# Version: 9.0

**Case Study: 1**
**Contoso, Ltd**
**General Overview**
Contoso, Ltd., is a manufacturing company that has 4,000 employees. The company has a sales department, a marketing department, a research department, and a human resources department.
Physical Locations
The company has four offices. The offices are configured as shown in the following table.

| Office location | Number of users | Extension prefix | Client subnet |
|---|---|---|---|
| New York | 1,500 | 1 | 192.168.8.0/21 |
| Miami | 100 | 2 | 192.168.20.0/24 |
| Los Angeles | 400 | 3 | 192.168.30.0/23 |
| Houston | 200 | 4 | 192.168.40.0/24 |

The New York office contains the main data center. Communications for all of the offices is routed through the New York office.
All telephone calls from the Los Angeles office and the Miami office are routed through a public switched telephone network (PSTN) gateway in the New York office.
All offices connect to each other by using a wide area network (WAN) link. Each office connects directly to the Internet.
**Existing Environment**
**Active Directory Environment**
The company has an Active Directory Domain Services (AD DS) forest named contoso.com. The forest contains a single domain. All domain controllers run Windows Server 2008 R2.
Each office contains two domain controllers. Each office is configured as an AD DS site.
Each office contains DHCP servers that run on 32-bit servers.
**Skype for Business Server Environment**
The company has nine servers. The servers are configured as shown in the following table.

| Server name | Office | Role | Software |
|---|---|---|---|
| Server1.contoso.com | New York | Front End Server | Skype for Business Server 2015 |
| Server2.contoso.com | New York | Front End Server | Skype for Business Server 2015 |
| Pool1.contoso.com | New York | Front End pool | n/a |
| Server3.contoso.com | New York | Mediation Server | Skype for Business Server 2015 |
| Server4.contoso.com | New York | Edge Server | Skype for Business Server 2015 |
| Gtwy1.contoso.com | New York | Media gateway | *None* |
| Gtwy2.contoso.com | Miami | Media gateway | *None* |
| Sba1.contoso.com | Houston | Survivable Branch appliance | Skype for Business Server 2015 |
| Exch1.contoso.com | New York | Client Access<br>Hub Transport<br>Mailbox<br>Unified Messaging | Microsoft Exchange Server 2010 |

The company uses a SIP domain of contoso.com. The voice infrastructure is configured as shown in the following table.

| Office | Phone number range | User dialing habit |
|---|---|---|
| New York | +1 212 555 1000-3000 | • Local PSTN: 10-digit phone number<br>• Long distance within North America: 11-digit phone number<br>• International: 011 + phone number |
| Miami | +1 425 555 1000-1100 | • Local PSTN: 7-digit phone number<br>• Long distance within North America: 11-digit phone number<br>• International: 011 + phone number |
| Los Angeles | +1 310 555 4000-4500 | • Local PSTN: 10-digit phone number<br>• Long distance within North America: 11-digit phone number<br>• International: 011 + phone number |
| Houston | +1 713 555 4000-4200 | • Local PSTN: 10-digit phone number<br>• Long distance within North America: 11-digit phone number<br>• International: 011 + phone number |

All users are enabled for Enterprise Voice.
The company also contains two Edge Servers that have Skype for Business Server 2015 deployed. The servers are configured as shown in the following table.

| Component | IP addressing | FQDN |
|---|---|---|
| A/V Edge service | 131.107.100.3/24 | Av.contoso.com |
| Access Edge service | 131.107.100.1/24 | Sip.contoso.com |

The Miami office has a dial plan. The dial plan is configured as shown in the following table.

| Normalization rule | Match pattern | Translation pattern |
|---|---|---|
| Internal New York | ^1(\d{4})$ | +1212555$1 |
| Internal Houston | ^4(\d{4})$ | +1713555$1 |
| Local 7 Digits | ^ (555\d{4})$ | +1425$1 |
| Long Distance | ^(1\d{10})$ | +$1 |
| International | ^(011\d{2}\d+)$ | +$1 |

The Skype for Business Server 2015 configuration has five routes. Location-based routing is not configured. The routes are configured as shown in the following table.

| Route name | Pattern to match | Description |
|---|---|---|
| LocalHouston | +1713 | Local calls in Houston through the gateway in the Houston office |
| LocalLA | +1310 | Local calls in Los Angeles through the gateway in the Los Angeles office |
| LDNY | +1 | Long distance calls through the gateway in the New York office |
| LDHouston | +1 | Long distance calls through the gateway in the Houston office |
| LDLA | +1 | Long distance calls through the gateway in the Los Angeles office |

The PSTN usage for the users in the Los Angeles office is configured as shown in the following table.

| PSTN usage name | Description |
|---|---|
| LocalDialing | Local calls within the area code |
| PrimaryLongDistanceDialing | All long distance calls within North America |
| BackupLongDistanceDialing | Backup for all long distance calls if PrimaryLongDistanceDialing fails |

**Problem Statements**

The company identifies the following issues with the current infrastructure:

- Los Angeles users report that the audio quality during calls to the New York office is poor and that the calls often disconnect.
- Users in the Miami office report that when their WAN link fails, they cannot establish calls to the PSTN.
- The Miami users report that they cannot call the Los Angeles users by using a five-digit internal phone number.

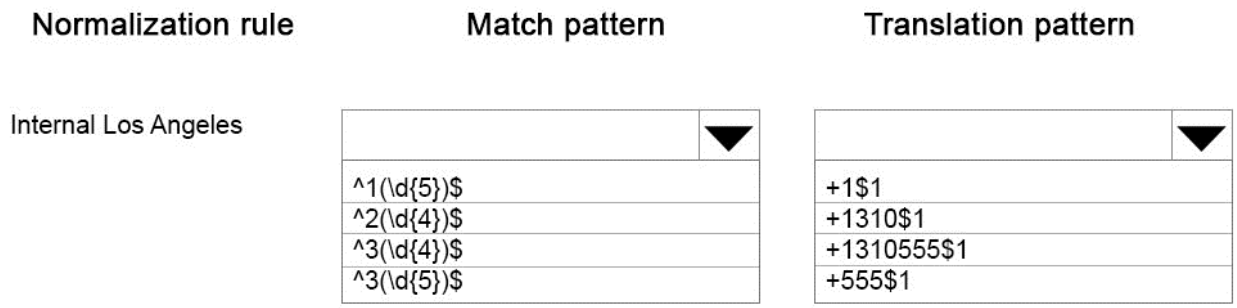
**Requirements**
**Planned Changes**
The company plans to implement the following changes:
- Provide voice resiliency in all of the offices if a WAN link fails.
- Implement Call Pack
- Implement an unassigned number range that has a voice announcement.
- Add an additional auto attendant.
- Implement a gateway in the Los Angeles office that uses the local PSTN.
- Migrate several users to Skype for Business Online. The users will use instant messaging (IM) with Skype for Business users only. Client computers will use automatic configuration and open federation. The migrated users will use a SIP domain of cloud.contoso.com.
- Provide a backup route for each office if a gateway fails.
- Provide each office with access to the local PSTN.

**Technical Requirements**
The company identifies the following technical requirements:
- Enable five-digit internal dialing that uses the site code and the last four digits of the phone number range.
- Configure the New York gateway as the backup route for the local gateway in each office.

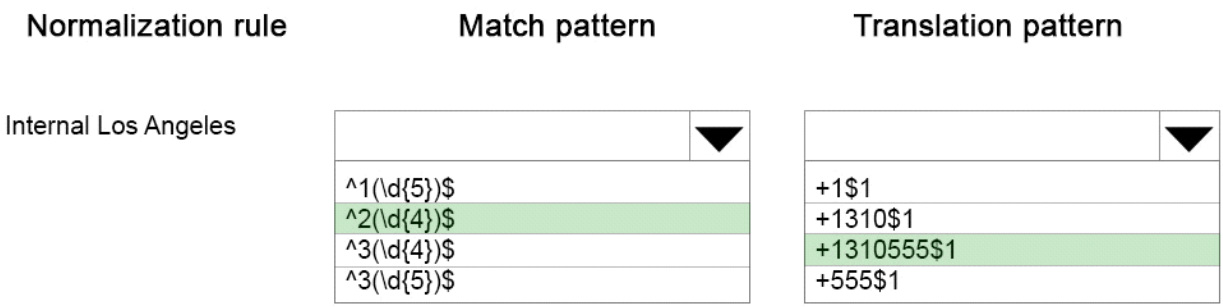
**Business Requirements**
Changes to the infrastructure must minimize the number of new servers deployed.

## Question: 1

HOTSPOT
You need to ensure that the Miami users can use a five-digit extension when they call the Los Angeles users.
What should you include in the normalization rule? To answer, configure the appropriate match pattern and translation pattern in the dialog box in the answer area.




**Answer:**




## Question: 2

DRAG DROP
You need to configure the unassigned numbers range to support the planned changes.
Which four actions should you perform?
To answer, move the four appropriate actions from the list of actions to the answer area and arrange them in the correct order.

| Actions | Answer Area |
| --- | --- |
| Run the **Import-CsAnnouncementFile** Skype for Business Management Shell cmdlet. | |
| Run the **New-CsAnnouncement** Skype for Business Management Shell cmdlet. | |
| Create an .mp3 file that contains the announcement. | |
| Create an unassigned number range. | |
| Run the **Set-CsApplicationServer** Skype for Business Management Shell cmdlet. | |
| Create a .wav file that contains the announcement. | |

**Answer:**

Create a .wav file that contains the announcement.

Run the **Import-CsAnnouncementFile** Skype for Business Management Shell cmdlet.

Run the **New-CsAnnouncement** Skype for Business Management Shell cmdlet.

Create an unassigned number range.

**Question: 3**

You collect the following call statistics for users in Los Angeles:
Peak call concurrency is 25 percent.
Fifty percent of all placed calls are routed to the public switched telephone network (PSTN)
Thirty percent of all placed calls are internal calls to users in the other offices.
Twenty percent of all placed calls are conference calls.
The average bandwidth for peer-to-peer calls is 65 kilobits per second (Kbps).
The average bandwidth used for conference calls is 100 Kbps.
You need to allocate the minimum amount of bandwidth required on the wide area network (WAN) link for the planned implementation of the voice gateway in the Los Angeles office. All calls to the PSTN will be routed through the local voice gateway in the Los Angeles office.
How much bandwidth in megabits per second (Mbps) should you allocate?

A. 7.20 Mbps
B. 3.95 Mbps
C. 10.00 Mbps
D. 2.25 Mbps

**Answer: B**

## Question: 4

DRAG DROP

You need to create the DHCP options required for Skype for Business Phone Edition devices.

Which three actions should you perform? To answer, move the three appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

- From a DHCP server, run **dhcpconfigscript.bat**.
- Copy Dhcpconfigscript.bat to a Skype for Business Server 2015 server.
- From a Skype for Business Server 2015 server, run **dhcputil.exe**.
- Copy Dhcpconfigscript.bat to a DHCP server.
- From a DHCP server, run **dhcputil.exe**.
- From a Skype for Business Server 2015 server, run **dhcpconfigscript.bat**.

Answer Area

**Answer:**

Answer Area

Copy Dhcpconfigscript.bat to a DHCP server.

From a DHCP server, run **dhcputil.exe**.

From a DHCP server, run **dhcpconfigscript.bat**.

## Question: 5

DRAG DROP

You need to plan the subnets for Call Admission Control (CAC) and media bypass.

Which subnet or subnets should you use for each office?

To answer, drag the appropriate subnet or subnets to the correct office in the answer are

a. Each subnet may be used once, more than once, or not at all. Additionally, you may need to drag the split bar between panes or scroll to view content.

**Subnets**

- 192.168.0.0/16
- 192.168.8.0/21
- 192.168.20.0/24
- 192.168.30.0/23
- 192.168.40.0/24
- 131.107.100.0/24
- 131.107.100.1/32
- 131.107.100.3/32

**Answer Area**

| | | |
|---|---|---|
| New York | Subnet | Subnet |
| Los Angeles | Subnet | |
| Miami | Subnet | |
| Houston | Subnet | |

**Answer:**

**Answer Area**

| | | |
|---|---|---|
| New York | 192.168.8.0/21 | 131.107.100.3/32 |
| Los Angeles | 192.168.30.0/23 | |
| Miami | 192.168.20.0/24 | |
| Houston | 192.168.40.0/24 | |

**Question: 6**

HOTSPOT
You need to design the Call Park solution.
Which Call Park design should you choose? To answer, select the appropriate range and application server in the dialog box in the answer area.

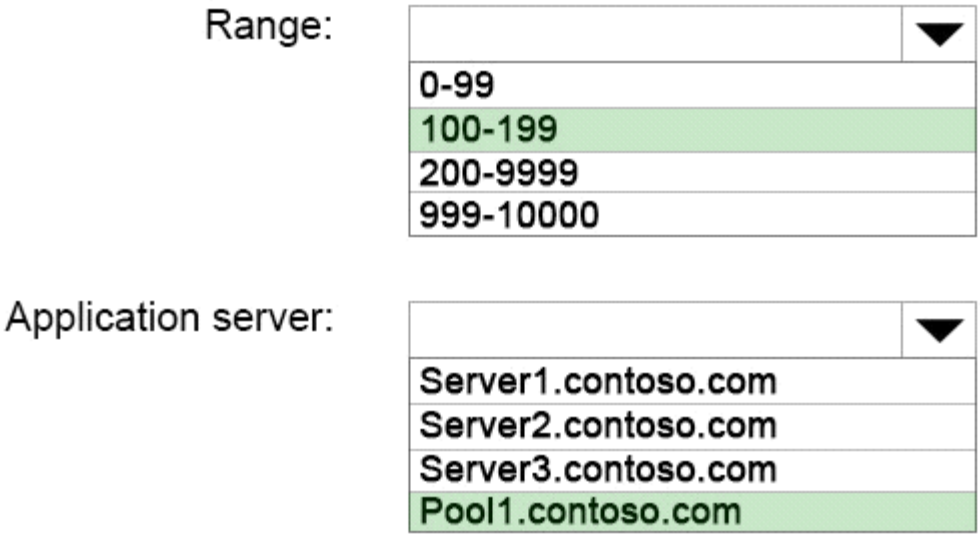
Range:

- 0-99
- 100-199
- 200-9999
- 999-10000

Application server:

- Server1.contoso.com
- Server2.contoso.com
- Server3.contoso.com
- Pool1.contoso.com

**Answer:**




## Question: 7

HOTSPOT

You need to deploy the Skype for Business components that are necessary to support the planned changes for voice resiliency.

Which component should you deploy at each office? To answer, select the appropriate component for each office in the answer area.

## Answer Area

| Office | Component to Deploy |
| --- | --- |
| New York | a voice gateway<br>a Standard Edition Front End server<br>a Survivable Branch Appliance<br>Do not deploy additional components |
| Miami | a voice gateway<br>a Standard Edition Front End server<br>a Survivable Branch Appliance<br>Do not deploy additional components |
| Los Angeles | a voice gateway<br>a Standard Edition Front End server<br>a Survivable Branch Appliance<br>Do not deploy additional components |
| Houston | a voice gateway<br>a Standard Edition Front End server<br>a Survivable Branch Appliance<br>Do not deploy additional components |

**Answer:**

## Answer Area

| Office | Component to Deploy |
|---|---|
| New York | a voice gateway<br>a Standard Edition Front End server<br>a Survivable Branch Appliance<br>**Do not deploy additional components** |
| Miami | a voice gateway<br>a Standard Edition Front End server<br>**a Survivable Branch Appliance**<br>Do not deploy additional components |
| Los Angeles | a voice gateway<br>a Standard Edition Front End server<br>**a Survivable Branch Appliance**<br>Do not deploy additional components |
| Houston | **a voice gateway**<br>a Standard Edition Front End server<br>a Survivable Branch Appliance<br>Do not deploy additional components |

## Question: 8

DRAG DROP

You need to ensure that least cost routing is used in the Los Angeles and Houston offices for local calls after the gateway is deployed. The solution must meet the technical requirements.

Which route should you assign to each public switched telephone network (PSTN) usage?

To answer, drag the appropriate route to the correct PSTN usage in the answer are

a. Each route may be used once, more than once, or not at all. Additionally, you may need to drag the split bar between panes or scroll to view content.

**Routes**

- LocalHouston
- LocalLA
- LDNY
- LDHouston
- LDLA

**Answer Area**

| | | |
|---|---|---|
| LocalDialing | Route | Route |
| PrimaryLongDistanceDialing | Route | |
| BackupLongDistanceDialing | Route | |

**Answer:**

**Routes**

- LocalHouston
- LocalLA
- LDNY
- LDHouston
- LDLA

**Answer Area**

| | | |
|---|---|---|
| LocalDialing | LocalLA | LocalHouston |
| PrimaryLongDistanceDialing | LDLA | |
| BackupLongDistanceDialing | LDNY | |