Introduction

This is an application note for interoperability connectivity of Avaya S8700 Communication Manager 2.2 PBX with Cisco Unified CallManager Express Release 3.2 via H.323 trunk.

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with two different sites of Cisco Unified CallManager Express that has Cisco Unity Express built in connected to an Avaya PBX via H323 trunks.
**Network Topology**

Figure 1. Network Topology or Test Setup

**H.323 Call Setup End-to-End Configuration**

**Limitations**

- Called Name only displayed on Avaya phone when calling CME phone
- Called Number only displayed on CME phone when calling Avaya phone
- H.450.2 and H.450.3 supplementary services must be disabled and "allow-connections H323 to H323" must be enabled on CME to support call transfer and call forward to Avaya
- Inbound H323 call from remote CME transferred or forwarded to Avaya phone disconnects after 30 seconds
- Inbound H323 call with G.711 codec from Avaya blind transferred or forwarded from CME to remote CME transcoded to G729 fails

**System Components**

**Hardware Requirements**

- Cisco Unified CallManager Express Cisco 3845 with NM-CUE
- Cisco Unified CallManager Express Cisco 2851 with NM-CUE
- Cisco Catalyst Switch 3560 48 ports
- Cisco Aironet 1100 Series Access Point
- Cisco 7960 and 7920 phones.
Avaya S8700 Call Server
Avaya G650 Media gateway
Avaya 4620 IP phones.

Software Requirements
Cisco Unified CallManager Express Release 3.2
Cisco IOS software Release 12.3(11)T3
Cisco CatOS software Release 12.1(19)EA1c
Cisco 7960 IP phone Firmware P00305000301
Cisco 7920 IP phone Firmware cmterm_7920.4.0-01-08
Avaya Communication Manager 2.2
Avaya IP phone Firmware Version 2.1.3

Features
The following features are supported between the Avaya S8700 Communication Manager 2.2 PBX using an H323 trunk with Cisco Unified CallManager Express Release 3.2.

CLIP-Calling Line (Number) Identification Presentation
CNIP-Calling Name Identification Presentation
CT-Call Transfer by Join (Please see the Limitation section)
CFU-Call Forwarding Unconditional (Please see the Limitation section)
CFB-Call Forwarding Busy (Please see the Limitation section)
CFNR-Call Forwarding no reply (Please see the Limitation section)
COLP-Connected Line (Number) Identification Presentation (Please see the Limitation section)
CONP-Connected Name Identification Presentation (Please see the Limitation section)
Transcoding-CT, CFU, CFB, and CFNR (Please see the Limitation section)
CUE VM-Integration (Please see the Limitation section)
Call Hold / Resume
3-Way Conference

Features Not Supported
MWI-Message Waiting Indication (lamp ON, lamp OFF) across the H.323 Trunk
Call Completion (Callback; Automatic Callback) across H323 Trunk
Alerting Name from CME across H323 Trunk

Configuration
Configure Avaya Site which includes the S8700 call Server and the G650 media gateway
Configure Site 1 which includes C3845, NM-CUE, Cat3560, and Cisco AP 1120B
Configure Site 2 which includes C2851, NM-CUE, Cat3560
### AAR Digit Analysis Table

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<th>Percent Full:</th>
<th>Route</th>
<th>Call</th>
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### Route Pattern 301

**display route-pattern 301**

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BCC VALUE   TSC CA-TSC   ITC BCIE Service/Feature BAND  No. Numbering LAR
0 1 2 3 4 W  Request  Dgts Format

Subaddress

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display route-pattern 301

Pattern Number: 301

Grp FRL NPA Pfx Hop Toll No. Inserted  DCS/ IXC
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display route-pattern 301

Pattern Number: 301

Grp FRL NPA Pfx Hop Toll No. Inserted DCS/ IXC
### Route Pattern 302

```plaintext
display route-pattern 302

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</tr>
<tr>
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**Subaddress**

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| 2: | y y y y y n n | rest | none |
| 3: | y y y y y n n | rest | none |
| 4: | y y y y y n n | rest | none |
| 5: | y y y y y n n | rest | none |
| 6: | y y y y y n n | rest | none |

`display route-pattern 302`

Pattern Number: 302

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15: n user
16: n user

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13: y y y y y n n rest none
14: y y y y y n n rest none
15: y y y y y n n rest none
16: y y y y y n n rest none

Signaling Group 301

display signaling-group 301

SIGNALING GROUP

Group Number: 301 Group Type: h.323
Remote Office? n Max number of NCA TSC: 0
SBS? n Max number of CA TSC: 0

Trunk Group for NCA TSC: Trunk Group for Channel Selection: 301

Supplementary Service Protocol: a Network Call Transfer? n
T303 Timer(sec): 10
Near-end Node Name: CLAN1          Far-end Node Name: CCME1
Near-end Listen Port: 1720        Far-end Listen Port: 1720
Far-end Network Region: 1

LRQ Required? n          Calls Share IP Signaling Connection? y
RRQ Required? n
Media Encryption? n          Bypass If IP Threshold Exceeded? y

DTMF over IP: out-of-band    Direct IP-IP Audio Connections? n
                           IP Audio Hairpinning? y
Interworking Message: PROGress

display signaling-group 301

ADMINISTERED NCA TSC ASSIGNMENT

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display signaling-group 301

ADMINISTERED NCA TSC ASSIGNMENT

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display signaling-group 301
display signaling-group 301

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Signaling Group 302

display signaling-group 302

SIGNALING GROUP

Group Number: 302           Group Type: h.323

Remote Office? n            Max number of NCA TSC: 0
SBS? n                      Max number of CA TSC: 0

Trunk Group for NCA TSC:

Trunk Group for Channel Selection: 302

Supplementary Service Protocol: a          Network Call Transfer? n

T303 Timer(sec): 10

Near-end Node Name: CLAN2            Far-end Node Name: CCME2
Near-end Listen Port: 1720           Far-end Listen Port: 1720
Far-end Network Region: 1
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<th>As-needed Inactivity Time-out (min):</th>
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12: n
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display signaling-group 302

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display signaling-group 302

ADMINISTERED NCA TSC ASSIGNMENT

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```plaintext
display signaling-group 302

ADMINISTERED NCA TSC ASSIGNMENT

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System Parameters

display system-parameters customer-options

OPTIONAL FEATURES

G3 Version: V12
Location: 1 RFA System ID (SID): 21096
Platform: 8 RFA Module ID (MID): 1

USED
Maximum Ports: 226 176
Maximum XMObILE Stations: 10 3
Maximum Off-PBX Telephones - EC500: 5 3
Maximum Off-PBX Telephones - OPS: 15 0
Maximum Off-PBX Telephones - SCCAN: 0 0

(NOTE: You must logoff & login to effect the permission changes.)
### OPTIONAL FEATURES

<table>
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<tr>
<th>IP PORT CAPACITIES</th>
<th>USED</th>
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<td>Maximum Administered H.323 Trunks:</td>
<td>8000</td>
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<tr>
<td>Maximum Concurrently Registered IP Stations:</td>
<td>137</td>
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<tr>
<td>Maximum Administered Remote Office Trunks:</td>
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<tr>
<td>Maximum Concurrently Registered Remote Office Stations:</td>
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<tr>
<td>Maximum Concurrently Registered IP eCons:</td>
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<tr>
<td>Maximum Administered SIP Trunks:</td>
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<tr>
<td>Maximum Number of DS1 Boards with Echo Cancellation:</td>
<td>400</td>
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<tr>
<td>Maximum TN2501 VAL Boards:</td>
<td>1</td>
</tr>
<tr>
<td>Maximum G700/G350 VAL Sources:</td>
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(Note: You must logoff & login to effect the permission changes.)

```display system-parameters customer-options```

### OPTIONAL FEATURES

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<tbody>
<tr>
<td>Access Security Gateway (ASG)? n</td>
<td>Authorization Codes? y</td>
</tr>
<tr>
<td>Analog Trunk Incoming Call ID? y</td>
<td>Backup Cluster Automatic Takeover? n</td>
</tr>
</tbody>
</table>
A/D Grp/Sys List Dialing Start at 01? y
Answer Supervision by Call Classifier? y
ARS? y
ARS/AAR Partitioning? y
ARS/AAR Dialing without FAC? n
ASAI Link Core Capabilities? n
ASAI Link Plus Capabilities? n
Async. Transfer Mode (ATM) PNC? n
Async. Transfer Mode (ATM) Trunking? n
ATM WAN Spare Processor? n
ATMS? y
Attendant Vectoring? y
Emergency Access to Attendant? y
Enable 'dadmin' Login? y
Enhanced Conferencing? y
Enhanced EC500? y
Enterprise Wide Licensing? n
Extended Cvg/Fwd Admin? y

CAS Branch? n
CAS Main? n
Change COR by FAC? n
Computer Telephony Adjunct Links? y
Co-Res DEFINITIY LAN Gateway? n
Cvg Of Calls Redirected Off-net? y
DCS (Basic)? y
DCS Call Coverage? y
DCS with Rerouting? y
Digital Loss Plan Modification? y
DS1 MSP? n
DS1 Echo Cancellation? y

(NOTE: You must logoff & login to effect the permission changes.)

display system-parameters customer-options

OPTIONAL FEATURES

IP Stations? y
Internet Protocol (IP) PNC? y
ISDN Feature Plus? n
ISDN Network Call Redirection? y
ISDN-BRI Trunks? y
ISDN-PRI? y
External Device Alarm Admin? y                   Local Spare Processor? n
Five Port Networks Max Per MCC? n               Malicious Call Trace? y
Flexible Billing? n                               Media Encryption Over IP? y
Global Call Classification? y                     Multifrequency Signaling? y
Hospitality (Basic)? y                            Hospitality (G3V3 Enhancements)? y
Hospitality (G3V3 Enhancements)? y Multimedia Appl. Server Interface (MASI)? n
IP Trunks? y                                      Multimedia Call Handling (Basic)? y
Multimedia Call Handling (Enhanced)? y
IP Attendant Consoles? y

(NOTE: You must logoff & login to effect the permission changes.)

display system-parameters customer-options

OPTIONAL FEATURES

Multinational Locations? n                       Station and Trunk MSP? n
Multiple Level Precedence & Preemption? n         Station as Virtual Extension? y
Multiple Locations? y                             System Management Data Transfer? y
Personal Station Access (PSA)? y                 Tenant Partitioning? y
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
Wideband Switching? y
Processor Ethernet? y
Wireless? n
Remote Office? y
Restrict Call Forward Off Net? y
Secondary Data Module? y

(NOTE: You must logoff & login to effect the permission changes.)

display system-parameters customer-options

CALL CENTER OPTIONAL FEATURES

Call Center Release: 12.0

ACD? y
PASTE (Display PBX Data on Phone)? y
BCMS (Basic)? y
Reason Codes? y
BCMS/VuStats Service Level? y
Service Level Maximizer? n
BSR Local Treatment for IP & ISDN? y
Service Observing (Basic)? y
Business Advocate? y
Service Observing (Remote/By FAC)? y
Call Work Codes? y
Service Observing (VDNs)? y
DTMF Feedback Signals For VRU? y  Timed ACW? y
Dynamic Advocate? n  Vectoring (Basic)? y
Expert Agent Selection (EAS)? y  Vectoring (Prompting)? y
EAS-PHD? y  Vectoring (G3V4 Enhanced)? y
Forced ACD Calls? n  Vectoring (ANI/II-Digits Routing)? y
Vectoring (G3V4 Advanced Routing)? y
Lookahead Interflow (LAI)? y  Vectoring (CINFO)? y
Multiple Call Handling (On Request)? n  Vectoring (Best Service Routing)? y
Multiple Call Handling (Forced)? n  Vectoring (Holidays)? y
Vectoring (Variables)? y

(NOTE: You must logoff & login to effect the permission changes.)

display system-parameters customer-options

CALL CENTER OPTIONAL FEATURES

VDN of Origin Announcement? y  VuStats? y
VDN Return Destination? y  VuStats (G3V4 Enhanced)? y

USED

Logged-In ACD Agents: 5 0
Logged-In Advocate Agents: 5 0
Logged-In IP Softphone Agents: 5 0
display system-parameters customer-options                      

QSIG OPTIONAL FEATURES

Basic Call Setup? y
Basic Supplementary Services? y
Centralized Attendant? y
Interworking with DCS? y
Supplementary Services with Rerouting? y
Transfer into QSIG Voice Mail? y
Value-Added (VALU)? y

(display system-parameters customer-options                      

ASAI ENHANCED FEATURES

Increased Adjunct Route Capacity? n

ASAI PROPRIETARY FEATURES

Agent States? n
(NOTE: You must logoff & login to effect the permission changes.)

display system-parameters customer-options

MAXIMUM IP REGISTRATIONS BY PRODUCT ID

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display system-parameters customer-options

MAXIMUM IP REGISTRATIONS BY PRODUCT ID

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(NOTE: You must logoff & login to effect the permission changes.)
Trunk Group 301

display trunk-group 301

TRUNK GROUP

Group Number: 301                  Group Type: isdn          CDR Reports: y
Group Name: CCME1                       COR: 90       TN: 1        TAC: #01
Direction: two-way        Outgoing Display? y         Carrier Medium: IP
Dial Access? n                  Busy Threshold: 255       Night Service:
Queue Length: 5
Service Type: cbc                   Auth Code? n            TestCall ITC: rest
Usage Alloc? n          Far End Test Line No:
TestCall BCC: 4               TestCall Service:

TRUNK PARAMETERS

Codeset to Send Display: 0     Codeset to Send National IEs: 6
Max Message Size to Send: 260   Charge Advice: none
Supplementary Service Protocol: a     Digit Handling (in/out): enbloc/enbloc

Trunk Hunt: ascend                  QSIG Value-Added? n
Digital Loss Group: 18
Incoming Calling Number - Delete: Insert: Format:
Bit Rate: 1200        Synchronization: async   Duplex: full
Disconnect Supervision - In? y Out? n
Answer Supervision Timeout: 0

display trunk-group 301

TRUNK FEATURES

ACA Assignment? n  Measured: both  Wideband Support? y

Maintenance Tests? y

Data Restriction? n  NCA-TSC Trunk Member:

Send Name: y  Send Calling Number: y

Used for DCS? n

Suppress # Outpulsing? n  Format: public

Outgoing Channel ID Encoding: preferred  UUI IE Treatment: service-provider

Replace Restricted Numbers? n

Replace Unavailable Numbers? n

Send Connected Number: y

Network Call Redirection: none  Hold/Unhold Notifications? y

Send UUI IE? y  Modify Tandem Calling Number? n

Send UCID? y

Send Codeset 6/7 LAI IE? y

SBS? n  Network (Japan) Needs Connect Before Disconnect? n
### INCOMING CALL HANDLING TREATMENT

<table>
<thead>
<tr>
<th>Service/Feature</th>
<th>Called Len</th>
<th>Called Number</th>
<th>Del Insert</th>
<th>Per Call CPN/BN</th>
<th>Night Serv</th>
</tr>
</thead>
</table>

### WIDEBAND SUPPORT OPTIONS

- H0? n
- H11? n
- H12? n
- NXDS0? n
display trunk-group 301

TRUNK GROUP

Administered Members (min/max): 1/6

GROUP MEMBER ASSIGNMENTS

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<thead>
<tr>
<th>Port</th>
<th>Code Sfx Name</th>
<th>Night</th>
<th>Sig Grp</th>
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display trunk-group 301

TRUNK GROUP

Administered Members (min/max): 1/6

GROUP MEMBER ASSIGNMENTS

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Trunk Group 302
display trunk-group 302

TRUNK GROUP

Group Number: 302 Group Type: isdn CDR Reports: y

Group Name: CCME2 COR: 90 TN: 1 TAC: #02

Direction: two-way Outgoing Display? y Carrier Medium: IP

Dial Access? n Busy Threshold: 255 Night Service:

Queue Length: 5

Service Type: cbc Auth Code? n TestCall ITC: rest

Usage Alloc? n Far End Test Line No:

TestCall BCC: 4 TestCall Service:

TRUNK PARAMETERS

Codeset to Send Display: 0 Codeset to Send National IEs: 6

Max Message Size to Send: 260 Charge Advice: none

Supplementary Service Protocol: a Digit Handling (in/out): enbloc/enbloc

Trunk Hunt: ascend QSIG Value-Added? n

Digital Loss Group: 18

Incoming Calling Number - Delete: Insert: Format:

Bit Rate: 1200 Synchronization: async Duplex: full

Disconnect Supervision - In? y Out? y

Answer Supervision Timeout: 0
display trunk-group 302

TRUNK FEATURES

ACA Assignment? n
Measured: both
Wideband Support? y
Maintenance Tests? y
Data Restriction? n
NCA-TSC Trunk Member:
Send Name: y
Send Calling Number: y
Used for DCS? n
Suppress # Outpulsing? n
Format: public
Outgoing Channel ID Encoding: preferred
UUI IE Treatment: service-provider
Replace Restricted Numbers? n
Replace Unavailable Numbers? n
Send Connected Number: y
Network Call Redirection: none
Hold/Unhold Notifications? y
Send UUI IE? y
Modify Tandem Calling Number? n
Send UCID? y
Send Codeset 6/7 LAI IE? y
SBS? n
Network (Japan) Needs Connect Before Disconnect? n

display trunk-group 302

INCOMING CALL HANDLING TREATMENT

Service/ Called Called Del Insert Per Call Night
Feature Len Number CPN/BN Serv
display trunk-group 302

INCOMING CALL HANDLING TREATMENT

<table>
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<tr>
<th>Service/Feature</th>
<th>Called Len</th>
<th>Called Number</th>
<th>Del</th>
<th>Insert</th>
<th>CPN/BN</th>
<th>Per Call Serv</th>
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display trunk-group 302

INCOMING CALL HANDLING TREATMENT

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<th>CPN/BN</th>
<th>Per Call Serv</th>
</tr>
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display trunk-group 302

WIDEBAND SUPPORT OPTIONS

H0? n
H11? n
H12? n
NXDS0? n

display trunk-group 302

TRUNK GROUP

Administered Members (min/max): 1/6

GROUP MEMBER ASSIGNMENTS

Total Administered Members: 6
<table>
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display trunk-group 302

TRUNK GROUP

Administered Members (min/max): 1/6

GROUP MEMBER ASSIGNMENTS

Total Administered Members: 6
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**Uniform-Dial Plan**

display uniform-dialplan 61

UNIFORM DIAL PLAN TABLE

Percent Full: 0

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<th>Insert</th>
<th>Node</th>
<th>Matching</th>
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© 2004-2005 Cisco Systems, Inc. All right reserved.
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**CCME Site 1 Configuration**

C3845 Configuration

*Show run*

Site-1#

Site-1#sh run

Building configuration...
Current configuration : 4514 bytes

!

version 12.3

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname Site-1

!

boot-start-marker

boot system flash:c3845-ipvoice-mz.123-11.T3.bin

boot-end-marker

!

enable password cisco

!

username user1 password 0 6301

username user2 password 0 6302

username 3

clock timezone PST -8

clock summer-time PST recurring

no aaa new-model

ip subnet-zero
ip cef
!
!
ip dhcp excluded-address 10.1.5.1
!
ip dhcp pool phone
    network 10.1.5.0 255.255.255.128
    default-router 10.1.5.1
    option 150 ip 172.28.221.108
!
!
no ip domain lookup

no ftp-server write-enable
!
!
voice service voip
    allow-connections h323 to h323
    allow-connections h323 to sip
    supplementary-service h450.12
!
!
interface GigabitEthernet0/0
    ip address 172.28.221.108 255.255.255.240
duplex auto
speed auto
media-type rj45

h323-gateway voip interface

h323-gateway voip id sitel ipaddr 172.28.221.242 1719
h323-gateway voip h323-id cme-site1
h323-gateway voip tech-prefix 1#

h323-gateway voip bind srcaddr 172.28.221.108
!

interface GigabitEthernet0/1
no ip address
shutdown
duplex auto
speed auto
media-type rj45
!

interface Service-Engine1/0
ip address 192.168.1.1 255.255.255.0
service-module ip address 192.168.1.2 255.255.255.0
service-module ip default-gateway 192.168.1.1
!
ip classless

ip route 0.0.0.0 0.0.0.0 172.28.221.107
ip http server
ip http authentication local
ip http path flash:
!
!
tftp-server flash:ATA030100SCCP040211A.zup
tftp-server flash:CP7902040000SCCP040701A.sbin
tftp-server flash:CP7905040000SCCP040701A.sbin
tftp-server flash:P00403020214.bin
tftp-server flash:CP7912040000SCCP040701A.sbin
tftp-server flash:S00103020002.bin
tftp-server flash:P00503010100.bin
tftp-server flash:cmterm_7936.3-3-5-0.bin
tftp-server flash:P00303020214.bin
tftp-server flash:P00305000301.sbn
tftp-server flash:cmterm_7920.4.0-01-08.bin
!
control-plane
!
!
dial-peer voice 10 pots
destination-pattern 9T
dial-peer voice 11 pots
destination-pattern 9T
!
dial-peer voice 12 pots
destination-pattern 9T
!
dial-peer voice 13 pots
destination-pattern 9T
!
dial-peer voice 1 voip
destination-pattern 70..
session target ipv4:172.28.221.50
dtmf-relay h245-alphanumeric
codec g711ulaw
no vad
!
dial-peer voice 2 voip
destination-pattern 61..
session target ipv4:172.28.221.226
dtmf-relay h245-alphanumeric
codec g711ulaw
no vad
dial-peer voice 3 voip
  destination-pattern 6300
  session protocol sipv2
  session target ipv4:192.168.1.2
  dtmf-relay sip-notify
  codec g711ulaw
  no vad
!
dial-peer voice 4 voip
  shutdown
  destination-pattern ....
  session target ras
  dtmf-relay h245-alphanumeric
  codec g711ulaw
  no vad
!
gateway
  timer receive-rtp 1200
!
!
telephony-service
  load 7910 P00403020214
load 7935 P00503010100
load 7960-7940 P00303020214
load 7914 S00103020002
load ATA ATA030100SCCP040211A.zup
load 7905 CP7905040000SCCP040701A.sbin
load 7902 CP7902040000SCCP040701A.sbin
load 7920 cmterm_7920.4.0-01-08.bin
load 7912 CP7912040000SCCP040701A.sbin
max-ephones 96
max-dn 192
ip source-address 172.28.221.108 port 2000
system message XYZ Corp
create cnf-files version-stamp Jan 01 2002 00:00:00
voicemail 6300
max-conferences 8
call-forward pattern .T
moh music-on-hold.au
web admin system name cisco password cisco
dn-webedit
time-webedit
transfer-system full-consult
transfer-pattern ....
secondary-dialtone 9
ephone-dn 1 dual-line

number 6301

label 6301

description Site 1 Phone1

name Site 1 Phone1

call-forward busy 7015

call-forward noan 6300 timeout 10

huntstop channel

!

ephone-dn 2 dual-line

number 6302

label 6302

description Site 1 Phone2

name Site 1 Phone2

call-forward busy 6301

call-forward noan 6301 timeout 10

huntstop channel

!

ephone-dn 3 dual-line
number 6303
name Site 1 Phone3
!
!
ephone-dn 10
number 8000....
mwi on
!
!
ephone-dn 11
number 8001....
mwi off
!
!
ephone 1
username "user1" password 6301
mac-address 000B.BEF9.E87D
type 7960
keep-conference
button 1:1
!
!
ephone 2
username "user2" password 6302
mac-address 000D.2890.C92E
type 7960
button 1:2

user3
mac-address 00D0.59D3.5144
button 1:3

line con 0
password cisco
stopbits 1
line aux 0
stopbits 1
line 66
no activation-character
no exec
transport preferred none
transport input all
transport output all
line vty 0 4
    password cisco
    login
!
scheduler allocate 20000 1000
!
end
Site-1#

NM-CUE Configuration

Show run
se-192-168-1-2#

se-192-168-1-2# sh run

Generating configuration:

clock timezone America/Los_Angeles

hostname se-192-168-1-2

ip domain-name unspecified

groupname Administrators create

groupname hunt1 create

groupname hunt2 create
username admin create
username user1 create
username user2 create
username user3 create

groupname hunt1 phonenumber "190"
groupname hunt2 phonenumber "111"

username user1 phonenumberE164 "7301"
username user2 phonenumberE164 "7302"
username user3 phonenumberE164 "7303"
username user1 phonenumber "6301"
username user2 phonenumber "6302"
username user3 phonenumber "6303"

groupname hunt1 owner admin
groupname hunt2 owner admin
groupname Administrators member admin
groupname Administrators member user1
groupname Administrators member user2
groupname hunt1 member user1
groupname hunt1 member user2
groupname hunt2 member user1

groupname hunt2 member user2

groupname Administrators privilege superuser

groupname Administrators privilege ManagePrompts

backup server url "ftp://127.0.0.1/ftp" credentials hidden "EWlTygcMhYmjazXhE/VN
XHCKp1VV4KjescbDaLa4f14WLSPFVv1rWUnfGWTYHfmPSd8ZzNgd+Y9J3xlk2B35jwAAAA="

ccn application autoattendant

description "autoattendant"

enabled

maxsessions 8

script "aa.aef"

parameter "MaxRetry" "3"

parameter "operExtn" "6333"

parameter "welcomePrompt" "AAWelcome.wav"

end application

ccn application ciscomwiapplication

description "ciscomwiapplication"

enabled

maxsessions 8

script "setmwi.aef"
parameter "strMWI_OFF_DN" "8001"

parameter "strMWI_ON_DN" "8000"

parameter "CallControlGroupID" "0"

end application

ccn application customaa

description "customaa"

enabled

maxsessions 8

script "s1_main-officehours.aef"

parameter "MainOperExt" "100"

end application

ccn application promptmgmt

description "promptmgmt"

enabled

maxsessions 1

script "promptmgmt.aef"

end application

ccn application voicemail

description "voicemail"

enabled
maxsessions 8

script "voicebrowser.aef"

parameter "logoutUri" "http://localhost/voicemail/vxmlscripts/mbxLogout.jsp"

parameter "uri" "http://localhost/voicemail/vxmlscripts/login.vxml"

end application

ccn engine

end engine

ccn subsystem jtapi

ccm-manager address

end subsystem

ccn subsystem sip

gateway address "192.168.1.1"

end subsystem

ccn trigger sip phonenumber 112

application "autoattendant"

enabled

locale "en_US"

maxsessions 8

end trigger
ccn trigger sip phonenumber 113
application "customaa"
enabled
locale "en_US"
maxsessions 8
end trigger

ccn trigger sip phonenumber 114
application "promptmgmt"
enabled
locale "en_US"
maxsessions 1
end trigger

ccn trigger sip phonenumber 200
application "voicemail"
enabled
locale "en_US"
maxsessions 8
end trigger

ccn trigger sip phonenumber 6300
application "voicemail"

enabled

locale "en_US"

maxsessions 8

description "hunt1 mailbox"

end trigger

ccn trigger sip phononenumber 6333

application "autoattendant"

enabled

locale "en_US"

maxsessions 8

end trigger

voicemail default expiration time 30

voicemail default language en_US

voicemail default mailboxsize 3000

voicemail recording time 900

voicemail default messagesize 60

voicemail operator telephone 100

voicemail capacity time 6000

voicemail mailbox owner "hunt1" size 3000

description "hunt1 mailbox"

zerooutnumber "100"
end mailbox

voicemail mailbox owner "hunt2" size 3000
description "hunt2 mailbox"
end mailbox

voicemail mailbox owner "user1" size 3000
timeout number "100"
end mailbox

voicemail mailbox owner "user2" size 3000
end mailbox

voicemail mailbox owner "user3" size 3000
zerooutnumber "100"
end mailbox

end

Cisco Catalyst 3560 Configuration
Show run
Cat3560#

Cat3560#sh run

Building configuration...
Current configuration : 6264 bytes

!

version 12.1

no service pad

service timestamps debug uptime

service timestamps log uptime

no service password-encryption

!

hostname Cat3560

!

enable secret 5 $1$0jWf$9pDNvRAwcvJScOoqBLsA41

enable password cisco

!

ip subnet-zero

!

!

spanning-tree mode pvst

no spanning-tree optimize bpdu transmission

spanning-tree extend system-id

!

!

interface FastEthernet0/1
description 3600-2

switchport trunk encapsulation dot1q

switchport trunk native vlan 99

switchport mode trunk

no ip address

duplex full

speed 100

no mdix auto

!

interface FastEthernet0/2

switchport access vlan 500

no ip address

no mdix auto

!

interface FastEthernet0/3

switchport access vlan 500

no ip address

no mdix auto

!

interface FastEthernet0/4

no ip address

no mdix auto

!
interface FastEthernet0/5

no ip address

no mdix auto

!

interface FastEthernet0/6

no ip address

no mdix auto

!

interface FastEthernet0/7

switchport access vlan 500

no ip address

mdix auto

!

interface FastEthernet0/8

no ip address

no mdix auto

!

interface FastEthernet0/9

no ip address

no mdix auto

!

interface FastEthernet0/10

no ip address
no mdix auto

!

interface FastEthernet0/11

switchport access vlan 500

no ip address

no mdix auto

!

interface FastEthernet0/12

no ip address

no mdix auto

!

interface FastEthernet0/13

switchport access vlan 140

no ip address

no mdix auto

spanning-tree portfast

!

interface FastEthernet0/14

switchport trunk encapsulation dot1q

switchport trunk native vlan 902

switchport mode trunk

switchport voice vlan 901

no ip address
no mdix auto

spanning-tree portfast

!

interface FastEthernet0/15

switchport trunk encapsulation dot1q

switchport trunk native vlan 902

switchport mode trunk

switchport voice vlan 901

no ip address

no mdix auto

spanning-tree portfast

!

interface FastEthernet0/16

no ip address

no mdix auto

!

interface FastEthernet0/17

no ip address

no mdix auto

!

interface FastEthernet0/18

switchport trunk encapsulation dot1q

switchport trunk native vlan 502
switchport mode trunk

switchport voice vlan 501

no ip address

no mdix auto

spanning-tree portfast

!

interface FastEthernet0/19

switchport trunk encapsulation dot1q

switchport trunk native vlan 502

switchport mode trunk

switchport voice vlan 501

no ip address

no mdix auto

spanning-tree portfast

!

interface FastEthernet0/20

switchport trunk encapsulation dot1q

switchport trunk native vlan 502

switchport mode trunk

switchport voice vlan 501

no ip address

no mdix auto

spanning-tree portfast
! 

interface FastEthernet0/21
switchport trunk encapsulation dot1q
switchport trunk native vlan 502
switchport mode trunk
switchport voice vlan 501
no ip address
no mdix auto
spanning-tree portfast
!

interface FastEthernet0/22
switchport trunk encapsulation dot1q
switchport trunk native vlan 502
switchport mode trunk
switchport voice vlan 501
no ip address
no mdix auto
spanning-tree portfast
!

interface FastEthernet0/23
no ip address
no mdix auto
!
interface FastEthernet0/24
switchport access vlan 888
no ip address
no mdix auto
!

interface FastEthernet0/25
switchport trunk encapsulation dot1q
switchport trunk native vlan 890
switchport voice vlan 889
no ip address
no mdix auto
spanning-tree portfast
!

interface FastEthernet0/26
switchport trunk encapsulation dot1q
switchport trunk native vlan 890
switchport voice vlan 889
no ip address
no mdix auto
spanning-tree portfast
!

interface FastEthernet0/27
no ip address
no mdix auto

!

interface FastEthernet0/28

no ip address

no mdix auto

!

interface FastEthernet0/29

no ip address

no mdix auto

!

interface FastEthernet0/30

no ip address

no mdix auto

!

interface FastEthernet0/31

switchport trunk encapsulation dot1q

switchport trunk native vlan 890

switchport voice vlan 889

no ip address

no mdix auto

spanning-tree portfast

!

interface FastEthernet0/32
switchport trunk encapsulation dot1q
switchport trunk native vlan 890
switchport voice vlan 889
no ip address
no mdix auto
spanning-tree portfast
!
interface FastEthernet0/33
switchport access vlan 160
no ip address
no mdix auto
!
interface FastEthernet0/34
no ip address
no mdix auto
!
interface FastEthernet0/35
no ip address
no mdix auto
!
interface FastEthernet0/36
no ip address
no mdix auto
interface FastEthernet0/37
switchport access vlan 150
no ip address
no mdix auto
!
interface FastEthernet0/38
switchport trunk encapsulation dot1q
switchport trunk native vlan 152
switchport mode trunk
switchport voice vlan 151
no ip address
no mdix auto
spanning-tree portfast
!
interface FastEthernet0/39
switchport trunk encapsulation dot1q
switchport trunk native vlan 152
switchport mode trunk
switchport voice vlan 151
no ip address
no mdix auto
spanning-tree portfast
interface FastEthernet0/40
no ip address
no mdix auto

interface FastEthernet0/41
switchport access vlan 500
no ip address
no mdix auto

interface FastEthernet0/42
switchport trunk encapsulation dot1q
switchport trunk native vlan 502
switchport mode trunk
switchport voice vlan 501
no ip address
no mdix auto
spanning-tree portfast

interface FastEthernet0/43
switchport trunk encapsulation dot1q
switchport trunk native vlan 502
switchport mode trunk
switchport voice vlan 501
no ip address
no mdix auto
spanning-tree portfast
!

interface FastEthernet0/44
description This is a test port to check DHCP issue with phone
switchport access vlan 501
no ip address
no mdix auto
!

interface FastEthernet0/45
no ip address
no mdix auto
!

interface FastEthernet0/46
no ip address
no mdix auto
!

interface FastEthernet0/47
switchport access vlan 501
no ip address
no mdix auto
interface FastEthernet0/48
   no ip address
   no mdix auto
!
interface GigabitEthernet0/1
   no ip address
!
interface GigabitEthernet0/2
   no ip address
!
interface GigabitEthernet0/3
   no ip address
!
interface GigabitEthernet0/4
   no ip address
!
interface Vlan1
   no ip address
   shutdown
!
interface Vlan500
   ip address 172.28.221.105 255.255.255.240
ip helper-address 172.28.221.22

no ip route-cache

!

ip default-gateway 172.28.221.107

ip classless

ip http server

!

!

line con 0

password cisco

login

line vty 0 4

password cisco

login

line vty 5 15

password cisco

login

!

end

Cat3560#
CCME Site 2 Configuration

C2851 Configuration

Show run

Site-2#

Site-2#sh run

Building configuration...

Current configuration : 5251 bytes

!

version 12.3

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname Site-2

!

boot-start-marker

boot system flash:c2800nm-ipvoice-mz.123-11.T3.bin

boot-end-marker

!

enable password cisco

!

clock timezone PST -8

clock summer-time PST recurring
no aaa new-model

ip subnet-zero

!

!

ip cef

ip dhcp excluded-address 10.1.15.1

!

ip dhcp pool phone

    network 10.1.15.0 255.255.255.128

    option 150 ip 172.28.221.226

    default-router 10.1.15.1

!

!

no ip domain lookup

no ftp-server write-enable

!

voice-card 0

no dspfarm

dsp services dspfarm

!

!

!

voice service voip
allow-connections h323 to h323

supplementary-service h450.12

!

interface GigabitEthernet0/0

ip address 172.28.221.226 255.255.255.240
duplex auto
speed auto

h323-gateway voip interface
h323-gateway voip id site2 ipaddr 172.28.221.242 1719
h323-gateway voip h323-id cme-site2
h323-gateway voip tech-prefix 1#
h323-gateway voip bind srcaddr 172.28.221.226

!

interface GigabitEthernet0/1

no ip address
shutdown
duplex auto
speed auto

!

interface FastEthernet0/1/0

switchport access vlan 10
no ip address
interface FastEthernet0/1/1
  switchport access vlan 10
  no ip address

interface FastEthernet0/1/2
  switchport access vlan 10
  no ip address

interface FastEthernet0/1/3
  switchport access vlan 10
  no ip address

interface FastEthernet0/1/4
  switchport access vlan 10
  no ip address

interface FastEthernet0/1/5
  switchport access vlan 10
  no ip address

interface FastEthernet0/1/6
  switchport access vlan 10
no ip address

!

interface FastEthernet0/1/7
  switchport access vlan 10
  no ip address

!

interface FastEthernet0/1/8
  switchport access vlan 10
  no ip address

!

interface Service-Engine1/0
  ip unnumbered Vlan10
  service-module ip address 192.168.1.2 255.255.255.0
  service-module ip default-gateway 192.168.1.1

!

interface Vlan1
  no ip address

!

interface Vlan10
  ip address 192.168.1.1 255.255.255.0

!

ip classless

ip route 0.0.0.0 0.0.0.0 172.28.221.225
ip route 192.168.1.2 255.255.255.255 Service-Engine1/0

!

ip http server

ip http authentication local

ip http path flash:

!

!

!

!

tftp-server flash:ATA030100SCCP040211A.zup
tftp-server flash:CP7902040000SCCP040701A.sbin
tftp-server flash:CP7905040000SCCP040701A.sbin
tftp-server flash:P00403020214.bin
tftp-server flash:CP7912040000SCCP040701A.sbin
tftp-server flash:S00103020002.bin
tftp-server flash:P00503010100.bin
tftp-server flash:cmterm_7936.3-3-5-0.bin
tftp-server flash:P00303020214.bin
tftp-server flash:P00305000301.sbn
tftp-server flash:cmterm_7920.4.0-01-08.bin

!

control-plane

!

!
sccp local GigabitEthernet0/0
sccp ccm 172.28.221.226 identifier 1
sccp

sccp ccm group 1
associate ccm 1 priority 1
associate profile 1 register mtp0012d974a208
keepalive retries 5

!
dspfarm profile 1 transcode
  codec g711ulaw
  codec g711alaw
  codec g729ar8
  codec g729abr8
  codec gsmfr
  maximum sessions 8
  associate application SCCP
!
!
dial-peer voice 10 pots
  destination-pattern 9T
!
dial-peer voice 11 pots
  destination-pattern 9T
!
dial-peer voice 12 pots
  destination-pattern 9T
!
dial-peer voice 13 pots
  destination-pattern 9T
!
dial-peer voice 1 voip
  destination-pattern 7...
  session target ipv4:172.28.221.56
  dtmf-relay h245-alphanumeric
  codec g711ulaw
  no vad
!
dial-peer voice 2 voip
  destination-pattern 63..
  session target ipv4:172.28.221.108
  dtmf-relay h245-alphanumeric
  codec g711ulaw
  no vad
!
dial-peer voice 4 voip

shutdown

destination-pattern ....

session target ras

dtmf-relay h245-alphanumeric

codec g711ulaw

no vad

!

gateway

timer receive-rtp 1200

!

!

telephony-service

load 7910 P00403020214

load 7935 P00503010100

load 7960-7940 P00303020214

load 7914 S00103020002

load ATA ATA030100SCCP040211A.zup

load 7905 CP7905040000SCCP040701A.sbin

load 7902 CP7902040000SCCP040701A.sbin

load 7920 cmterm_7920.4.0-01-08.bin

load 7912 CP7912040000SCCP040701A.sbin

max-ephones 96
max-dn 192

ip source-address 172.28.221.226 port 2000

system message ABC Corp

sdspfarm units 1

sdspfarm transcode sessions 8

sdspfarm tag 1 mtp0012d974a208

create cnf-files version-stamp Jan 01 2002 00:00:00

dialplan-pattern 1 6... extension-length 4

voicemail 9000

max-conferences 8

call-forward pattern .T

moh music-on-hold.au

web admin system name cmeadmin password cmeadmin
dn-webedit
time-webedit
transfer-system full-consult
transfer-pattern ....
secondary-dialtone 9

!

ephone-dn 1 dual-line

number 6101

label 6101
description Site 2 Phone 1
name Site 2 Phone 1
call-forward busy 7015
call-forward noan 7015 timeout 10
huntstop channel
!
!
ephone-dn 2 dual-line
number 6102
label 6102
description Site 2 Phone 2
name Site 2 Phone 2
call-forward busy 6101
call-forward noan 6101 timeout 10
huntstop channel
!
!
ephone 1
username "user1" password 6101
mac-address 000B.BEF2.D824
type 7960
keep-conference
button 1:1
! 
! 
! 
ephone 2

username "user2" password 6102
mac-address 000A.8A48.F9C9
type 7960
button 1:2
!
!
line con 0
line aux 0
line 66
  no activation-character
  no exec
  transport preferred none
  transport input all
  transport output all
line vty 0 4
  password cisco
  login
!
scheduler allocate 20000 1000
NM-CUE Configuration
Show run

se-192-168-1-2# sh run

Generating configuration:

clock timezone America/Los_Angeles

hostname se-192-168-1-2

ip domain-name localdomain

software download server url "ftp://127.0.0.1/ftp" credentials hidden "6u/dKTN/h
seUSAEfw40Xl2eFHnZfyUTSd8ZZNgd+Y9J3x1k2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3x1k2B35jwAAA
AA="

 grouppname Administrators create

grouppname Broadcasters create
username admin create
username user1 create
username user2 create
username user1 phonenumber "6101"
username user2 phonenumber "6102"

groupname Administrators member admin
groupname Administrators privilege superuser
groupname Administrators privilege ManagePrompts
groupname Administrators privilege ManagePublicList
groupname Administrators privilege ViewPrivateList
groupname Broadcasters privilege broadcast

backup server url "ftp://127.0.0.1/ftp" credentials hidden "EWlTygcMhYmjazXhE/VNXHCkplV4KjescbDaLa4f14WLSPPvv1rWUnfGWTYHfmPSd8ZZNgd+Y9J3x1k2B35jwAAAAA=

calendar biz-schedule systemschedule
open day 1 from 00:00 to 24:00
open day 2 from 00:00 to 24:00
open day 3 from 00:00 to 24:00
open day 4 from 00:00 to 24:00
open day 5 from 00:00 to 24:00
open day 6 from 00:00 to 24:00
open day 7 from 00:00 to 24:00
end schedule

ccn application autoattendant

description "autoattendant"

enabled

maxsessions 8

script "aa.aef"

parameter "busOpenPrompt" "AABusinessOpen.wav"

parameter "holidayPrompt" "AAHolidayPrompt.wav"

parameter "busClosedPrompt" "AABusinessClosed.wav"

parameter "allowExternalTransfers" "false"

parameter "MaxRetry" "3"

parameter "operExtn" "0"

parameter "welcomePrompt" "AAWelcome.wav"

parameter "businessSchedule" "systemschedule"

end application

ccn application ciscomwiapplication

description "ciscomwiapplication"

enabled

maxsessions 8

script "setmwi.aef"
ccn application promptmgmt

description "promptmgmt"

enabled

maxsessions 1

script "promptmgmt.aef"

end application

ccn application voicemail

description "voicemail"

enabled

maxsessions 8

script "voicebrowser.aef"

parameter "logoutUri" "http://localhost/voicemail/vxmlscripts/mbxLogout.jsp"

parameter "uri" "http://localhost/voicemail/vxmlscripts/login.vxml"

end application

ccn engine

end engine
ccn subsystem jtapi

ccm-manager address 0.0.0.0

end subsystem

ccn subsystem sip

gateway address "192.168.1.1"

end subsystem

ccn trigger sip phonenumber 6100

application "voicemail"

enabled

maxsessions 8

end trigger

voicemail default mailboxsize 3000

voicemail broadcast recording time 300

voicemail mailbox owner "user1" size 3000

zerooutnumber "100"

end mailbox

voicemail mailbox owner "user2" size 3000

zerooutnumber "100"
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCME</td>
<td>Cisco Unified CallManager Express</td>
</tr>
<tr>
<td>CUE</td>
<td>Cisco Unity Express</td>
</tr>
<tr>
<td>CFB</td>
<td>Call Forwarding on Busy</td>
</tr>
<tr>
<td>CF NR</td>
<td>Call Forwarding No Reply</td>
</tr>
<tr>
<td>CF U</td>
<td>Call Forwarding Unconditional</td>
</tr>
<tr>
<td>CL IP</td>
<td>Calling Line (Number) Identification Presentation</td>
</tr>
<tr>
<td>CN IP</td>
<td>Calling Name Identification Presentation</td>
</tr>
<tr>
<td>COL P</td>
<td>Connected Line (Number) Identification Presentation</td>
</tr>
<tr>
<td>CON P</td>
<td>Connected Name Identification Presentation</td>
</tr>
<tr>
<td>CT</td>
<td>Call Transfer</td>
</tr>
<tr>
<td>MWI</td>
<td>Message Waiting Indicator</td>
</tr>
</tbody>
</table>
Important Information

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<table>
<thead>
<tr>
<th><strong>Corporate Headquarters</strong></th>
<th><strong>European Headquarters</strong></th>
<th><strong>Americas Headquarters</strong></th>
<th><strong>Asia Pacific Headquarters</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>170 West Tasman Drive</td>
<td>BV</td>
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