Avaya Solution & Interoperability Test Lab

Sample Configuration for Avaya Communication Manager Release 4.0 Dial Plan Expansion with Short Number Dialing and Station Call Appearance Display – Issue 1.0

Abstract

These Application Notes describe the configuration steps necessary for Avaya Communication Manager with short number dialing and station call appearance display to support Avaya Communication Manager Release 4.0 Dial Plan Expansion feature. The sample configuration depicted in these Application Notes consists of an Avaya S8710 Media Server running Avaya Communication Manager with an Avaya Single Carrier Cabinet (SCC1) located at the Main Location, an Avaya IG550 Media Gateway located at Remote Location 1, and an Avaya G650 Media Gateway located at Remote Location 2.

1. Introduction

These Application Notes describe configuration steps necessary for Avaya Communication Manager with short number dialing and station call appearance display to support Avaya Communication Manager Release 4.0 Dial Plan Expansion feature. Short number dialing allows station users to dial a shorter number to reach the same 13-digit location. For example, users can use 4-digit dialing instead of dialing the full number. The dial plan expansion is a feature in Avaya Communication Manager 4.0 feature, which supports the flattened, consolidated, and expended enterprises.

The sample configuration depicted in this document consists of 3 locations. The Main Location is configured to have11-digit extensions starting with 1-732-123-xxxx. Remote Location 1 is configured to have11-digit extensions starting with 1-408-333-xxxx. Remote Location 2 is located in Europe and is configured to have12-digit extensions starting with 49-69-7505-xxxx. Avaya Communication Manager is administered to have different length uniform dial plan within a location and across locations. The Main and Remote Location1 site users will use a 5-digit short number dialing and Remote Location 2 users will use a 4- digit dialing. If a unique dialed pattern for a location is available, short number dialing can be administered for inter location dialing. In the sample configuration, users will use a 6-digit short number dialing to reach users in another location.

In these Application Notes, station call appearances are administered to display short numbers for intra location calls and full extension numbers for inter location calls.

- Intra location calls:
  - Main and Remote Location 1 telephones display 5-digit on the station display.
  - Remote Location 2 telephones display 4-digit on the station display.

- Inter location calls:
  - All telephones display full extension number.

Figure 1 illustrates the configuration used to verify these Application Notes. The Main Location consists of Avaya S8710 Media Servers with one Avaya Single Carrier Cabinet (SCC1). The Remote Location consists of an Avaya IG550 Media Gateway. The EMEA Location consists of an Avaya G650 Media Gateway. All IP telephones register to Avaya Communication Manager running on the Avaya S8710 Media Servers at the Main Location.

Note: These Application Notes assume that all locations depicted in **Figure 1** are already in place, as well as Avaya Communication Manager, Avaya Media Gateway, routers and switches. Please consult the appropriate documentation listed in the References section of this document for more information on setting up these components.

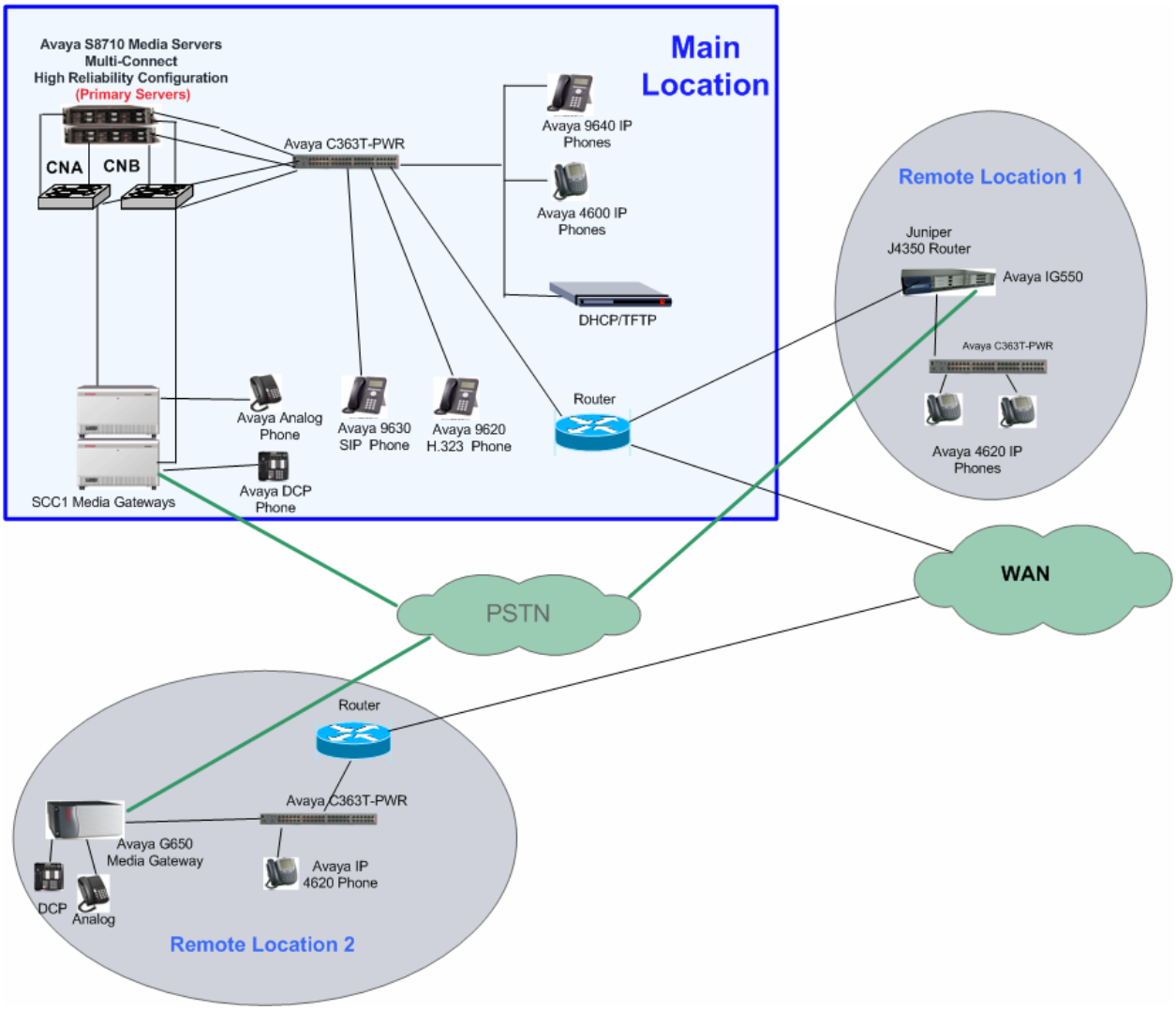

Figure 1: Network Configuration Diagram

1.1. Short Extension Number Dialing

If short extension number is administered, users can use short extension number to register their IP phones. It also can be used for older IP phones that are not supporting the 13-digit extensions.

On the IP telephones, the top line of the display is the extension number, which the user entered on the keypad to register the telephone. The extension number displayed on the top line of the telephone may not match the extension number displayed on call appearances. For example, if user enters 12-digit extension number (for example, 4969-7505-5011) to register the IP telephone while the call appearance is administered to display 4-digit extension number (5011),

the top line of the display will show the **unpunctuated** 12-digit extension number (**496975055011**), but the call appearance will display the 4- digit extension number (5011).

For administering short extension number please refer to Section 4 of these Application Notes.

1.2. Configure Avaya 9600 Series SIP Telephones with Dial Plan Expansion

The default setting of the 9600 series SIP telephones will display the Avaya one-X logo. When the logo is displayed, the call appearance will only show up to 7 digits. To display more than 7 digits on the call appearance, the logo on the phone needs to be disabled.

The following steps can be used to disable the logo on the9600 SIP telephone. From the telephone, perform the following:

- Press the **A Menu** button and then press **Select** to select **Options & Settings**.
- The **Options & Settings** screen appears, scroll down to **Screen & Sound Options**.
- press **Select**.
- The **Screen & Sound Options** screen appears, scroll down to **Background Logo**.
- press the > key to select **none**.
- Press the **save** button.

2. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment	Software
Avaya S8710 Media Server	Avaya Communication Manager 4.0 (R014x.00.0.730.5)
Avaya SCC1 and G650 Media gateway IPSI (TN2312BP) C-LAN (TN799DP) MEDPRO (TN2302AP)	 HW12 FW050 HW01 FW022 HW20 FW030
Avaya IG550 Media Gateway Telephony Interface Modules ▪ ANA IMM (TGM550AP) ▪ DS1 MM (TIM510AP) ▪ ANA MM (TIM514AP) ▪ BRI MM (TIM521AP)	26.29.0 HW 00 FW000 HW 02 FW000 HW 02 FW000 HW 02 FW000
Avaya 4600 IP Telephones	2.8
Avaya 9600 one-X Desk phone Edition H.323 IP Telephones	1.5
Avaya 9600 one-X Desk phone Edition SIP IP Telephones	12.1
Avaya C363T-PWR	4.5.14
Juniper Services Router ▪ JWAN MM (MMJWAN)	JUNOS 8.2B3.1 HW 00 FW000

Table 1 - Equipment and Version Validated

3. Configure Avaya Communication Manager for Short Extension Number Dialing

This section details the administration on Avaya Communication Manager for Dial Plan Expansion. The following commands are issued at the Avaya System Access Terminal (SAT) on the S8710 Media Server at the Main Location.

1. Issue "**display system-parameters customer-options**" and navigate to **Page 5**. Verify that **Multiple Locations** and **Uniform Dialing Plan** are set to "**y**".

```
display system-parameters customer-options                      Page   5 of  11
                              OPTIONAL FEATURES

                 Multinational Locations? n            Station and Trunk MSP? n
 Multiple Level Precedence & Preemption? n     Station as Virtual Extension? n
                       Multiple Locations? y
                                              System Management Data Transfer? n
          Personal Station Access (PSA)? y             Tenant Partitioning? n
                        Posted Messages? n      Terminal Trans. Init. (TTI)? y
                        PNC Duplication? n              Time of Day Routing? y
                   Port Network Support? y             Uniform Dialing Plan? y
                                             Usage Allocation Enhancements? y
                Processor and System MSP? n       TN2501 VAL Maximum Capacity? y
                      Private Networking? y
                      Processor Ethernet? y               Wideband Switching? y
                                                                  Wireless? y
                           Remote Office? y
          Restrict Call Forward Off Net? y
                   Secondary Data Module? y
```

2. In the sample configuration SCC1 is located in location 1. Issue the **display cabinet 1** command to verify that **Location** is set to "**1**".

```
display cabinet 1                                               Page   1 of   1
                                  CABINET
 CABINET DESCRIPTION
                 Cabinet: 1
           Cabinet Layout: single-carrier-stack
             Cabinet Type: expansion-portnetwork

    Survivable Remote EPN? n
                 Location: 1         IP Network Region: 1

                     Room:              Floor:             Building:

 CARRIER DESCRIPTION
   Carrier       Carrier Type        Number


      D        not-used              PN  01
      C        not-used              PN  01
      B        port                  PN  01
      A        expansion-control     PN  01
```

3. In the test configuration the IG550 is located in Remote Location 2. Issue the **display media-gateway 4** command to verify that **Location** is set to "**2**".

```
display media-gateway 4                                        Page   1 of   1
                            MEDIA GATEWAY
        Number: 4                              Registered?  y
          Type: j4350               FW Version/HW Vintage: 26 .23 .0  /0
          Name: TR-MG-4                       IP Address: 5  .1  .108.1
     Serial No: 06IS27819429        Controller IP Address: 5  .1  .1  .4
  Encrypt Link? y                             MAC Address: 00:04:0d:f5:50:86
Network Region: 2
      Location: 2                              Site Data:
 Recovery Rule: 1
                                                      DSP Type  FW/HW version
     Slot   Module Type                Name           DAR1      1    0
      V1:   TGM550                     ANA IMM
      V2:   TIM521                     BRI MM
      V3:   MMJWAN                     DATA MM
      V4:   TIM514                     ANA MM
      V5:   TIM510                     DS1 MM
      V6:   MMJWAN                     DATA MM
                                                 Max Survivable IP Ext: 8

      V9:   gateway-announcements      ANN VMM
```

4. In the test configuration the Avaya G650 is located in Remote Location 3. Issue the **display cabinet 2** command to verify that **Location** is set to "**3**".

```
display cabinet 2                                              Page   1 of   1
                                  CABINET
CABINET DESCRIPTION
                Cabinet: 2
          Cabinet Layout: G650-rack-mount-stack
            Cabinet Type: expansion-portnetwork


                Location: 3         IP Network Region: 3

Rack:               Room:              Floor:             Building:

CARRIER DESCRIPTION
  Carrier       Carrier Type        Number

     E        not-used              PN  02
     D        not-used              PN  02
     C        not-used              PN  02
     B        not-used              PN  02
     A        G650-port             PN  02
```

5. Administer the Dial Plan for short number dialing within location. Issue the **change dialplan analysis** command.

   Configure dial plan entries for the three locations.
   - In the Dialed String field, enter a unique string that corresponds to that location's dial plan.
   - In the Total Length field, enter the total number of dialed digits
   - Enter "ext" in the Call Type field.

```
change dialplan analysis                                      Page   1 of  12
                          DIAL PLAN ANALYSIS TABLE
                                                        Percent Full:    0

      Dialed   Total  Call    Dialed   Total  Call     Dialed   Total  Call
      String   Length Type    String   Length Type     String   Length Type
       056        6   ext       8          1   dac
       1          3   dac       9          1   dac
       1408      11   ext       *          3   dac
       1732      11   ext
       2          5   ext
       3          5   ext
       338        6   ext
       4         11   ext
       4969      12   ext
       6          4   ext
```

6. To configure short number dialing for intra location dialing, issue the **change locations** command. For each location, enter the following values:

   - Name: Enter a descriptive location name.
   - Timezone: Designate the time zone location that the other locations will be used to determine the offsets for all locations. Use 00:00 for that Timezone offset. For other locations, set the Timezone offset based on the initial location.
   - Disp Parm: Enter the number of the display-parameters, which will be used for call appearance display. This value is used in Step 10.
   - Prefix: Enter the prefix for each location. The value will be used in Step 7.

```
change locations                                              Page   1 of  16
                                  LOCATIONS

                ARS Prefix 1 Required For 10-Digit NANP Calls? y

 Loc  Name           Timezone Rule  NPA  ARS  Atd      Disp   Prefix   Proxy Sel
 No                   Offset             FAC  FAC      Parm             Rte Pat
 1:  Lincroft        + 00:00   0                        1   173212
 2:  San Jose        - 03:00   0                        2   140833
 3:  Frankfurt       + 06:00   0                        3   49697505
 4:
 5:
 6:
```

7. To assign the prefix, issue the **change uniform-dialplan** command. Enter the following values:
   Configure uniform dial plan entries for the three locations.
   - In the matching pattern field, enter a unique string that corresponds to that location's dial plan.
   - In the len field, enter the total number of dialed digits
   - Enter the number of digits to delete in the Del field
   - Enter the number of digits in the Prefix field from step 6 in the Insert Digits field

```
change uniform-dialplan 0                                        Page   1 of   2
                     UNIFORM DIAL PLAN TABLE
                                                                 Percent Full: 0

  Matching                    Insert              Node
  Pattern       Len Del       Digits     Net Conv Num
 1               4   0        L8         ext  n
 123             7   0        L4         ext  n
 2               4   0        L6         ext  n
 3               5   0        L6         ext  n
 333             7   0        L4         ext  n
 338             6   0        14083      ext  n
 5               4   0        L6         ext  n
 6               4   0        L8         ext  n
                                         n
                                         n
                                         n
```

8. Administer the Dial Plan for inter location short number dialing. Issue the **change dialplan analysis** command.
   Configure dial plan entries for the three locations.
   - In the Dialed String field, enter a unique string that corresponds to that location's dial plan.
   - In the Total Length field, enter the total number of dialed digits
   - Enter "ext" in the Call Type field.

```
change dialplan analysis                                         Page   1 of  12
                          DIAL PLAN ANALYSIS TABLE
                                                          Percent Full:    0

      Dialed   Total  Call    Dialed   Total  Call     Dialed   Total  Call
      String   Length Type    String   Length Type     String   Length Type
       056        6   ext       8          1   dac
       1          3   dac       9          1   dac
       1408       11  ext       *          3   dac
       1732       11  ext
       2          5   ext
       23         6   ext
       3          5   ext
       338        6   ext
       4          11  ext
       4969       12  ext
       6          4   ext
```

9. To insert the prefix digits, issue the **change uniform-dialplan** command. Enter the following values:
   Create entries for each of the locations:
   - In the Matching Pattern field enter the Dialed String value from Step 8.
   - Enter the total length of the number in the Len field.
   - Enter the number of digits to delete in the Del field.
   - Enter the digits that will be inserted in the front of the dialed string in the Insert Digits field.
   - Net: Enter "**ext**".
   - Enter "n" in the Conv field.

```
change uniform-dialplan 0                                    Page   1 of   2
                      UNIFORM DIAL PLAN TABLE
                                                           Percent Full: 0

  Matching                    Insert              Node
  Pattern        Len Del      Digits     Net Conv Num
 056              6   0      496975     ext  n
 1                4   0      L8         ext  n
 2                4   0      L6         ext  n
 23               6   0      17321      ext  n
 3                5   0      L6         ext  n
 30331            5   0                 aar  n
 30333            5   0                 aar  n
 333              7   0      L4         ext  n
 338              6   0      14083      ext  n
 390              5   0                 aar  n
 432              7   0                 aar  n
 5                4   0      L6         ext  n
 6                4   0      L8         ext  n
```

10. To administer the station call appearance, issue the **change display-parameters <n>** command, where <n> is the Disp Param from Step 6. Enter the following values:

    - Inter-Location: Enter a location wide format for inter location call appearance of 11 and 12 digits extensions. The detailed format information can be found from the help screen.
    - Intra-Location: Enter a location wide format for intra location call appearance of 11 and 12 digits extensions.
    - Default Call Appearance Display Format: Enter "**intra-location**" to have short numbers call appearance on the station display as default setting. **Note**: This value can be overridden from the station form.

```
change display-parameters 1                                    Page   1 of   1
                              DISPLAY PARAMETERS

EXTENSION DISPLAY FORMATS

   Note: If a format is blank, the corresponding format administered
         on the Dial Plan Parameters form will be used

                               Inter-Location     Intra-Location
         6-Digit Extension:
         7-Digit Extension:
         8-Digit Extension:
         9-Digit Extension:
        10-Digit Extension:    xxx-xxx-xxxx       xxxx
        11-Digit Extension:    xxxx-xxx-xxxx      xxxxx
        12-Digit Extension:    xxxxxxxx-xxxx      xxxx
        13-Digit Extension:

        Default Call Appearance Display Format: intra-location
```

11. The call appearance display format on the station form overrides the default call appearance display format administered in Step 10. Issue the **change station <n>** command, where <**n**> is a valid station number, for example "**17321238004**". Navigate to page **3**. Set the **Call Appearance Display Format** field to "**inter-location**".

```
change station 17321238008                                     Page   3 of   5
                                    STATION

          Conf/Trans on Primary Appearance? n
Bridged Appearance Origination Restriction? n
       Call Appearance Display Format: inter-location
IP Phone Group ID:



                               ENHANCED CALL FORWARDING
                                      Forwarded Destination         Active
 Unconditional For Internal Calls To:                                  n
                   External Calls To:                                  n
          Busy For Internal Calls To:                                  n
                   External Calls To:                                  n
      No Reply For Internal Calls To:                                  n
                   External Calls To:                                  n
```

12. To change an extension number from 5-digit to 11-digit extension number, issue the "**change extension number <x>**" command, where <x> is the 5-digit extension number. Enter the 11-digit extension number as shown below. Submit the change.

    Note: The warning message at the bottom of the screen below is important for the older H.323 phones. DCP and analog phones, and newer H.323 phones, are able to change their extension on the fly.

```
change extension-station 38007                                  Page   1 of   1

                              CHANGE STATION EXTENSION

          Station Name: 38007, Main                    Port: S02903

                     FROM EXTENSION              TO EXTENSION
                     --------------              ------------
                       Station: 38007            17321238007
                  Message Lamp: 38007            38007
        Emergency Location Ext: 38007            38007




       WARNING: Submtting this form does not update the extension stored
       in the station itself.  After submitting this command, be sure to
       reprogram the station with the new extension.
```

4. Verification Steps

This section provides the tests that may be used to verify the proper configuration:

1. Verify that the stations display the short number on the station display correctly. Verify intra location calls by dialing full extension numbers. Repeat at all three locations.

2. Verify intra location calls by dialing short extension numbers. Repeat at all three locations.

   Verify that the stations display the short number on the station display correctly.
   Using the SAT, enter **list station n** where n is the full extension number of the station.

```
list trace station 17321238008

                                LIST TRACE

time           data
14:32:16     active station    17321238008 cid 0x16f9
14:32:16     G711MU ss:off ps:20 rn:1/1 5.1.1.153:45734 5.1.1.7:15172
14:32:16     xoip: fax:T38 modem:off tty:US 5.1.1.7:15172 uid:0x8af7
14:32:21     dial 30012
14:32:21     ring station    17321230012 cid 0x16f9
14:32:22     active station    17321230012 cid 0x16f9
14:32:26     idle station    17321230012 cid 0x16f9
```

3. Verify inter location calls by dialing full extension numbers. Place calls from all locations and verify that the stations display the full extension number on the station display correctly.

4. Verify inter location calls by dialing short extension numbers. Place calls from all locations and verify that the stations display the full extension number on the station display correctly.
   Using the SAT, enter **list station n** where n is the full extension number of the station.

```
list trace station 17321238008

                                LIST TRACE

time           data
14:40:56     active station    17321238008 cid 0x16fa
14:40:56     G711MU ss:off ps:20 rn:1/1 5.1.1.153:45734 5.1.1.6:18768
14:40:56     xoip: fax:T38 modem:off tty:US 5.1.1.6:18768 uid:0x8af7
14:40:59     dial 338900
14:40:59     ring station    14083338900 cid 0x16fa
14:40:59     G729A ss:off ps:20 rn:2/1 5.1.108.102:52224 5.1.1.6:18772
14:40:59     xoip: fax:Relay modem:off tty:US 5.1.1.6:18772 uid:0x8b04
14:41:06     active station    14083338900 cid 0x16fa
14:41:06     G729A ss:off ps:20 rn:1/2 5.1.1.153:45734 5.1.108.102:52224
14:41:06     G729A ss:off ps:20 rn:2/1 5.1.108.102:52224 5.1.1.153:45734
14:41:08     idle station    14083338900 cid 0x16fa
```

5. Conclusion

These Application Notes demonstrate how to provision the Avaya Communication Manager with flexible number dialing for inter and intra location dialing and station call appearance display for 13-digit dial plan expansion.

6. Additional References

The following documents can be found at http://support.avaya.com:

[1] *Administrator's Guide for Avaya Communication Manager, Issue 3, May 2007; Doc ID:* 03-300509

[2] *Avaya Extension to Cellular User Guide for Avaya Communication Manager, Issue 9, February 2007; Doc ID:* 210-100-700

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Solution & Interoperability Test Lab at interoplabnotes@list.avaya.com