat
- Presence Engine
- SIP Proxy

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM

- Web Browser
Cisco Unified Presence Server

SIP Proxy and Presence Engine Relationship

- Proxy provides routing function for Server
- The Proxy is able to route at a method/event level for apps
- Access to the server is based on Access control Lists. (Default is block all)
Cisco Unified Presence Server

IPPM: HTTP / SIP/SIMPLE Gateway

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM
Cisco Unified Presence Server
Unified Client Configuration download

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM
Cisco Unified Presence Server
Microsoft LCS Integration using uaCSTA

- Appliance Model
- Same OS as CUCM
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IP Phone Messenger

- IPPM provides an Integrated IM capability within Cisco IP Phones
- Server component provides HTTP/S to SIMPLE gateway
- Phone Service provide Messaging and Presence interface to end user
- Web Service provides user access to phone services setting and Broadcast message function
IP Phone Messenger

IPPM: HTTP / SIP/SIMPLE Gateway

- Appliance Model
- Same OS as CUCM
- Same Hardware as CUCM
Cisco Unified Personal Communicator (CUPS)

- Cisco Unified Personal Communicator features an easy-to-use interface that streamlines the communications experience and facilitates collaboration.
- CTI Desktop Control
- SIP Softphone
- Presence/Reachability
- Unity Connection Support
- Desktop Collaboration (using MeetingPlace Express)
- Supports Mac OSx and Windows XP clients
Cisco Unified Personal Communicator

Communication Hub

- **Menu, Icon and Mode Controls**
- **Contact List with current presence status and preferred contact method**
- **Recent Communication including access Unity Connection Voicemail**
- **Directory Search Control and Search results**
Cisco Unified Personal Communicator

Contact Groups and Presence

Preferred method of contact as defined by User

Available
Away
Busy
Idle
Presence not available

Right-Click provides access call and contact management
This is in addition to the Call Icons on the main hub view.
Cisco Unified Personal Communicator

Making a Call (1)

- A User would start a Call by selecting a Contact and a Call Medium
- The Conversation Dialogue is display on the Calling Client
Cisco Unified Personal Communicator

Making a Call (2)

- The Called Client will display a Toaster Popup Window

- This will allow the Called Client to:
  - Accept the Call as a Voice Call
  - Accept the Call as a Video Call
  - Forward the Call to Voicemail
Additional Conversation mediums can be added to the call

- Request Video
Cisco Unified Personal Communicator

Making a Call (4)

- Desktop sharing when enabled allows the sharing of any window, application or the entire desktop.
Cisco Unified Personal Communicator
Protocol Overview

- LDAP V3 Server
- Cisco Unity Connection
- IMAP
- HTTPS
- CTI-QBE
- SIMPLE
- SOAP
- SIP
- Cisco Call Manager Cluster
- Cisco Unified Presence Server (Presence Engine)
- Cisco Unified Presence Server (Profile Agent)
To login to a CUPC Client the User must have:

- CUPS/CUPC Enabled
- Exist in LDAP Directory
- Account on CCM
- Added to relevant Call Control & Application Profiles in CUPS
- CTI or UPC Device (if applicable)
Using CUPS with Microsoft LCS

Microsoft Office Communicator

- Microsoft Office Communicator is User Client for LCS
- MOC is a SIP User Agent (UA)
- The provide multiple methods of communication including:
  - Instant Messaging
  - Voice (Softphone)
  - Video (using PC Camera)
  - Application Sharing (using Net meeting)
  - White boarding (using Net meeting)
Using CUPS with Microsoft LCS
MOC/LOC Telephone Integration

PBX
Subscriber Phone

Protocol Conversion

LCS Server
Microsoft Office Communicator
Using CUPS with Microsoft LCS

CCM MOC/LOC Telephone Integration

- Call Manager 5
- CTI Manager
- CUPS CTIGW
- SIP/SIMPLE Info Method (RFC 2976)
- (CSTA)
- TCP or TLS
- LCS Server
- Subscriber Phone
- Microsoft Office Communicator
Using CUPS with Microsoft LCS
CSTA Communication

SIP INVITE
CSTA RequestSystemStatus
SIP 200 OK
CSTA RequestSystemStatusResponse
ACK

(Sequence of SIP INFO with CSTA messages)
Using CUPS with Microsoft LCS
MOC Telephone Integration

- Make Call/Click to Call
- Answer Call
- Clear/Hang-up Call
- Deflect Call
- Hold Call
- Single Step Transfer
- Retrieve call
- Generate Digit DTMF
- Reconnect Call
- Set Forwarding
- Set Do Not Disturb
- Get Forwarding
- Get Do Not Disturb

MOC VOIP Feature

MOC TDM/IP PBX
Using CUPS with Microsoft LCS
Providing Telephone Presence

- Current Presence is displayed by the MOC client
- Example: Smart Tags (Green Dots) show users are available
Using CUPS with Microsoft LCS
Providing Telephone Presence

- Current Presence is displayed by the MOC client
- Example: Smart Tags (Green Dots) show users are available
- With telephone integration telephony presence is now indicated by these tags
What have we learned?

- Examined what presence delivers and how it works
- How presence functionality is imbedded in Call Manager
- The Architecture of the Cisco Unified Presence Server
- Some of Applications that can use the services of the Cisco Presence Server
  - IP Phone Messenger
  - Cisco Unified Personal Communicator
  - Microsoft Live Communications Server 2005
  - Applications that Support SIP/SIMPLE
Q and A