Phone Firmware Migration

Automated procedure for mass deployment

Multiplatform Phones team
April 2019

Agenda list

1. Overview
2. Enterprise and MPP firmware – DHCP options review
3. MPP firmware – Cloud Provisioning (CDA / EDOS) review
4. Firmware migration scenario review

Overview

Phone Firmware Migration

User Experience and features are NOT exactly same between Enterprise and MPP phones.
Make sure you run a proof of concept first before migrating your customers.

Migration Firmware

- 7811, 7821 V03+, 7841 V04+, 7861 V03+, 7832
- All 8800s except 8821, 8831, 8851NR, 8865NR
- KEMs do not require migration
- Data loss - Call History, Local Contacts

Migration License

- Flex plan includes 1 license per user
- Per device cost for non-Flex SP
- Locked to MAC Address
- One-way migration per license

Customer Flow

Non-FLEX

Order via CCW ($)

- L-CP-E2M-88XX-CNV=
- L-CP-E2M-78XX-CNV=
- L-CP-M2E-88XX-CNV=
- L-CP-M2E-78XX-CNV=

Get eDelivery email

- Product Authorization Key (PAK)
- License SKU, QTY
- Link to License and Registration Portal

License & Registration Portal

- Upload MAC Address(es)
- Partial fulfillment

Authorize upgrade via license

- Zero touch options available

FLEX

Order via Product Upgrade Tool (PUT)

- No additional cost, QTY limited to number of users
- Available at https://software.cisco.com
- L-CP-E2M-FLEX-CNV=
- L-CP-M2E-FLEX-CNV=

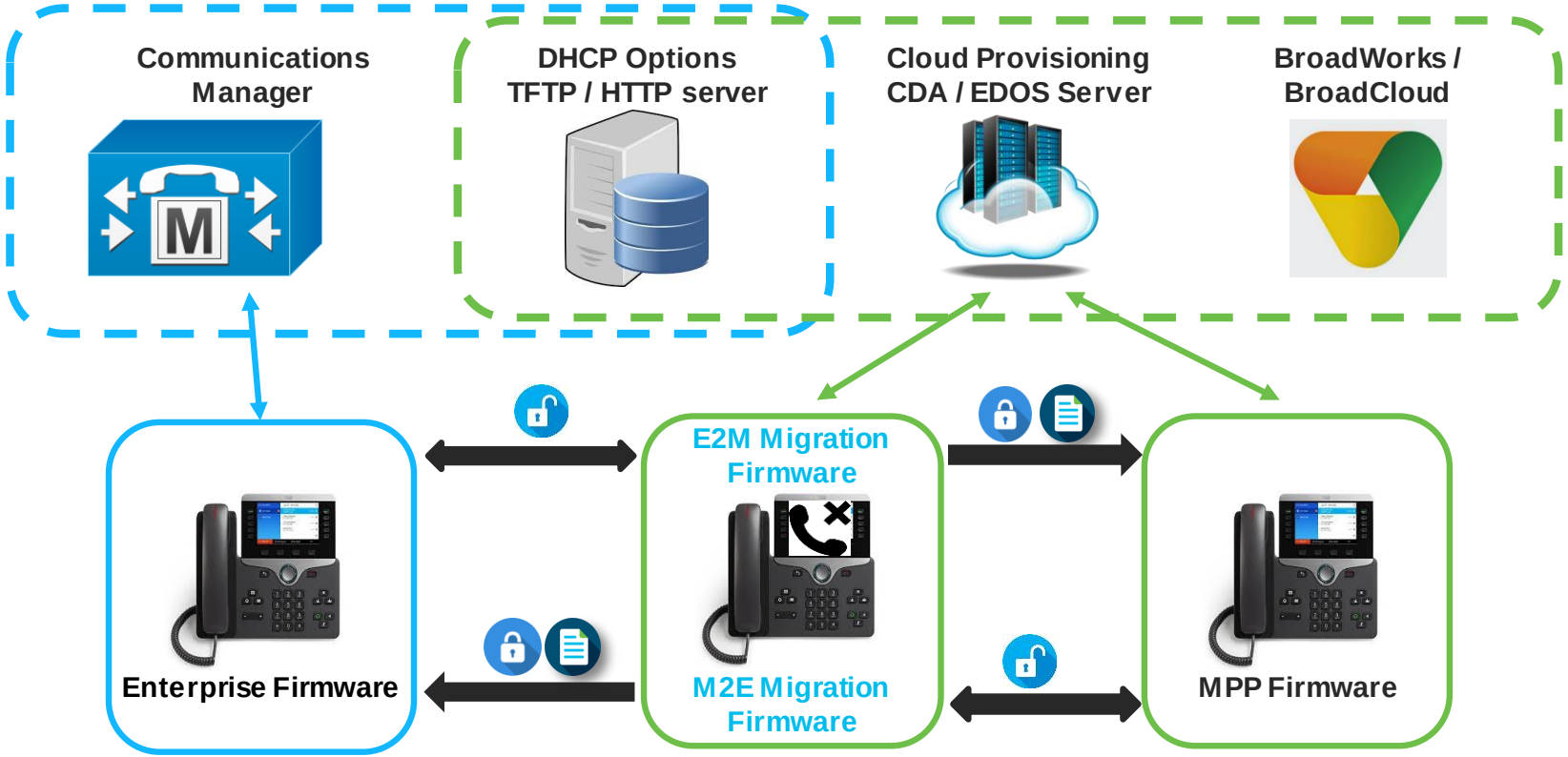
License SKU legend:

- E2M – Enterprise (CUCM/HCS) to MPP
- M2E – MPP to Enterprise (CUCM/HCS)

Firmware Migration Process

Legend:
- E2M: Enterprise to MPP
- M2E: MPP to Enterprise

Migration license

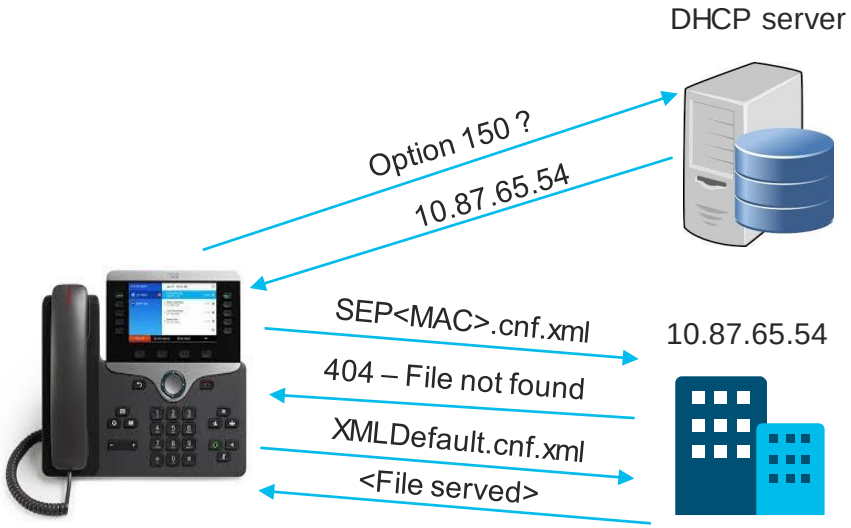


Device running migration firmware uses MPP style configurations

Enterprise Firmware – DHCP options

Enterprise Firmware – DHCP options

- DHCP options – 150, 66
- Order of requests:
  1. SEP<MAC>.cnf.xml
     - Individual phone configuration
  2. XMLDefault.cnf.xml
     - Common configuration
     - Firmware specified per phone model type



XMLDefault.cnf.xml - Ent-To-MPP migration

```
<Default>
  <autoRegistrationName>AUTO-REG</autoRegistrationName>
  <autoRegistration>enabled</autoRegistration>
  <selfProvisioningSecureMode>true</selfProvisioningSecureMode>
  <adminProvisionMode>false</adminProvisionMode>
  <ipAddressMode>0</ipAddressMode>
  <ipPreferenceModeControl>0</ipPreferenceModeControl>
  <ipMediaAddressFamilyPreference>0</ipMediaAddressFamilyPreference>
▼<callManagerGroup>
    <name>Default</name>
    <tftpDefault>true</tftpDefault>
  ▼<members>
    ▼<member priority="0">
      ▼<callManager>
          <name>12.34.56.78</name>
          <description>12.34.56.78</description>
        ▼<ports>
            <ethernetPhonePort>2000</ethernetPhonePort>
            <sipPort>5060</sipPort>
            <securedSipPort>5061</securedSipPort>
          ▼<mgcpPorts>
              <listen>2427</listen>
              <keepAlive>2428</keepAlive>
            </mgcpPorts>
          </ports>
          <processNodeName>12.34.56.78</processNodeName>
        </callManager>
      </member>
    </members>
  </callManagerGroup>
▼<TVS>
  ▼<members>
    ▼<member priority="0">
        <port>2445</port>
        <address>12.34.56.78</address>
      </member>
    </members>
  </TVS>
  <loadInformation36213 model="Cisco 7811">sip78xx.TLexE2M-11-2-3C-4</loadInformation36213>
  <loadInformation621 model="Cisco 7821">sip78xx.TLexE2M-11-2-3C-4</loadInformation621>
  <loadInformation622 model="Cisco 7841">sip78xx.TLexE2M-11-2-3C-4</loadInformation622>
  <loadInformation623 model="Cisco 7861">sip78xx.TLexE2M-11-2-3C-4</loadInformation623>
  <loadInformation36247 model="Cisco 7832">sip7832.TLexE2M-11-2-3C-4</loadInformation36247>
  <loadInformation36258 model="Cisco 8832">sip8832.TLexE2M-11-2-3C-4</loadInformation36258>
  <loadInformation36217 model="Cisco 8811">sip88xx.TLexE2M-11-2-3C-4</loadInformation36217>
  <loadInformation683 model="Cisco 8841">sip88xx.TLexE2M-11-2-3C-4</loadInformation683>
  <loadInformation684 model="Cisco 8851">sip88xx.TLexE2M-11-2-3C-4</loadInformation684>
  <loadInformation685 model="Cisco 8861">sip88xx.TLexE2M-11-2-3C-4</loadInformation685>
  <loadInformation36224 model="Cisco 8845">sip8845_65.TLexE2M-11-2-3C-4</loadInformation36224>
  <loadInformation36225 model="Cisco 8865">sip8845_65.TLexE2M-11-2-3C-4</loadInformation36225>
</Default>
```

Load server / File server

Migration firmware load name

SEP<MAC>.cnf.xml - Ent-To-MPP migration

```
<device>
  <loadInformation>sip88xx.TLexE2M-11-2-3C-4</loadInformation>
▼<vendorConfig>
    <webAccess>0</webAccess>
    <loadServer>12.34.56.78</loadServer>
  </vendorConfig>
</device>
```

Migration firmware load name

Load server / File server

MPP firmware – DHCP options

MPP Firmware – DHCP options

- Order of DHCP options – 66, 160, 159, 150
- Option 66 – IP address
- Option 160, 159 - URL
  - URL format1: <schema>://<domain><:port>/<path>
  - URL format2: <schema>://<domain><:port>
- Option 150 - Multiformat:<url1 or ip1>;<url2 or ip2>
- Files requested:
  - $PSN.xml (default profile rule) – Ex. 8851-3PCC.xml or 7861-3PCC.xml
  - /Cisco/$PN/$MA.cfg – Ex. /Cisco/CP-8851-3PCC/001234ab45de.cfg
    - PN: Product Name, MA: MAC address lowercase, PSN: Product Series Number

MPP Firmware – DHCP option - IP address format

- For example DHCP option 66 / 150 set to 10.23.45.67
- Device (Cisco 8851, MAC 001234ab45de) attempts tftp, http, https
- tftp
  a) tftp://10.23.45.67/$PSN.xml – Ex. tftp://10.23.45.67/8851-3PCC.xml
  b) tftp://10.23.45.67/Cisco/$PN/$MA.cfg – Ex. tftp://10.23.45.67/Cisco/CP-8851-3PCC/001234ab45de.cfg
- http
  a) http://10.23.45.67/$PSN.xml – Ex. http://10.23.45.67/8851-3PCC.xml
  b) http://10.23.45.67/Cisco/$PN/$MA.cfg – Ex. http://10.23.45.67/Cisco/CP-8851-3PCC/001234ab45de.cfg
- https
  a) https://10.23.45.67/$PSN.xml – Ex. https://10.23.45.67/8851-3PCC.xml
  b) https://10.23.45.67/Cisco/$PN/$MA.cfg – Ex. https://10.23.45.67/Cisco/CP-8851-3PCC/001234ab45de.cfg

MPP Firmware – DHCP option – URL format

- For example DHCP option 160 / 159 set to “http://10.23.45.67/path/”
- Device (Cisco 8851, MAC 001234ab45de) attempts following:
  a) http://10.23.45.67/path/
  b) http://10.23.45.67/path/$PSN.xml – Ex. http://10.23.45.67/path/8851-3PCC.xml
  c) http://10.23.45.67/path/Cisco/$PN/$MA.cfg – Ex. http://10.23.45.67 /path/Cisco/CP-8851-3PCC/001234ab45de.cfg

MPP configuration file example

- $PSN.xml or /Cisco/$PN/$MA.cfg sample:

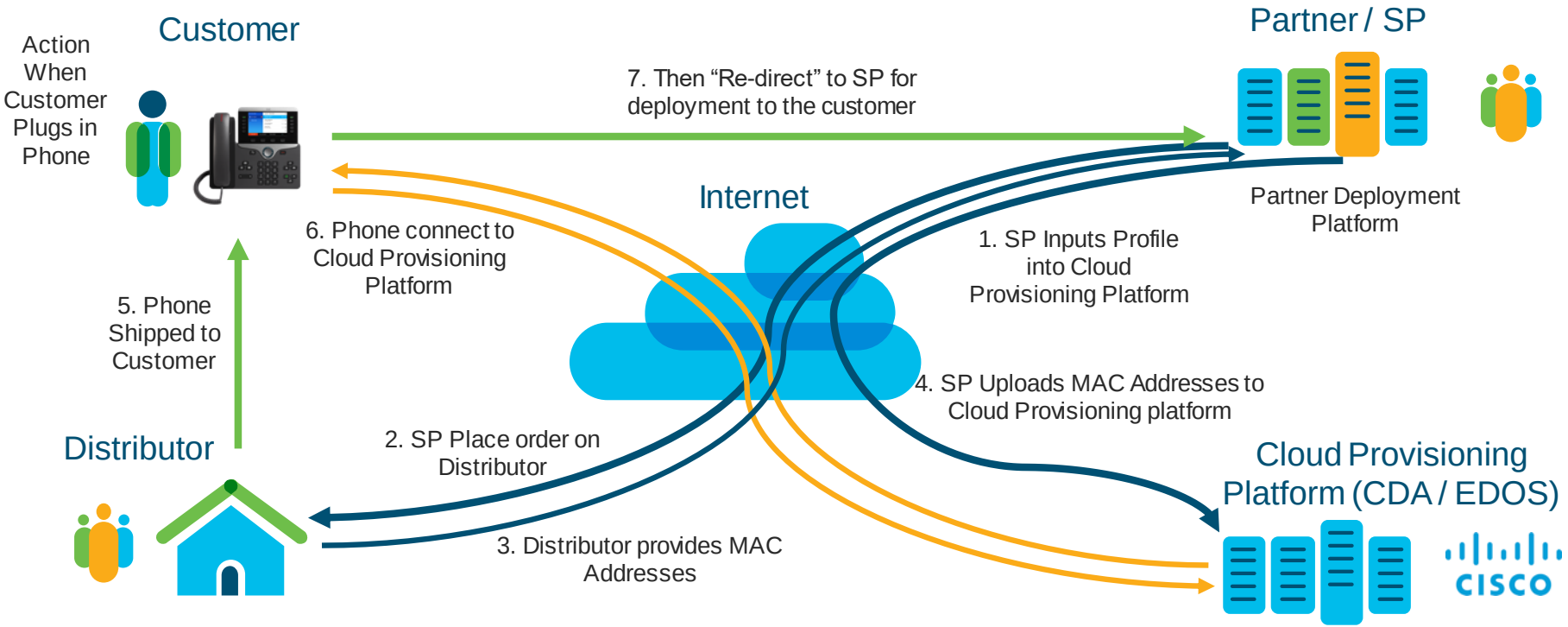
Link to license file. Phone substitutes $MAU macro with MAC address Uppercase

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
   <Upgrade_Rule ua="na">http://10.23.45.67/sip88xx.11-2-3MPP-398.loads</Upgrade_Rule>
 </flat-profile>
</device>
```

Link to MPP firmware

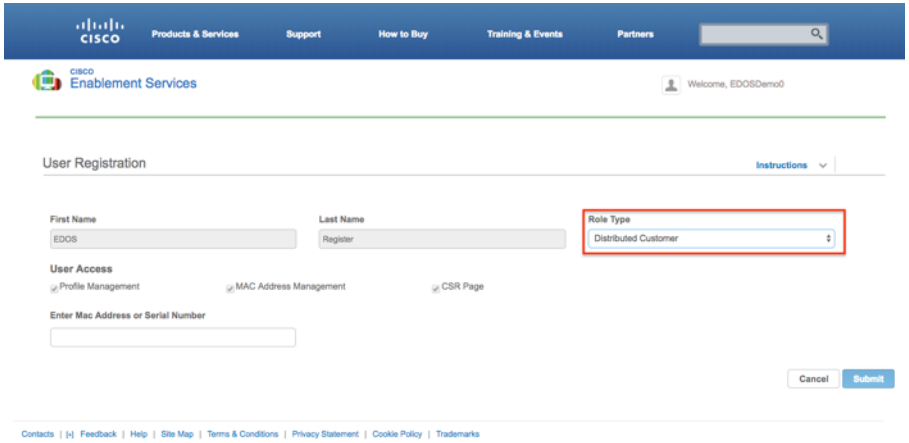
MPP firmware – Cloud Provisioning (CDA / EDOS)

Process Flow



Setting Up the Service

- Account setup instructions
- Quick start guide
- Detailed user guide
- API specification



Firmware migration scenario

Enterprise phones to MPP migration - Call Manager (Ent) + CDA / EDOS (MPP)

- Pre-requisite: Setup CDA/ EDOS redirection profile and assign all the MAC addresses to that redirection profile.

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
   <Upgrade_Rule ua="na">http://10.23.45.67/sip88xx.11-2-3MPP-398.loads</Upgrade_Rule>
 </flat-profile>
</device>
```

- Pre-requisite: Upgrade the enterprise phones to 12.5 firmware version via Call Manager by specifying load name (Ex. sip88xx.12-5-1SR1-4) and load server (Ex. 10.23.45.67)
- Step 1: Upgrade the enterprise phones to E2M migration firmware via Call Manager by specifying load name (Ex. sip88xx.TLexE2M-11-2-3C-4) and load server (Ex. 10.23.45.67)
- Step 2: Once phones upgrade to E2M migration firmware, they will reach out to EDOS server to get redirection profile and each phone will replace $MAU macro with its upper case MAC to retrieve device specific license file to enable upgrade to requested MPP firmware.

Enterprise phones to MPP migration - Call Manager (Ent) + DHCP options (MPP)

- Pre-requisite: Setup DHCP option and file server for MPP
  - Ex. DHCP option 160 set to “http://10.23.45.67”
  - Create $PSN.xml at the root of file server so url http://10.23.45.67/8851-3PCC.xml is available

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
   <Upgrade_Rule ua="na">http://10.23.45.67/sip88xx.11-2-3MPP-398.loads</Upgrade_Rule>
 </flat-profile>
</device>
```

- Pre-requisite: Upgrade the enterprise phones to 12.5 firmware version (Ex. sip88xx.12-5-1SR1-4) via Call Manager
- Step 1: Upgrade the enterprise phones to E2M migration firmware via Call Manager by specifying load name (Ex. sip88xx.TLexE2M-11-2-3C-4) and load server (Ex. 10.23.45.67)
- Step 2: Phones boot up with E2M migration firmware and finds DHCP option 160 set.
  - Device request $PSN.xml - http://10.23.45.67/8851-3PCC.xml.
  - Each phone will replace $MAU macro with its upper case MAC to retrieve device specific license file to enable upgrade to requested MPP firmware.

Enterprise phones to MPP migration – DHCP Options (Ent) + CDA / EDOS (MPP)

- Pre-requisite: Setup CDA/ EDOS redirection profile and assign all the MAC addresses to that redirection profile.

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
   <Upgrade_Rule ua="na">http://10.23.45.67/sip88xx.11-2-3MPP-398.loads</Upgrade_Rule>
 </flat-profile>
</device>
```

- Pre-requisite: Upgrade the enterprise phones to 12.5 firmware version via DHCP option 150
  - Ex. DHCP option 150 set to 10.23.45.67
  - Create XMLDefault.cnf.xml with 12.5 load information (Ex. sip88xx.12-5-1SR1-4) and reset phones
- Step 1: Upgrade the enterprise phones to E2M migration firmware via DHCP option 150
  - Ex. DHCP option 150 set to 10.23.45.67
  - Update XMLDefault.cnf.xml with E2M migration firmware load information (Ex. sip88xx.TLexE2M-11-2-3C-4) and reset phones
- Step 2: Once phones upgrade to E2M migration firmware, they will reach out to EDOS server to get redirection profile and each phone will replace $MAU macro with its upper case MAC to retrieve device specific license file to enable upgrade to requested MPP firmware.

Enterprise phones to MPP migration - DHCP Options (Ent) + DHCP options (MPP)

- Pre-requisite: Setup DHCP option and file server for MPP
  - Ex. DHCP option 160 set to “http://10.23.45.67”
  - Create $PSN.xml at the root of file server so url http://10.23.45.67/8851-3PCC.xml is available

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
   <Upgrade_Rule ua="na">http://10.23.45.67/sip88xx.11-2-3MPP-398.loads</Upgrade_Rule>
 </flat-profile>
</device>
```

- Pre-requisite: Upgrade the enterprise phones to 12.5 firmware version via DHCP option 150
  - Ex. DHCP option 150 set to 10.23.45.67
  - Create XMLDefault.cnf.xml at the root of file server with 12.5 load information (Ex. sip88xx.12-5-1SR1-4) and reset phones
- Step 1: Upgrade the enterprise phones to E2M migration firmware via DHCP option 150
  - Ex. DHCP option 150 set to 10.23.45.67
  - Update XMLDefault.cnf.xml with E2M migration firmware load information (Ex. sip88xx.TLexE2M-11-2-3C-4) and reset phones
- Step 2: Phones boot up with E2M migration firmware and finds DHCP option 160 set.
  - Device request $PSN.xml - http://10.23.45.67/8851-3PCC.xml.
  - Each phone will replace $MAU macro with its upper case MAC to retrieve device specific license file to enable upgrade to requested MPP firmware.

MPP phones to Enterprise firmware migration – CDA / EDOS (MPP)

- Pre-requisite: Setup CDA / EDOS redirection profile and assign all the MAC addresses to that redirection profile.
  - Note the use of conditional expression. When the phone is running M2E migration firmware, it will attempt to upgrade to Enterprise firmware. In other cases, it will attempt to upgrade to M2E migration firmware first.

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
 ▼<Upgrade_Rule ua="na">
    ($SWVER eq sip88xx.TLexM2E-11-2-3C-4)? http://10.23.45.67/sip88xx.12-5-1SR1-4.loads |
    http://10.23.45.67/sip88xx.TLexM2E-11-2-3C-4.loads
   </Upgrade_Rule>
 </flat-profile>
</device>
```

- Step 1: Upgrade MPP phones to M2E migration firmware (Ex. sip88xx.TLexM2E-11-2-3C-4)
  - Option1: You can provide updated configurations (similar to above) to the phone via your provisioning server
  - Option2: You can factory reset all the phones which causes them to reach CDA / EDOS server to get updated configurations and in turn upgrade to M2E migration firmware.
- Step 2: Once phones upgrade to M2E migration firmware, they will reach out to EDOS server to get redirection profile and each phone will replace $MAU macro with its upper case MAC to retrieve device specific license file to enable upgrade to requested Enterprise firmware.

MPP phones to Enterprise firmware migration – DHCP options (MPP)

- Pre-requisite: Setup DHCP option and file server for MPP
  - Ex. DHCP option 160 set to “http://10.23.45.67”
  - Create $PSN.xml at the root of file server so url http://10.23.45.67/8851-3PCC.xml is available
  - Note the use of conditional expression. When the phone is running M2E migration firmware, it will attempt to upgrade to Enterprise firmware. In other cases, it will attempt to upgrade to M2E migration firmware first.

```
<device>
▼<flat-profile>
   <Trans_Auth_Rule ua="na">http://10.23.45.67/$MAU.lic</Trans_Auth_Rule>
  ▼<Upgrade_Rule ua="na">
     ($SWVER eq sip88xx.TLexM2E-11-2-3C-4)? http://10.23.45.67/sip88xx.12-5-1SR1-4.loads |
     http://10.23.45.67/sip88xx.TLexM2E-11-2-3C-4.loads
   </Upgrade_Rule>
 </flat-profile>
</device>
```

- Step 1: Upgrade MPP phones to M2E migration firmware (Ex. sip88xx.TLexM2E-11-2-3C-4)
  - Option1: You can provide updated configurations (similar to above) to the phone via your provisioning server
  - Option2: You can factory reset all the phones which causes them to discover DHCP option 160 to get updated configurations and in turn upgrade to M2E migration firmware.
- Step 2: Phones boot up with M2E migration firmware and finds DHCP option 160 set.
  - Device request $PSN.xml - http://10.23.45.67/8851-3PCC.xml.
  - Phones replace $MAU macro with uppercase MAC, retrieve device specific license file and enable upgrade to Enterprise firmware.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