CMS & Expressway Update

Cisco Virtual Update - 28. februar 2017

Speaker: Per Toft, CSE

Speaker: Morten Skanner, SE
Agenda CMS & Expressway Update

1. Cisco Meeting Server (CMS) overview
2. CMS What’s new?
3. Streaming solution with vBrick-Rev
4. Deployment: New CMS server hardware
5. Expressway – What’s new?
6. Attention Jabber iOS users: New Apple API, APNS, requires infrastructure upgrade!
Cisco Meeting Server Overview
Cisco Collaboration Architecture and Portfolio

Cisco Hybrid

Cisco Spark™ Service
Message | Meeting | Call

On-Premises and Partner Hosted

Cisco® Collaboration Edge Architecture
Unified Communications  Customer Care  Conferencing

Developer Extensions

Apps and Endpoints

Cisco DevNet
Cisco Meeting Server
Driving Pervasive Video Adoption

Rich User Experiences
Enhanced Productivity

Open, Interoperable, and Extensible
Investment Protection

Extensive Scale
IT Simplification
Cisco Meeting Server

Voice | Video | Web | Content

User Experience
Connect the way you want on the device of your choice

Virtually Limitless Scale
Everyone can meet and share together

Extensible Design
Flexible APIs to work with your business processes
Cisco Meeting Server Integrating the silos

Enterprise UC Client
Microsoft Lync / Cisco Jabber

Video-Conferencing / Telepresence
Cisco, Polycom

Audio & Web-Conferencing

IP Telephony Platform
Multi - Vendor
It’s Just a Meeting

**Video Conferencing**
- Feel as though you are really there with high-quality video experiences
- Make meetings more enjoyable with consistent experience on room, desktop, and mobile devices
- Make the experience work for you with flexible layouts and controls

**Audio Conferencing**
- Reduce IT effort with a solution that integrates with your existing dial plan
- Give your users more flexibility with:
  - Multiple ways to join
  - Customizable DTMF controls
  - Interactive voice response (IVR)

**Web Conferencing**
- Attend meetings on the move; join from your browser as user or guest
- Fully participate with audio, video, content sharing, and controls
- No plug-in with WebRTC-compatible browsers
- Maintain security with guest access or user login

Video Conferencing

Audio Conferencing

Web Conferencing
Cisco Meeting Server Spaces

Personal meetings
  Invite others to your personal meeting using your own join details
Scheduled meetings
  Cisco TelePresence Management Suite (including Microsoft Outlook integration)
  One-Button-to-Push support
Ad hoc conference with UCM
  Escalate 1:1 calls to add participants

SIP Endpoints Dial: conference@mysystem.com
Phone Dial: +1(408)555-5555

WebRTC Go to: https://join.mysystem.com
CMA Go to: your personal Space
Skype for Business
  Click: Join Skype Meeting

What are Cisco Meeting Server Spaces?

- A Space is an always available personal meeting room.
- Users can have multiple Spaces.
- Participants dial consistent addresses to reach a Space.
- Participants can be Voice/Video/Web/Skype and have a consistent experience.
- Synced from Active Directory.
- Can be defined via API or from admin UI.
Advanced Interoperability

Enjoy one consistent meeting experience from:

- Standards-based video endpoint
- Smartphone or laptop with Cisco Jabber®
- Cisco® Meeting App (native or with WebRTC compatible browser)
- Skype for Business
  - Audio, video, and bidirectional content sharing (RDP)
  - Scheduled Lync conferences
  - Lync buddy list integration
  - Gateway or Dual Home integration
Meet Your Way
Personal, Scheduled, or Ad Hoc Meetings

Meetings

- Virtual rooms for audio, video, and web
- Unlimited spaces: As many as you want, one for each person, project, and team
- Always available
- Connect with any device

Personal Meetings
- Invite others to meet at any time, with easy join capabilities

Scheduled meetings with Cisco TelePresence® Management Suite
- Simpler meeting scheduling:
  - Via web portal or Microsoft Outlook integration
- Easy meeting join:
  - One button to push on selected endpoints

Ad hoc meetings
- Easily escalate your call to include more people
  - Ad hoc escalation (Requires Cisco® Unified Communications Manager)
Enable anyone to join your meeting with the downloadable Cisco® Meeting App:

- Fully participate with the benefit of exceptional video quality from any location on any device
- Windows, Mac OS X and Apple iOS mobile, and with browsers using WebRTC
- Control your experience with
  - Layout controls
  - Mute audio and video
  - Device mobility and flexibility
# WebRTC: Browser Readiness for Collaboration

<table>
<thead>
<tr>
<th></th>
<th>IE/Win (10+ only)</th>
<th>Win 10 / Edge</th>
<th>Safari/Mac (7+ only)</th>
<th>FireFox (WebRTC)</th>
<th>Chrome (WebRTC)</th>
<th>Chromebook (WebRTC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VoIP</strong></td>
<td>No WebRTC – Plugin Only</td>
<td>WebRTC ORTC</td>
<td>No WebRTC – Plugin Only</td>
<td>Opus - G711 WebRTC</td>
<td>Opus - G711 WebRTC</td>
<td>Opus - G711 WebRTC</td>
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<tr>
<td><strong>Video</strong></td>
<td>No WebRTC – Plugin Only</td>
<td>WebRTC ORTC</td>
<td>No WebRTC – Plugin Only</td>
<td>H.264** / VP8</td>
<td>VP8 / H.264**</td>
<td>H.264** / VP8</td>
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<tr>
<td><strong>Share</strong></td>
<td>No WebRTC – Plugin Only</td>
<td>TBD</td>
<td>No WebRTC – Plugin Only</td>
<td>WebRTC (TBD*)</td>
<td>WebRTC (TBD*)</td>
<td>WebRTC (TBD*)</td>
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<tr>
<td><strong>Telephony</strong></td>
<td>Callback</td>
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</tbody>
</table>

* WebRTC Share standard extension definition underway
** OpenH.264 currently in Firefox
  Considers interoperability
Apple is rolling WebRTC video-chat into Safari iOS, OS X browsers

WebKit could soon get support for open conferencing standard

13 Apr 2016 at 20:28,

Apple is adding support for WebRTC videconferencing to WebKit, the engine at the heart of Safari. This will allow the web browser to handle websites and apps that offer WebRTC’s encrypted video-nattering.

The Cupertino maker of iThings has updated its WebKit website to add WebRTC to its list of open specifications as “in development.” No timeline has been given for when the support would be introduced in the iOS and OS X versions of Safari.

Reports emerged last Fall that Apple was looking to hire WebRTC developers, foreshadowing moves to adopt the open video and voice chat standard for web browsers.

Originally put forward by Google in 2011, the WebRTC API allows browser-based applications to make real-time voice or video calls as well as peer-to-peer data connection. WebRTC uses encryption and high quality video and audio encoding, adapts well to network conditions, and plays nice with other video and audio chat systems.

Microsoft Puts New Edge in WebRTC

A preview of the WebRTC 1.0 API is now available in the Edge browser, meaning Safari alone no longer supports the real-time communications protocol.

As many of you know, I have been a strong advocate of the Web-based transformation that WebRTC is enabling for real-time communications — and we have already seen the technology help usher in a number of telecom apps and UC/workflow entrants like Cisco Spark and Unify Circuit, as well as a range of new applications and integrations. However, a shadow has hung over WebRTC despite the forward progress.

For the last three years, the first comment out of naysayers is that Microsoft and Apple do not support WebRTC. Never mind that Chrome and Firefox are gaining in popularity; the fact that Edge and Safari did not support WebRTC has long served as the primary reason to continue with proprietary implementations, often based on last decade or even last millennium technology.

Now the number of holdouts is down to one: Microsoft this week announced that it is stepping up to provide WebRTC 1.0 support, while increasing the drive for the additional functionality in Object RTC (ORTC).
Scale Meetings to Include Everyone

- **Key features:**
  - Preserve the user experience as meetings scale seamlessly across servers in different locations
  - Each user is connected to their local server; bandwidth is optimized between servers
  - Servers can be deployed in redundant configurations

- **Key benefits:**
  - Optimal user experience and simplified management of meetings
  - Video bandwidth savings
  - Enhanced resilience
CMS – What’s new?
## New in Cisco Meeting Server

<table>
<thead>
<tr>
<th>Stronger Integration with Collaboration Endpoints</th>
</tr>
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<tbody>
<tr>
<td>Improved Conference Experience</td>
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<tr>
<td>Single Collaboration Edge</td>
</tr>
<tr>
<td>Licensing Enhancements</td>
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<tr>
<td>Capability to Stream Conferences</td>
</tr>
<tr>
<td>Increased Solution Scale</td>
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</tbody>
</table>
Cisco Meeting Server Architecture

Fundamental Architectural Components

External

Cisco Meeting App
Lync/S4B Direct Federation
Cisco Meeting App WebRTC

Edge Software

Load Balancer
TURN Server
Web Bridge

XMPP Server
Call Bridge
Database

Core Software

Internal

Cisco Meeting App
Lync FE
Call Control SIP / H.323
Active Directory
Cisco Meeting App
Optimizing Scale and Resource Usage
Call Bridge Groups

- Improved hardware utilization
  - Reduces cascading
  - Adds load balancing

- Optimized experience with a distributed architecture
Cisco Meeting Server

- CallBridge Groups and Intelligent Load balancing
- Introduced in CMS 2.1
- To group CallBridges in same Location
- Used to reject calls rather than reduce resolution when capacity is reached
- Enables Load Balancing of CallBridges within same CallBridge groups
- CallBridge Groups require Cisco Call Manager
  - Requires “INVITE with Replaces” (not supported by Cisco VCS)
- RTT of 100ms within CallBridge Group, RTT of 300ms within cluster
- Call routing for CallBridge Groups relies on Cisco Call Manager:
  - Route Patterns
  - Route Groups
  - Route Lists
Cisco Meeting Server

• Load Balancing

What can be set?
• Maximum load percentage for callBridge
• Maximum percentage of free capacity before rejecting existing conferences
• Maximum percentage of free capacity before rejecting new conferences

Max Load Limit
100%

EXISTING CONFERENCE THRESHOLD
80%

NEW CONFERENCE THRESHOLD
50%
ActiveControl with Meeting Server
Improved functionality with Collaboration Endpoints

- With Cisco TelePresence endpoints:
  - View participant list (including S4B clients)
  - Change local layout
  - Drop participants

- Requires CE8.3 or later
ActiveControl

- CE8.3 Required
  - Participant list (including S4B Clients)
  - Drop

![ActiveControl Interface](image.png)
ActiveControl

• CE8.3 Required
  • Participant list (inc S4B clients)
  • Change layouts
Video Streaming and Recording

- Stream live meetings to reach a wider audience
- Easily access live stream using third-party video portal, such as Vbrick Rev
- Streaming included with existing recording SKUs
  - $10,000 USD for the starter kit with one recording/streaming port
  - $1,500 USD per additional recording/streaming port
- Each port can be used for recording or streaming
  - Record your conference for distribution and playback later
  - Standard MPEG-4 record format for easy video playback
Cisco Meeting Server

• Recorder Deployment

  Recorder
  • 720p30 H.264 Video Coding
  • 64kbps AAC-LC
  • 2 recordings per physical core
  • 16 physical core maximum
  • Requires Recorder license

  NFS Sizing
  • Maximum 1GB per hour

  Recorder acts as client to XMPP server

  XMPP Server
  Call Bridge
  Recorder
  Network File Server (NFS)
Cisco Meeting Server 2.1

• Streamer Deployment

Streamer

• RTMP stream to external streaming server with bitrate of 2Mbps
• 720p30 H.264 Video Coding
• 64kbps AAC-LC
• 6 streams per vCPU and 1GB of memory
• Maximum 32 vCPUs
• Use recorder licenses for streaming

Streamer acts as client to XMPP server

XMPP Server

Call Bridge

Streamer

rtmp://xxx/xxx
Cisco Meeting Server 2.1

- Streaming and Recording Solution

The Vbrick solution can provide the ability to distribute both recorded and streamed content and provides a mechanism for users to consume this content.
Live Stream Your Meeting

LIVE STREAMING FROM A VIDEO CONFERENCE SYSTEM SOURCE WITH GLOBAL REACH

Use a VC system or endpoint as a webcast source

Integrated recording for after event playback
### Recording/Streaming Solution Components with Rev

<table>
<thead>
<tr>
<th>Product</th>
<th>Recording / Streaming Platform</th>
<th>Transcoding</th>
<th>Video Portal</th>
<th>Live Events</th>
<th>Management/ Reporting</th>
<th>Streaming Origin Server</th>
<th>Content Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco Meeting Server (CMS)</td>
<td></td>
<td></td>
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<tr>
<td>Rev</td>
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<tr>
<td>Rev</td>
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<td></td>
<td>Distributed Media Engine (DME)</td>
</tr>
</tbody>
</table>

**Next-Gen REV dramatically simplifies the architecture**

- Cross-platform mobile support
- Cloud, On-premise and Hybrid deployment options
- Distributed, Elastic, and Highly Available
- Integrated streaming and content distribution
Cisco Meeting Server Integration

Manage CMS recordings seamlessly via REV

Record Meetings With CMS

Auto Upload For Management In Rev

Rev Extends CMS By:
- Sharing Recordings
- Collaborating
- Video Transcription & Search
- Enterprise Workflows
- Distribution & Caching
Add Value with Customization

Establish your brand

- IVR backsplash
- IVR voice prompts
- Customized WebRTC Splash screen
- Customized invitations
- Customize meeting controls
Branding

• IVR Backsplash

• IVR Voice Prompts
  • New voice prompts added
  • “passcode_or_blank_required_entry.wav”
  • “passcode_or_blank_timeout_entry.wav”

• WebRTC Splash screen
  • New Background images added
  • “passcode_or_blank_required_background.jpg”
  • “passcode_or_blank_timeout_background.jpg”

• WebRTC Logo

• Customize Invites

• Configuration Cheat sheet available
On Screen Text

- One message at a time.
- Duration configurable.
- Position – top/middle/bottom.
Other new Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host/Guest PIN’s</td>
<td>Ability to have different Host and Guest PIN’s</td>
</tr>
<tr>
<td>Multiple CDR Support</td>
<td>Support for up to 4 CDR receivers</td>
</tr>
<tr>
<td>Disconnect active calls</td>
<td>Calls are automatically ended when CMS detects no media for over 60 seconds</td>
</tr>
<tr>
<td>PMP for adhoc calls</td>
<td>Adhoc calls consume PMP licenses</td>
</tr>
</tbody>
</table>
Deployment: New server HW
High-Capacity Cisco Meeting Server 2000
Industry-Leading Scale

- Orderable Q1 CY2017
- Highest capacity in the industry
  - Enables customers to achieve user adoption at high scale
  - Up to 500 simultaneous HD calls
  - More participants can join, adapting resolution for each connection
  - Complements Meeting Server 1000
- Bare-metal hardware (no VMWare)
  - For maximum performance and simpler management

Powerful 6RU Cisco UCS® server:
- Based on Cisco UCS 5108 and 8 B200 blades
- GPL list price: $200,954 USD
- Product ID: CTI-CMS-2K-BUN-K9
Expressway & VCS X8.9.x
Session Objectives

• New Feature in X8.9
  • Edge services for CMS
  • IM&P Federation with SfB/O365
  • H.323 Registrations on Expressway C
  • MRA enhancements
  • System Admin Enhancements
Edge Services for Cisco Meeting Server 2.1
# External Federation – X8.9

<table>
<thead>
<tr>
<th>Services</th>
<th>Scenarios</th>
<th>Protocols</th>
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</thead>
<tbody>
<tr>
<td>IM&amp;P External Federation</td>
<td>Cisco on Cisco</td>
<td>(XMPP)</td>
</tr>
<tr>
<td></td>
<td>Cisco &lt;&gt; O365</td>
<td>(Microsoft SIP Simple(^1,3))</td>
</tr>
<tr>
<td></td>
<td>Cisco &lt;&gt; Skype for Business</td>
<td>(Microsoft SIP Simple(^1,3))</td>
</tr>
<tr>
<td>AV External Federation</td>
<td>Cisco &lt;&gt; Cisco</td>
<td>(SIP, H.323)</td>
</tr>
<tr>
<td></td>
<td>Cisco &lt;&gt; Standard Based</td>
<td>(SIP, H.323)</td>
</tr>
<tr>
<td></td>
<td>Cisco &lt;&gt; Cloud CMR</td>
<td>(SIP, H.323)</td>
</tr>
<tr>
<td></td>
<td>Cisco &lt;&gt; O365</td>
<td>(Microsoft SIP Simple(^2))</td>
</tr>
<tr>
<td></td>
<td>Cisco &lt;&gt; SfB</td>
<td>(Microsoft SIP Simple(^2))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) Requires IM&amp;P 11.5(1)SU2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Requires CMS 2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Preview</td>
</tr>
</tbody>
</table>

\(^1\) Requires CMS 2.1

\(^2\) Requires IM&P 11.5(1)SU2

\(^3\) Requires CMS 2.1
Skype™ for Business Federation (External Partner)

- SIP Federation with Microsoft ® Office 365 & S4B based partners directly
- S4B users can join your CMS based conferences
- B2B-based Open Video Federation with S4B client

Considerations:
- Basic domain allow-list capability
- TLS1.2, cipher suites, policy, et al security considerations
Skype™ for Business Federation (External Partner)

- Federate IM/P Workload with S4B-based partners
- Escalate IM/P session to A/V Session
- B2B-based Open Video Federation with S4B client

- Basic domain allow-list capability
- Policy and compliance (i.e. managed file transfer)
- TLS1.2, cipher suites, policy, et al security considerations
Skype for Business/O365 Integration Enhancement

• New Search Rule
• Detects the SIP variant and routes the signal/payload
  ➢ Search rules can now detect the SIP variant and will only route if it matches
Single Edge Solution

• Single Edge for Cisco Meeting Server deployments
  • Enabled multiple collaboration with Cisco Meeting Server
    ➢ Cisco collaboration endpoints, registered to Cisco Unified Communications Manager or Expressway
    ➢ Jabber clients, registered to Cisco Unified Communications Manager IM and Presence Service
    ➢ Cisco Meeting Server (CMS) spaces
    ➢ WebRTC Clients (CMS Web Proxy)
    ➢ Microsoft clients on Skype for Business infrastructure/Office 365 in other organizations
H.323 on Expressway C
Expressway Registrations Overview – X8.8

Expressway is now able to register SIP endpoints directly.
Registrations are enabled using the same top level licenses as used on CUCM:

- UCL Enhanced or higher enables Desktop Endpoints - LIC-EXP-DISK
- Telepresence Room Licenses enables Cisco and 3rd Party room based endpoints – LIC-EXP-ROOM

Registrations are hosted on Expressway C.
Expressway E is configured in proxy registration mode.
H.323 Registrations on Expressway-C – X8.9

- Registrations on Expressway C only
  - No support for remote registration planned
  - Prefer to educate customers on benefits of SIP!
- H.323 cannot distinguish between Room and Desktop Systems
  - Therefore all H.323 registrations will require a TP room license
Device and User based Licensing Model

- Option Keys for H.323 Endpoint Registrations on Expressway
- Room Systems License:

<table>
<thead>
<tr>
<th>Devices</th>
<th>Any H.323 Endpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option Key</td>
<td>116341Axxxx-xxxxxxx</td>
</tr>
<tr>
<td>xxxx is number of system license, e.g. 116341A50 for 50 Room Systems</td>
<td></td>
</tr>
</tbody>
</table>
Licensing and Consumption

Call scenarios that require Rich Media Session licenses to proceed

Business to Business Calls
Firewall Traversal Calls
consume 1 x RMS on Expressway-E

Business to Customer Calls
Jabber Guest Calls
consume 1 x RMS on Expressway-E

Interoperability Gateway Calls
i.e. MS Interop calls,
consume 1 x RMS on Expressway-C Gateway Calls

Registered Calls (no RMS required)
Calls between endpoints registered to Cisco Call control services
Calls to Cisco conferencing infrastructure or cloud services
Mobile and Remote Access Enhancements
Apple iOS cert-based authentication for Jabber over MRA

- Enables iOS ‘password-less’ Certificate-based SSO

- Leverages iOS9+
  *SFSafariViewController* (better UE), eliminates browser cross launch

- Requires Apple iOS 9+, SSO, UCM 11.5, some certificate distribution mechanism, and Jabber 11.8

- Authentication method remains between IdP and client browser
Apple Push Notification service (APNs) for IM

- Apple Push Notification services for IM requirements:
  - UCM & IMP 11.5(1)SU2
  - Expressway X8.9.1 (Only required for MRA)
  - Jabber for iOS 11.8 MR currently in beta

For more information, see Deploying Apple Push Notifications for the IM and Presence Service on the Cisco Unified Communications Manager IM and Presence Service Configuration and TechNotes page on Cisco.com.
Advanced Line Feature Support for 78xx/88xx

- Basic Lineside feature set available
- Shared line support with associated features (hold resume, merge, etc.)
- Multi-Line support

Shared Line, Multi-Line example

UCM 11.5(1) SU2 or later

Expressway

Internet

78xx, 88xx Series IP Phones

Firmware version: 11-5-1ES5

UCM 11.5(1)

X8.9 or later
Media Assure 1.1 Support over Edge

- a.k.a. Media Adaptation and Resilience Implementation (MARI)
- Advanced Packet Loss Resilience
- Introduces Edge support for advanced packet loss resilience mechanisms that increase video quality in an error prone environment

Cisco Jabber 11.8
CE 8.3
System Admin and Security Enhancement
Maintenance Mode

- Support Maintenance Mode in conjunction with the MRA feature
  - Enabled Maintenance Mode (on Expressway-E) - MRA Client in active call
  - XCP service remain operational until all active calls disconnected, what does this mean?
    - Active calls are left up and mid-call/re-registration messages (from specific MRA client which in active call) continue to proxy
    - XCP service remain active, therefore presence and IM continue to works
DSCP Classification X8.8

System > Quality of Service >

- Enhancing to include more granular marking control
Enhanced DSCP Classification (X8.9)

- DiffServ Code Point Marking
- DSCP Configuration
  - Support configure SDCP parameter by API and Web GUI
  - Configuration is available from Web GUI: Maintenance > Quality of Service
# Kommende updates

### Marts 2017

<table>
<thead>
<tr>
<th>Dato</th>
<th>Seminar/event</th>
<th>Målgruppe</th>
<th>Sted</th>
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<tbody>
<tr>
<td>1.</td>
<td>Security Everywhere</td>
<td>Kunder</td>
<td>Hørsholm, Søhuset</td>
</tr>
<tr>
<td>2.</td>
<td>Security Everywhere</td>
<td>Kunder</td>
<td>Aarhus, Aros Museum, Sunset Lounge</td>
</tr>
<tr>
<td>3.</td>
<td>Cisco Tech Update – Datacenter UCS og CloudCenter</td>
<td>Slukkende/Partnere</td>
<td>København</td>
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<tr>
<td>4.</td>
<td>Cisco Virtual Update – Prime Infrastructure Management</td>
<td>Slukkende/Partnere</td>
<td>Online</td>
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<tr>
<td>5.</td>
<td>Cisco Virtual Update – Tetration Applikations Analytics</td>
<td>Slukkende/Partnere</td>
<td>Online</td>
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<tr>
<td>6.</td>
<td>Cisco Connect</td>
<td>Kunder</td>
<td>Øksnehallen</td>
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### April 2017

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<thead>
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<td>4. &amp; 6</td>
<td>Cisco Tech Update – Security Cyber rapport, Umbrella og Firepower</td>
<td>Slukkende/Partnere</td>
<td>Århus &amp; København</td>
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<td>Cisco Virtual Update – UC-klienter og video endepunkter</td>
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<td>Online</td>
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<td>Cisco Virtual Update – Catalyst access switching</td>
<td>Slukkende/Partnere</td>
<td>Online</td>
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<td>25. &amp; 27</td>
<td>Cisco Tech Update – Router Update IWAN &amp; udviklingen på fremtidens eNFV platforme</td>
<td>Slukkende/Partnere</td>
<td>Århus &amp; København</td>
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