What You Make Possible
Jabber Web and SDK Application Integration
BRKUCC-2663
Abstract

With Jabber Web the great capabilities found in the Jabber clients and also be accessed and utilised directly from a web browser. Also using the Cisco Jabber Software Development Kit (SDK) you can integrate Cisco Unified Communications capabilities into any web application easily and quickly. Application developers, customers, and partners alike can take advantage of this powerful SDK to incorporate voice, video, instant messaging (IM), Presence, voice messaging, and conferencing capabilities. Join this session to hear about how the Jabber web toolkit enables products and services to be built on top of the Cisco collaboration portfolio. This session will explore the Jabber Web client and we will also discuss how the toolkit can be used to add value to your existing collaboration portfolio by incorporating collaboration capabilities pervasively within your line of business application or web portal. UC/Video
Agenda

- Web Browsers & UC/Video Overview
- Cisco Browser-based Collaboration Applications
- Cisco Jabber SDK … Extending UC/Video to Web Apps
- HTML5 & “WebRTC” Advancements
- Future Possibilities for Web-based UC/Video
Web Browser Technology Evolution
Has Come A Long Way in A Relatively Short Time …

Explore Interactively via “The Evolution of the Web”
… But Notable UC/Video Capabilities Missing from Browsers

Plugins and native apps fill these gaps

- Softphone engine
- Real-time voice codecs
- Real-time video codecs
- Real-time data/content sharing
- Call signalling
- Media encryption

- Ability to send media to other endpoints
- Notifications
- Firewall traversal negotiation
- Peripheral controls
- System activity detection
UC/Video Is Not Broadly Deployable Today in Browsers Alone

Plugins or native apps that browsers can launch are required
Cisco Strategy for Web
Extend SDKs, Build Standards, Develop Products

**SDK**
- Build on Jabber SDK
- Empower customers, ISV’s, partners, etc

**Standards**
- Work with standard bodies and industry shapers
- Openness, interoperability

**Products**
- Progressively introduce HTML5 & WebRTC
- e.g. “Jabber Web”
Cisco Jabber – The Power to Collaborate
All-in-One UC Application

All-in-one UC Application:
- Presence & IM
- Voice, Video, voice messaging
- Desktop sharing, conferencing

Collaborate from Any Workspace:
- PC, Mac, tablet, smart phone
- On-premises and Cloud
- Integration with Microsoft Office
Cisco Jabber: Leading Experience Across Broadest Range of Platforms and Devices

NEW … “off-the-shelf” Jabber for web browsers

Via Jabber SDK Today
Cisco Jabber SDK
Communications-enabled Workflows

Voice  Video
IM/Chat  Presence
Voice mail
Web Conferencing

Easily add collaboration to web applications & business processes

www.jabberdeveloper.com
Use Case: Pervasive UC in Enterprise Social Application

- Presence and UC capabilities throughout the application
- Cisco on Cisco Integration – Cisco Quad leverages public facing APIs

- Presence enabled
- IM / Chat enabled
- Click 2 WebEx enabled
- Click 2 Call enabled
Use Case: Salesforce.com Cisco UC Integration

• Use Cases: Immediate collaboration with people who are relevant to the current SFDC transaction and receive information from Salesforce workflows and approval processes

- Presence enabled
- IM / Chat enabled
- Click 2 Call enabled
- Click 2 Video enabled
Use Case: Cisco UC enabled Corporate Directory

- Search and connect: real-time collaboration within corporate directories
- Presence, Click 2 Voice / Video / IM / WebEx /
Use Case: Cisco Voice Enabled Gmail

- Cisco UC Enable Gmail and Google Apps for Business
- Cisco Jabber APIs
  - Web Softphone (AJAX)
  - IM / Presence (CAXL)
- User Capabilities
  - View Presence
  - Click 2 IM
  - Click 2 Call
- Deployment Requirement
  - Corporate VPN active session
- Demo: Completed Integration
  - [http://www.youtube.com/watch?v=pIGyEubjBrU](http://www.youtube.com/watch?v=pIGyEubjBrU)
The Jabber SDK
A Toolkit for Web Applications

Your UC enabled web application

Web Phone (AJAX)
CAXL (AJAX)
CUMI (REST)
WebEx (URL/XML)

Video Audio Call Cntl IM/Chat Presence Pub/Sub Voice mail Meeting

Cisco Unified Infrastructure

Communications Manager IM & Presence WebEx Messenger Unity Messaging WebEx Collaboration
Webphone Library

- Web Phone provides two operating modes
  - Control of a physical desk phone
  - Soft Phone functionality
- JavaScript library
- Browser plug-in required for media termination

Toolkit Name: Web Phone API
AJAX / jQuery
Webphone Library
Feature highlights

- Make voice or video call
- Answer, drop
- Hold/Resume
- Conference
- Transfer
- Enter DTMF
- Add/remove video
- Video adaptation and resolution
- Picture in Picture
- Resize
- Full screen
Webphone Library

- Web 2.0 (AJAX)
  - JavaScript libraries
  - Cisco Unified Communications Manager

- SIP
  - Browser phone User Interface
  - Browser Plug-in Softphone & Media
Voice Enable Your Webpage in 5 Easy Steps

- Configure CSF device on CUCM
- Install browser plugin on client machine
- Deploy javascript files to your web server (or local machine)
- Copy sample html code
- Enter a number to make a call

http://developer.cisco.com/web/jabber-developer/uc-enable-your-webpage-under-5-minutes-video
Webphone Library – Browser Plugin

- Support Matrix
  - Operating Systems:
    - Windows 7, XP, Vista
    - OSX 10.6, 10.7
  - Browsers:
    - Internet Explorer 8 & 9 (Win)
    - Firefox 3.6 + (Win & Mac)
    - Chrome 12 (Win & Mac)
    - Safari 5.1 (Mac)

- Soft phone:
  - Standards based codecs G.711, G.729 and G.722

- License Considerations
  - End user license required
  - CUCM License required for Soft phone
Cisco Ajax XMPP Library

- CAXL is a Web 2.0 JavaScript client SDK for integration of Instant messaging, Presence and Roster services
- Evolution of Jabbers former jabberwerx suite
- Common SDK for on-prem (CUP) and off-prem (Webex) integration
- Uses BOSH for server communication (Bidirectional streams over synchronous HTTP)
Cisco Ajax XMPP Library

- **1:1 Instant Messaging**
  - Ability to initiate and receive P2P IM
  - Supports xHTML-IM rich-text

- **Multi-user chat room (including Persistent Chat)**
  - Ability to create adhoc and persistent chat rooms
  - Ability to invite and be invited to chat rooms.
  - Ability to search for existing chat rooms

- **Pub/Sub Applications (e.g. for GeoLocation)**
  - Personal Eventing Protocol - Ability to create/publish/subscribe to pub/sub service nodes on a server.

- **User Authentication**

- **Roster Presence and Roster (Contacts List) management**
  - Ability to Add/Update/Remove Contacts
  - Ability to move contacts between groups

- **My presence**
  - Ability to set device presence
  - When integrated with CUP, SDK can be configured to set CAXL device presence to be the same as Presence engine composed presence.

- **Temporary Presence Subscriptions**
  - Ability to create temporary subscriptions to users who are not on your roster ("Quick Contacts")
  - Ability to do bulk subscribe/unsubscribe of temporary subscriptions. Useful in multi-page applications where each page may have a different list of users
Cisco Unity Connection REST APIs

- Web 2.0 interface for accessing Cisco Unity Connection Voicemail
- CUMI – Cisco Unity Messaging interface for retrieving and managing messages
- CUNI – Cisco Unity Notifications interface for managing notifications
- CUTI – Cisco Unity Telephony interface for telephone record and playback

API Name:
Cisco Unity Connection REST REST
Cisco Unity Connection REST APIs

- Provides access to a wide set of Unity Connection Messaging functionality:
  - Access to messages (including broadcast messages)
  - Send new messages
  - Reply to messages
  - Manage dispatch messages
  - Receive notifications of new messages
  - Telephone Record and Playback of messages

- Specify what messages are returned and how
  - Filtering
  - Sorting
WebEx Library

- The Webex Library provides a simple URL based interface to execute Webex Meeting functionality in a browser

- Cisco recommends Using the URL API for:
  - Authentication to the WebEx Page
  - Immediately starting/joining WebEx sessions
  - URL API Version Coincides with WBS Version

- Cisco also provides an advanced XML interface to Webex Meeting Center
WebEx Library

- Account Admin and Login
  - User account login
  - User account log out
  - User account creation
  - User account editing
  - User Profile

- Manage meetings
  - My WebEx features
  - Schedule meetings
  - Delete meetings
  - Host meetings
  - Join meetings
  - List meetings
  - Start meetings
Recommended Skillsets

- Industry standard web technologies
  - REST
  - JavaScript
  - jQuery
  - HTML

- API naming is easy to understand

- Developers don’t need to be UC or voice experts
Recommended Skillsets

- Industry standard web technologies
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  - JavaScript
  - jQuery
  - HTML

- API naming is easy to understand

- Developers don’t need to be UC or voice experts
main()
{
    printf("Hello World!");
}
Hello World!

The HTML Markup

```html
<body>
  <label for="numtodial">Number to dial:</label>
  <input type="text" id="numtodial">
  <button type="button" id="callbtn" disabled="true">Make Call</button>
  <div id="container">
    <div id="callcontainer">
      <div class="remotename"></div>
      <div id="videocontainer"></div>
    </div>
    <button type="button" class="endbtn">End Call</button>
  </div>
</body>
```

Renders simply as

Number to dial: [Input Field]  Make Call  End Call
Hello World!

Add some JavaScript

```javascript
$(document.body).ready(function() {
    var videoObject = null;
    $('#container').civic('init', {
        ready: function() {
            $(this).civic('registerPhone', {
                user: 'username', password: '', cucm: 'cucm ip address',
                success: function() {
                    $('#callbtn').attr('disabled', false);
                    $('#videocontainer').civic('createVideoWindow', {id: 'videocallobject', success: function(id) {
                        videoObject = $('#'+id)[0];
                    }});
                }
            })
        }
    })

    $('#callbtn').click(function() {
        var num = $('#numdial').val();
        $('#container').civic('startConversation', {participant: { recipient: num}, videoDirection: 'sendrecv', remoteVideoWindow: videoObject});
    })

    $('#container').bind('conversationStart', function(event, conversation) {
        $('#callcontainer').show();
        $('#container').civic('updateConversation', {addRemoteVideoWindow:'videocallobject'});
    })

    $('#callcontainer .endbtn').click(function() {
        $('#container').civic('endConversation');
    })

    $('#container').bind('conversationEnd', function(event, conversation) {
        $('#callcontainer').hide();
    })
});
```
Hello World!

Enter a number, and this is your HD video call
Hello World!

Now for Chat & Presence

Some new markup

```html
<body>
  <label for="jid">Chat with: </label>
  <input type="text" id="jid">
  <label for="message">Message: </label>
  <input type="text" id="message">
  <button type="button" id="chatbtn" disabled="disabled">Chat</button>
  <div id="IMdialog" class="IMdialog"></div>
</body>
```

Rendered simply as:

Chat with: [Input field]
Message: [Input field] Chat
Hello World!

Include the following lines of Javascript

```javascript
var connectArgs = {
    httpBindingURL: 'com:7335/httpbinding'
};
jabberwerx._config.unsecureAllowed=true;
jabberwerx._config.serviceDiscoveryEnabled=false;$(document.body).ready(function() {
    client = new jabberwerx.Client("MyClient");
    controller = new jabberwerx.RosterController(client);
    client.connect("", connectArgs);
});
$('#chatbtn').click(function() {
    var jid = $('#jid').val();
    var message = $('#message').val();
    client.sendMessage(jid, message);
});

client.event("messageReceived").bind(function(evt) {
    var message = evt.data;
    var body = message.getBody();
    if (body) {
        var incomingIM = '<div'+message.getFrom()+': '+body+'</div>';
        $('#'IMdialog').append(incomingIM);
    }
});
```
Hello World!

Let's test!

Chat with: [mags]
Message: Hi Mags
me: Hi Mags
mags: [mags]
: Hi there
mags: [mags]
: Not just chats, but federated chats :(
Hello World!

Now to light up your app

Some HTML to represent a name and their presence state

```
<span id="headerName">Mags Mora</span>
```

In JavaScript register for presence updates

```
client.event("presenceReceived").bind(function(evt) {
    var presence = evt.data;
    var jidStr = evt.data.getFromJID().getBareJIDString();
    if (jidStr == 'mags') {
        var presenceDisplay = presence.getShow() || 'available';
        //
        $('#renderPresence').attr('class', presenceDisplay).text(presenceDisplay);
        $('#renderPresence').text(presenceDisplay);
    }
});
```

Resulting in:

```
Mags Mora
```
Getting Started –Cisco Developer Network

- Download SDKs, Samples, Videos, Community
- www.jabberdeveloper.com

The power of UC in your web app

The Cisco Jabber™ tool kit makes enabling unified communications in your web app easy. Allow your users to initiate a call, manage voice mail, work with instant messaging, and conduct meetings with WebEx all within your existing web application.
Introducing “Jabber Web”
― Jabber Web‖ Overview

- Browser-based Jabber UC/video for employees
- Primary client for some, alternative client for others
- Sessions from browser to browser, to UC/video endpoints, to PSTN
- Desktop initial focus … targeting mobile over time
- Initially, on-prem web server deployment with support for cloud services, i.e. IM/P, meetings – cloud-based deployment model targeted in future
- Targeting 1st release by 1H CY13 *

* Partially execute committed, subject to change pending follow-on execute commitments. Images for illustration purpose only. Final UI subject to change.
“Jabber Web” Capabilities

Planned for 1st release …

• Contacts
• IM & Presence
• Voice/Video (plugin)
• Notifications
• Conferencing
• WebEx Meetings
• Jabber for Everyone
• SSO
• Localisations
• Persistent Chat
Targeted Deployment Options

Jabber Web on Premise

Outside

1. CUCM IM/P
2. WebEx Messenger IM/P
3. WebEx Meetings Server
4. WebEx Meetings

Enterprise

1. CUCM
2. Unity Connection
3. WebEx Meetings
4. CUCM IM/P

Jabber Web Client App

Plugin or HTML5 “WebRTC”

NOTE: subsequent phases targeting Jabber Web (a) WebRTC support, (b) deployed in cloud, (c) supporting enterprise firewall traversal.
HTML5 & “WebRTC” Advancements
HTML5 Overview
Actually, HTML5 & Friends … Standards Finalising in Parallel with Implementations

SEMANTICS
- `<!DOCTYPE html>`
- `<footer>`
- `<header>`
- `<audio>`
- MathML
- `<section>`
- `<video>`
- `<time>`
- `<output>`

OFFLINE / STORAGE
- Application Cache
- IndexedDB
- `localStorage`

STYLING
- `border-radius`
- `columns`
- `border-image`
- CSS3
- `shadows`
- backgrounds
- `transitions`
- animations

MEDIA & GRAPHICS
- WebRTC
- RTCWeb
- `<audio>`
- `<video>`
- `<canvas>`
- WebGL
- SVG

INTEGRATION
- Drag & Drop
- Touch Events
- Geolocation
- Full Screen

PERFORMANCE
- XMLHttpRequest
- Web Sockets
- `window.history`
Browser Support of HTML5
Steadily Increasing Trend Across Browsers

Source: http://html5test.com/results/desktop.html
Demonstration – HTML5 Apps
Interactive Voice, Video, Data in Web Browsers

A Journey

Vendor A Browser with Web App X

Native, Zero Plugin

Vendor B Browser with Web App X
Notable Challenges

- Media traversal through firewalls, NAT
- Validating identity of person calling
- Optimising real-time traffic performance
- Securing browsers and media
Standards Efforts
Cisco Playing Key Role

- **RTCWeb Working Group**
  - Primary effort in IETF
  - Cullen Jennings of Cisco is co-chair
- **Defining how browsers communicate with others … largely re-using existing protocols**
- **Notable documents …**
  - draft-ietf-rtcweb-audio
  - draft-ietf-rtcweb-data-channel
  - draft-ietf-rtcweb-jsep
  - draft-ietf-rtcweb-overview
  - draft-ietf-rtcweb-qos
  - draft-ietf-rtcweb-rtp-usage
  - draft-ietf-rtcweb-security-arch
  - draft-ietf-rtcweb-use-cases-and-requirements

- **WebRTC Working Group**
  - Primary effort in W3C
  - Cullen Jennings of Cisco co-authors draft
- **Defining how Web applications access browser real-time communications, i.e. API’s**
- **Notable documents …**
  - [WebRTC 1.0: Real-time Communication Between Browsers](#)
  - [Media Capture and Streams](#)
  - [Media Capture Scenarios](#)
Browser Architecture
High-level Browser-to-Browser Real-time Communications

Voice, Video via SRTP

Web App X via HTTP/HTTPS (e.g. HTML, CSS, JavaScript)
Browser Architecture
Closer Look at Enhancements for Real-time Communications

- Access to mic, camera
- Audio, video codecs
- RTP for interactive media, lip sync, etc
- SRTP media encryption using DTLS keying
- ICE for NAT/firewall traversal
- SCTP/DTLS for real-time data, e.g. games
- SDP-based offer/answer negotiation

- Web App (HTML, CSS, JavaScript)
- Media Control APIs
- Other Browser APIs
- Camera, Microphone, Access
- Audio/Video Engine RTP Stack
- ICE Engine
- Codecs
- DTLS/SRTP Transport
- Data SCTP/DTLS
- Offer/Answer Signalling Controller

= enhancement to browser
= app using new browser APIs
Good Progress on Technology Agreement

Though Some Significant TBDs

**CONVERGING**

- Audio Codecs … G.711, Opus
- Signalling … SDP-based offer/answer using JavaScript
- Firewall/NAT Traversal … ICE, STUN, TURN
- Media Encryption … DTLS-keyed SRTP
- Media Consent … ICE/STUN
- Identity … identity provider model
- QoS … DiffServ Code Point markings to enhance WiFi, residential GWs, LTE links

**TBD**

- Video Codec(s) … VP8 vs H.264?
- Congestion Control … goals = minimise latency, quick reaction, consistent data flow
- Screen/Application Sharing
- Etc …
Browser Implementations of WebRTC

Initial Versions Coming to Market

Google Chrome
- Initial implementation in Chrome 23 Stable
- Actively contributing to standards efforts
- Contributing to open source, e.g. WebRTC.org

Mozilla Firefox
- Initial implementation in Firefox Aurora channel
- Actively working on open source implementation & contributing to standards efforts
- Cisco contributed open source development, e.g. RFC4566-compliant SDP engine, call control application logic

Microsoft Internet Explorer
- Actively contributing to standards efforts
- Implementation status not public

Apple Safari
- Maintaining strict secrecy
Closer Look at Cisco Product Strategy for HTML5 / WebRTC

Expecting broad, standards-based, interoperable browser support of WebRTC within 1-2 years

- Offer compelling products today, using existing broadly adopted browser standards
- Architect new products for emerging browser capabilities, e.g. WebRTC
- Plan support for emerging browser capabilities as they become broadly available

Complement with native platform capabilities if necessary

Progressive adoption by customers & partners over time
Future Application Possibilities for Web-based UC/Video
Consumer Applications
Accelerated Integration of Real-time Communications … And Adoption

Social Networking

Interactive Gaming

Personal Email

Social Entertainment

TBD
Business
Measured Integration and Adoption Over Time

Virtual Meetings
Employee-to-Employee Calls
Public Interactions

Social Collaboration
Presentation Recording
TBD

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