Towards Unified Communications at CERN
Context

• Moving CERN away from analogue telephony
  • Replace proprietary PABX by in-house VoIP based on OSS products
  • Approved by ED end 2014
  • 9000 unique numbers to migrate
  • 16000 unique users
• Timeline: completion before end 2018
The New Service

• Based on Skype for Business
  • Existing, field-proven service
  • Answers evolving users needs for more flexible communication
• With a software PABX
  • TONE system
The New Service

- Softphones
  - Ubiquitous
    - Windows, Mac, Android, iOS:
      - Skype for Business client
    - Linux: Sky Linux or Pidgin/SIPE
    - Can run on multiple platforms simultaneously
    - Wherever in the world
  - Rich Unified Communication client
    - Contacts, directory search, phone calls, audio calls, video calls, IM, content sharing, voicemail…

free download
The New Service

- **Peripherals**
  - Mono USB headset – Under Investigation – In CERN Stores – Around 30 chf
  - Stereo USB headset – Under Investigation – In CERN Stores – Around 50 chf
  - USB speakerphone – Under Investigation – Punchout catalogue – Around 150 chf
  - Bluetooth Earset – Under Investigation – Punchout catalogue
  - Loudspeakers – Selected – Logitech Z120 – Distrelec punchout – 22 chf
Provisioning Phone Numbers

• One Authorized User = One Individual Number
• Current Process:
  • Request, modification, rights management, phone purchase, all through one interface in EDH
• Problems
  • Unnecessary workflow for numbers with CERN access
  • Missing proper lifecycle management for numbers
  • Operational issues
Provisioning Phone Numbers

• New Process

• A phone number is a resource and is always assigned a responsible; automatically freed or re-assigned after departure
Provisioning Phone Numbers

- Resource Portal
  - Migrate analogue phone number
  - Request new phone number
  - Re-assign phone number
  - Suppress phone number
- EDH
  - Request special rights
  - Modify special rights
  - Nothing else
Use Cases

- Twelve use cases validated with user communities (CCEB, GTPA)
- Main use cases
  - Individual phone numbers (~3000)
    - Migrate to softphone – mono headset provided if needed
  - Shared phone numbers (1920)
    - Migrate to softphone and individual phone numbers
      - mono headsets provided if needed
  - Underlying use cases:
    - Contacting any member of a team: use the «group call» Skype for Business feature
    - Contacting anyone present at a location: Ex. «University of Madison Office at CERN», «ateliens centraux bâtiment XXX», may need the TONE piquet feature or exceptionally a physical phone
    - Listings will be established with the departments
    - Cost of physical phones will be borne by phone owner
Use Cases

- Main use cases (continued)
  - Phones not in offices (???)
    - Not safety devices; a lot of these are never used; 92% of users have smartphones;
    - Will remove them after informing DSOs/TSOs
  - Red Phones (403)
    - A dedicated gateway will be installed
  - Conference Phones (???)
    - Connect meeting room VC device with phone system
    - Use USB speakerphone
Special Features

• Supervision/delegation (245+): Feature available in Skype for Business
• Group of phones (15): case of parallel calls covered by Skype for Business
• Piquet phone: case of cyclical and sequential calls covered in TONE
• Voice Messages: Already available using Exchange UM
• IVR (Interactive Voice Message) (8): Available in TONE
• Three-person conference: Available in Skype for Business
• Service number display (25): Skype for Business «call on behalf» option
Migration

- Migration wizard
  - Web interface to guide users through the migration process
    - Propose migration options
    - Make sure that the user is ready (installed softphone, acquired peripherals)
    - Manually trigger migration
- Process
  - Send email to user with link to wizard and a deadline (4-6 weeks after)
  - Users can adjust the migration deadline, or initiate the migration
  - Automatically migrated at deadline
- Stages
  - In groups of roughly equivalent sizes ensuring that all members of Organic Units are migrated together
  - Distribution of headsets and recuperation of old phones through secretariats
Migration

- Draft only!

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<th>February 2018</th>
<th>May 2018</th>
<th>August 2018</th>
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<tr>
<td>16/1 - 12/2</td>
<td>13/2 - 9/4</td>
<td>21/6 - 15/8</td>
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<td>16/1 - 12/2</td>
<td>10/5 - 4/7</td>
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<td></td>
<td>31/5 - 25/7</td>
<td>2/8 - 26/9</td>
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Finish 26/9
Questions?

• Contact: phone-migration-support@cern.ch
## Backup Slides: Telephony Authorized Users

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<thead>
<tr>
<th>CERN Class</th>
<th>Description</th>
<th>Phone number</th>
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<tbody>
<tr>
<td>ADMI</td>
<td>Administrative Students</td>
<td>YES</td>
</tr>
<tr>
<td>APPR</td>
<td>Apprentice</td>
<td>YES</td>
</tr>
<tr>
<td>CASS</td>
<td>Corresponding Associate</td>
<td>YES</td>
</tr>
<tr>
<td>COAS</td>
<td>Cooperation Associate</td>
<td>YES</td>
</tr>
<tr>
<td>DOCT</td>
<td>Doctoral Student</td>
<td>YES</td>
</tr>
<tr>
<td>ENTC</td>
<td>Employee of a CERN contractor</td>
<td>YES</td>
</tr>
<tr>
<td>EXTN</td>
<td>Ex-Member of Personnel</td>
<td>YES</td>
</tr>
<tr>
<td>FELL</td>
<td>Fellow</td>
<td>YES</td>
</tr>
<tr>
<td>FTMP</td>
<td>Future Member of the Personnel</td>
<td>YES</td>
</tr>
<tr>
<td>GPRO</td>
<td>Guest Professor</td>
<td>YES</td>
</tr>
<tr>
<td>PART</td>
<td>Participant to an experiment</td>
<td>YES</td>
</tr>
<tr>
<td>PJAS</td>
<td>Project Associate</td>
<td>YES</td>
</tr>
<tr>
<td>RETP</td>
<td>Retired participating in an experiment</td>
<td>YES</td>
</tr>
<tr>
<td>RETR</td>
<td>Retired</td>
<td>YES</td>
</tr>
<tr>
<td>SASS</td>
<td>Scientific Associate</td>
<td>YES</td>
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<tr>
<td>STAF</td>
<td>Staff Member</td>
<td>YES</td>
</tr>
<tr>
<td>SUMM</td>
<td>Summer Student</td>
<td>YES</td>
</tr>
<tr>
<td>TECH</td>
<td>Technical Student</td>
<td>YES</td>
</tr>
<tr>
<td>TEMC</td>
<td>Temporary Labour for CERN</td>
<td>YES</td>
</tr>
<tr>
<td>TRNE</td>
<td>Trainee</td>
<td>YES</td>
</tr>
<tr>
<td>USER</td>
<td>User</td>
<td>YES</td>
</tr>
<tr>
<td>VISC</td>
<td>Visiting Scientist</td>
<td>YES</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Phone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCO</td>
<td>Attendant of a MoP or pensioner needing assistance in mobility</td>
<td>YES</td>
</tr>
<tr>
<td>CLUB</td>
<td>Member of a Staff Association Club (SA ONLY)</td>
<td>YES</td>
</tr>
<tr>
<td>COMT</td>
<td>Member of a CERN official committee</td>
<td>YES</td>
</tr>
<tr>
<td>CONF</td>
<td>Speaker</td>
<td>YES</td>
</tr>
<tr>
<td>ETAS</td>
<td>External Team Account Supervisor</td>
<td>YES</td>
</tr>
<tr>
<td>FORM</td>
<td>Trainer invited by training services</td>
<td>YES</td>
</tr>
<tr>
<td>GUID</td>
<td>Guide with dosimeter (VISITS SERVICE ONLY)</td>
<td>YES</td>
</tr>
<tr>
<td>HONO</td>
<td>Honorary Member of Personnel (HR ONLY)</td>
<td>YES</td>
</tr>
<tr>
<td>HOST</td>
<td>Host state authorities (DG-RH ONLY)</td>
<td>YES</td>
</tr>
<tr>
<td>ILOF</td>
<td>Industrial Liaison Officer (HR ONLY)</td>
<td>YES</td>
</tr>
<tr>
<td>INST*</td>
<td>Institute collaborator without participation to experiment</td>
<td>YES</td>
</tr>
<tr>
<td>KIND</td>
<td>Kindergarten Child or Accompanying Person (HR ONLY)</td>
<td>YES</td>
</tr>
<tr>
<td>SCIE</td>
<td>Scientific activities of pensioners from institutes who have</td>
<td>YES</td>
</tr>
<tr>
<td>STAG</td>
<td>Trainee outside CERN official programs</td>
<td>YES</td>
</tr>
<tr>
<td>VISI</td>
<td>Professional Visitor (Registration Office ONLY!)</td>
<td>YES</td>
</tr>
<tr>
<td>DIST</td>
<td>Persons who participate remotely in projects</td>
<td>YES</td>
</tr>
<tr>
<td>EUPR</td>
<td>External collaborators in EU projects</td>
<td>YES</td>
</tr>
</tbody>
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*: deprecated, replaced with DIST and EUPR
Backup Slides: Phones

- Physical phones compatible with Skype for Business are available for exceptional use cases
  - VVX 201 (simple use cases) – 144 chf - Stores
  - VVX 411 (secretariats) – 294 chf - Stores
Backup Slides: Other Use Cases

- **Access Control Phones (>40)** – Planning migration with BE
  - Proposed SIP phone alternative; users will pay for the replacement
- **Lift Phones (117)** – Ongoing migration (completed end 2018)
  - GSM modems
- **Faxes (150)**
  - Deprecated service; will provide local SIP converter for those still needed
- **Modems (4)**
  - Deprecated service; will provide local SIP converter for mandatory ones
- **Wireless phones (~30)**
  - VVX411 + Bluetooth kit
- **Outdoor Phones (????)** – Ongoing checks
  - Remove
- **Hotel Phones (460):** Install VVX201
Backup Slides: User Survey Results

- Survey coverage
- 903 answers
Backup Slides: WW Mobile Subscribers

- 2016
  - 65% worldwide population
  - 79% 10yo+
- Forecast 2020
  - 73% worldwide population
  - 88% 10yo+