Chapter 2: Migration Details—Network-Wide Settings

Numbering Plans and Network Addressing

Ideally, network voice messaging numbering plans are set up to be consistent with phone system number plans. This allows voice mail subscribers to send network voice messages by using the same sequence of numbers they use when placing a phone call. Keep in mind that the network address length should be consistent throughout your organization, and a 7- or 10-digit network address length is usually used.

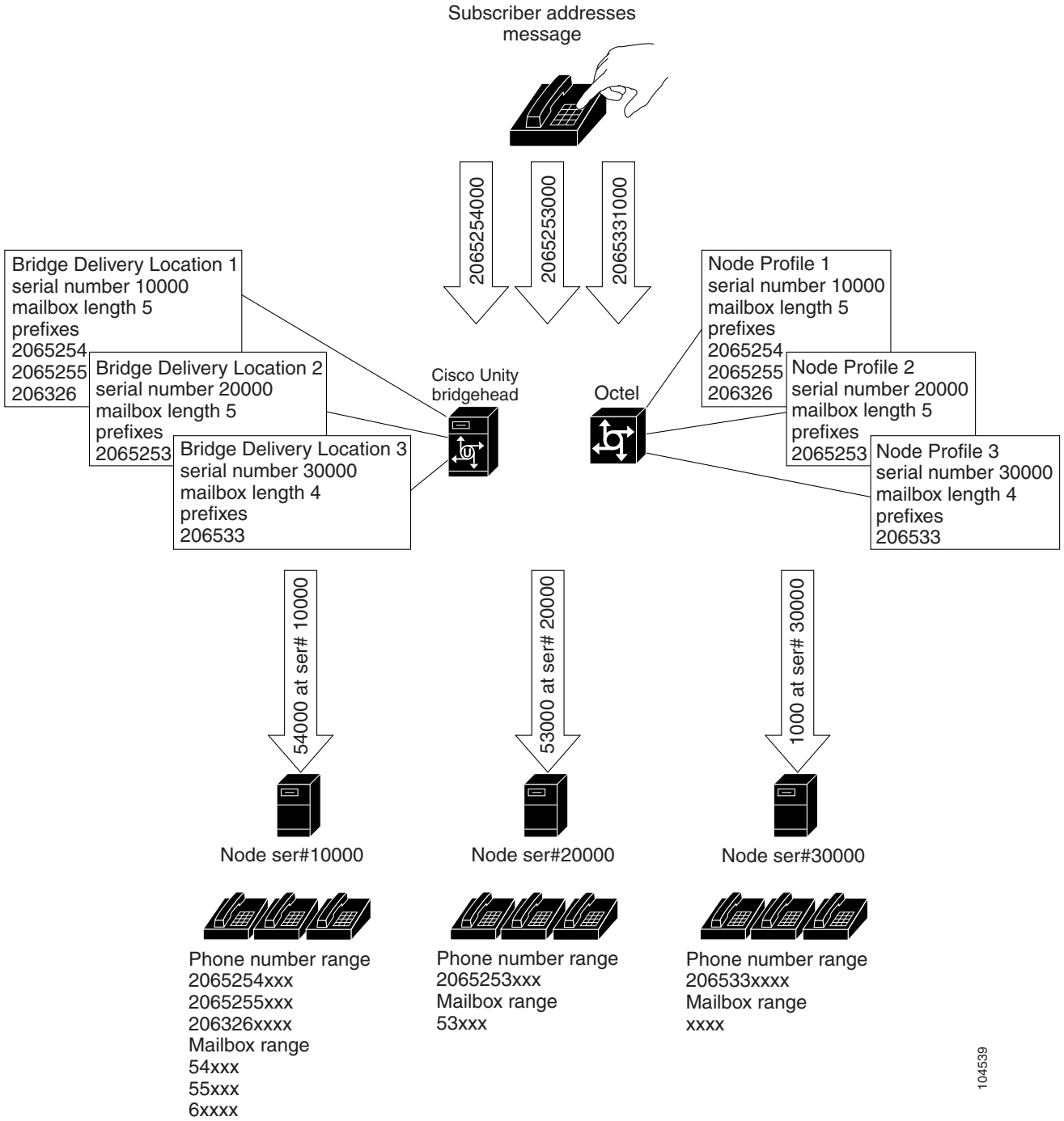
When a voice message is exchanged between two systems via Octel analog networking, there are two pieces of information that are used to uniquely identify the sender and the recipient: the node serial number and the mailbox number for both the sender and the recipient. Addressing prefixes exist to allow subscribers who are addressing a network message to do so by using the 7- or 10-digit network address. Multiple prefixes can be assigned to a single location to allow routing of different network addresses to the same node serial number. These prefixes are used only for addressing. When the voice mail server has identified which location the message needs to be routed to and the destination mailbox, the prefix is no longer needed. This means that the prefix itself is not exchanged between systems as part of message delivery.

On an Octel system, a node profile is configured for each node (remote system) with which it will communicate. The node profile includes, among other things, the serial number of the remote system, the number of digits in a mailbox on the remote system, and the addressing prefixes that are used for local subscribers when addressing network messages to this node.

Similarly, on a Cisco Unity system, a Bridge delivery location is configured for each Octel node with which the Cisco Unity Bridge will communicate. The Bridge delivery location includes the serial number of the remote system, the number of digits in a mailbox on the remote system, and the addressing prefixes that are used for local subscribers to address network messages to this node.

Figure 1 shows an example of network addressing, configured similarly on Cisco Unity Bridge delivery locations and Octel analog networking node profiles.

Figure 1: Network Addressing



In a Cisco Unity voice network where all of the systems access the same directory, only one Bridge delivery location needs to be configured for each Octel server. In the Octel voice network, each server accesses its own local directory; therefore, the node profiles for all other nodes need to be configured on each server.

Logical Octel Node Assignment Within the Cisco Unity Directory

Cisco Unity 4.0(3) and later and Cisco Unity Bridge 3.0(1) and later are designed to allow flexibility in numbering plans. When the Octel subscribers for a particular server are migrated to Cisco Unity, the administrator has the ability to retain the previous Octel node serial number and mailbox identity for each subscriber. In this manner, the Cisco Unity identity of the subscriber can be configured optimally for functioning within the Cisco Unity network, independent of the numbering plan used within the Octel network. When a Cisco Unity subscriber sends or receives a voice message via the Cisco Unity Bridge, the Legacy Mailbox and Unity Node Serial Number attributes of the subscriber are used. For all other Cisco Unity functions these two fields are ignored.

Figure 2 and Figure 3 illustrate this for an Octel with the node ser# 10000, whose subscribers are migrated to the Cisco Unity organization.

Figure 2: Subscribers on Octel Node Ser#10000 Prior to Migration to Cisco Unity

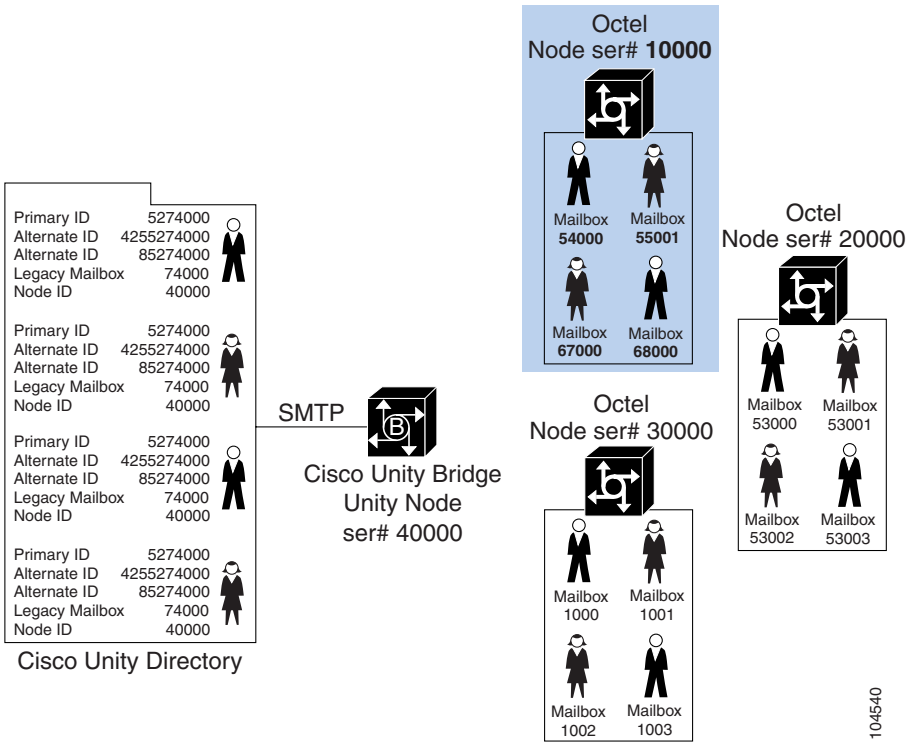
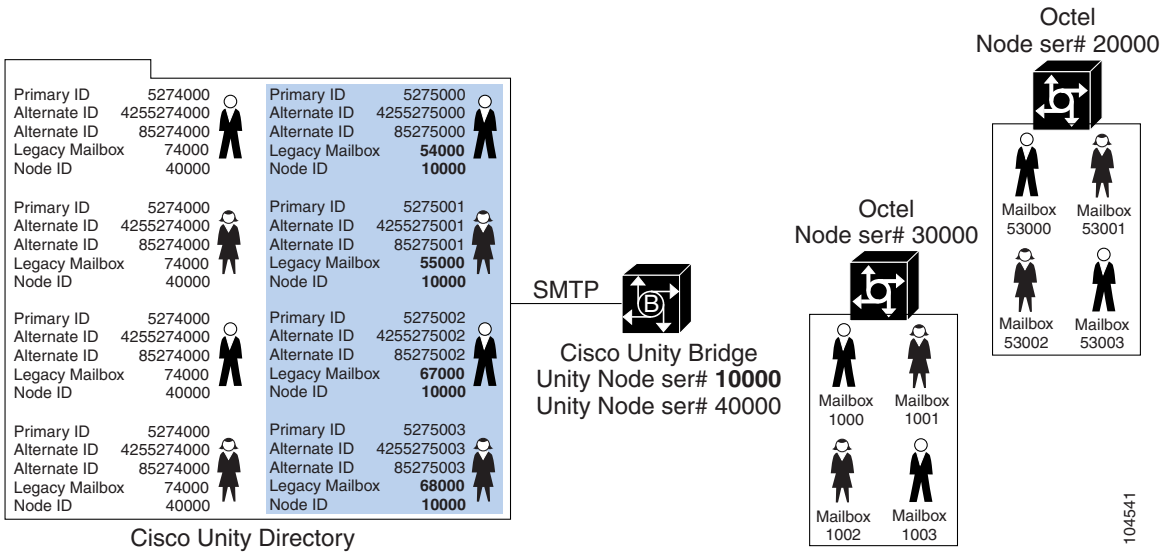


Figure 3: Subscribers on Octel Node Ser#10000 Subsequent to Migration to Cisco Unity



The numbering plan flexibility provides many benefits:

- The configuration changes on other Octel systems in the network are minimized when subscribers at one Octel node migrate to Cisco Unity.
- The Cisco Unity administrator can take full advantage of primary and alternate ID capabilities, to optimize the voice mail numbering plan for the organization.
- More flexibility is possible when phone system or phone number changes happen concurrently with the voice mail migration.

Distribution Lists

Cisco Unity Subscribers in Octel Distribution Lists

When Cisco Unity and the Bridge are configured to communicate with Octel servers via analog networking, the inclusion of Cisco Unity subscribers in a distribution list on an Octel server is no different from including any other subscriber from a remote Octel analog networking node. The network address of a Cisco Unity subscriber can be added to a distribution list whether or not a NameNet directory entry exists on the local Octel server.

However, a distribution list created on one Octel server is not necessarily available to Octel subscribers on other Octel servers in the network. The administrative processes and tools used for updating distribution

lists on multiple Octel servers in the network vary. Check with the Octel administrator for details specific to your situation.

When Cisco Unity represents Octel nodes in the network, the presence of Cisco Unity does not necessarily require changes to the processes and tools used for updating distribution lists. However, the number of moves, adds, and changes associated with a migration from Octel to Cisco Unity will be larger than normal. Therefore, it is important to consider how the presence of Cisco Unity may affect distribution lists on the Octel servers, and to understand the distribution list modification process.

Octel Subscribers in Cisco Unity Distribution Lists

In the Cisco Unity network, a Bridge subscriber object representing the remote Octel subscriber must be present in the directory in order to add an Octel subscriber to a public or private distribution list. Be sure to take this into consideration when planning how Bridge subscriber objects will be administered in the Cisco Unity network. Carefully read the "About Bridge Networking" chapter in the *Cisco Unity Bridge Networking Guide,* which describes in detail the relevant alternatives and behavior. (The *Cisco Unity Bridge Networking Guide* is available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/products_installation_and_configuration_guides_list.html.) Most importantly, understand the conditions under which you will delete a Bridge subscriber object, either automatically or manually.

When a Bridge subscriber object is deleted, it is removed from any distribution lists of which it is a member. This is true of both private and public Cisco Unity distribution lists. When subscribers from an Octel server are being migrated to the Cisco Unity network, any Bridge subscriber objects formerly associated with those subscribers must be deleted from the Cisco Unity bridgehead server. Then, Cisco Unity subscriber objects for the migrated subscribers are added on the Cisco Unity server designated as their home server. The distribution list membership for the deleted Bridge subscribers is now gone, and the new Cisco Unity subscribers must be added to the desired lists. This is one of the more challenging aspects of a migration from Octel to Cisco Unity. In addition, public and private distribution lists in Cisco Unity are significantly different implementations, and the alternatives available to handle the two different types during migration differ as well.

Cisco Unity Public Distribution Lists

Public distribution lists in the Cisco Unity network are stored in the global directory and are available for use by subscribers on all Cisco Unity servers. Because they are kept in the global directory, any Cisco Unity server in the network has the ability to determine which public distribution lists a particular subscriber object is a member of. For this reason, there are a number of possibilities available for ensuring that deleted Bridge subscribers appear in the desired distribution lists when re-added as full Cisco Unity subscribers.

Regardless of the approach chosen, it is always a good idea to periodically export the Cisco Unity public distribution list membership for Bridge subscribers on the Cisco Unity bridgehead server. This will ensure there is always a record of this data available if recovery is ever necessary.

In a situation where a Bridge subscriber object is being removed, a new Cisco Unity subscriber object will be created in its place, and membership in the same public distribution lists is desired, you should export the distribution list membership information for the Bridge subscriber, before the object is deleted. Then, the exported information can be imported along with the other values for the new Cisco Unity subscriber, by using the Cisco Unity Bulk Import tool.

Whether the Cisco Unity public distribution list membership for new subscribers will be based on previous Bridge subscriber objects or not, remember that the Cisco Unity Bulk Import tool allows you to specify public distribution membership in the CSV file used for import. Multiple public distribution lists can be specified for each import record, and each record can specify a unique set of public distribution lists.

The Cisco Unity Bulk Import tool can also be used to update public distribution list membership for existing subscriber objects. If it is ever necessary to change distribution list membership for a large group of subscriber objects after they have been created, this tool provides the ability to specify the changes in a CSV file and update all records in a single step.

Cisco Unity subscriber templates also provide a means for specifying public distribution list membership for subscribers at the time of creation. If a large number of subscribers are to be added to the same public distribution list(s), specify the list(s) in the subscriber template used to import or create the subscribers.

Cisco Unity Private Distribution Lists

Unlike public distribution lists, Cisco Unity private distribution list membership information is not stored in the global directory. Information is available for the private lists of a particular subscriber, but only locally on each Cisco Unity server. In addition, membership information for a subscriber—detailing which private distribution lists a particular subscriber is a member of—is not available.

When a Bridge subscriber object is deleted in the process of migrating someone to Cisco Unity, existing Cisco Unity subscribers may experience a mysterious disappearance of the Bridge subscriber from their private distribution lists. Therefore, we recommend that when Bridge subscriber existence within the Cisco Unity network is known to be temporary or subject to frequent change—which is common in Octel to Cisco Unity network migrations—you advise Cisco Unity subscribers to avoid inclusion of Bridge subscribers in their private distribution lists.

Instead, provide Cisco Unity public distribution lists in the network to include any commonly addressed groups of Bridge subscribers. Inform Cisco Unity subscribers of these lists, and recommend that they be used rather than private distribution lists. The Cisco Unity administrator can maintain these lists as the migration progresses, restoring membership of deleted Bridge subscribers with the appropriate Cisco Unity subscriber objects as the members migrate from Octel to Cisco Unity.

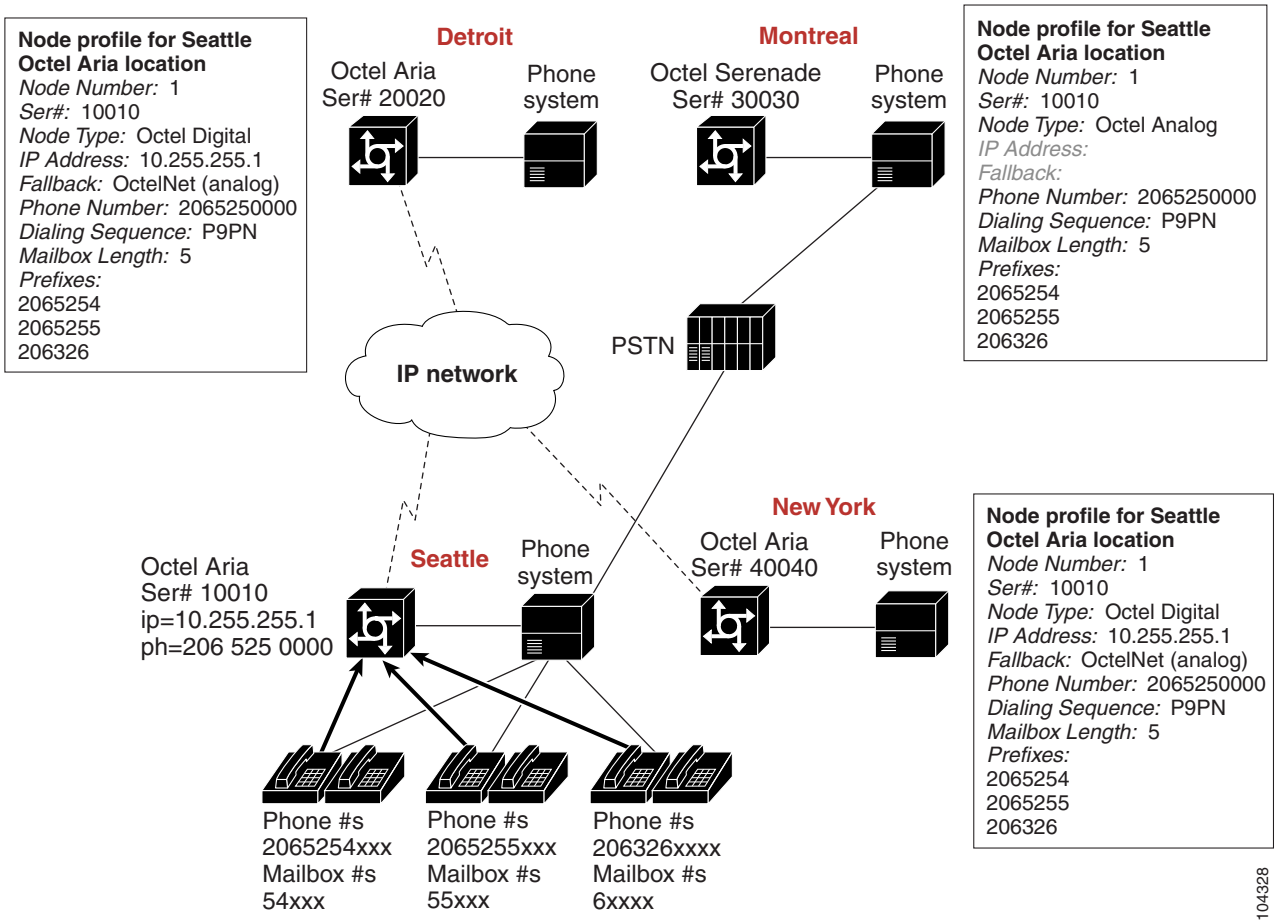
Networking Configuration Considerations for Existing Octel Servers

Considerations for Partial Server Migration

If the first subscribers being migrated from Octel to Cisco Unity are only a subset of the subscribers currently on a particular Octel server, additional steps need to be taken on the existing Octel servers to ensure that addressing within the network remains the same.

When you choose a subset of subscribers on an existing Octel server for migration to Cisco Unity, it is important to select the group based on their network addressing prefixes. Consider the example in Figure 4, which shows a company with four Octel servers: an Octel Aria server in Seattle, one in Detroit, and one in New York; and an Octel Serenade server in Montreal.

Figure 4: Network Node Configuration on Octel Servers in the Network

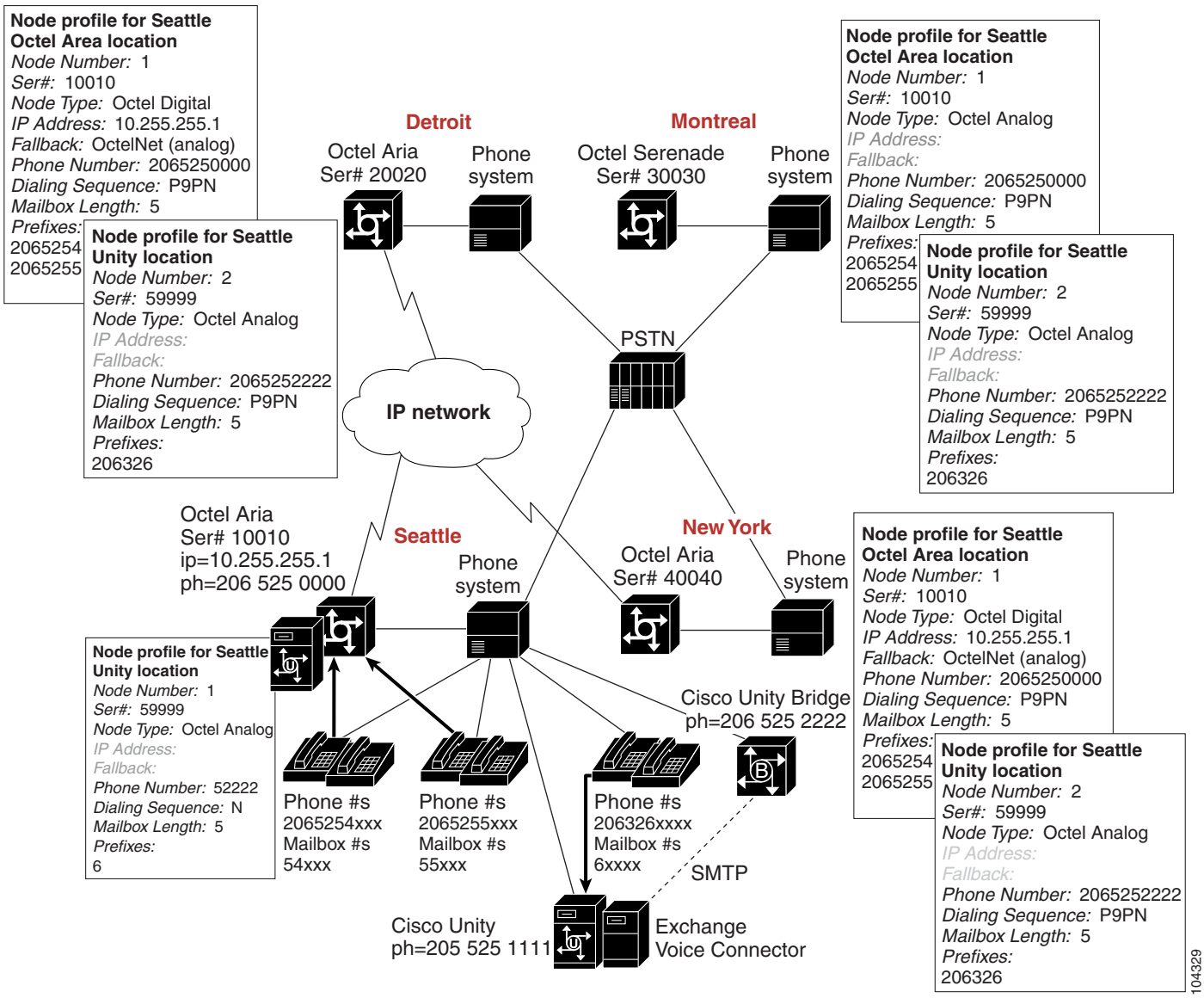


Note the configuration of the Octel networking profiles on the Detroit, New York, and Montreal servers for network addressing with Seattle.

In this example:

- A 10-digit network addressing numbering plan is used, consistent with the area code and phone number of the subscribers.
- A subset of the subscribers in Seattle will be the first subscribers migrated from Octel to Cisco Unity.
- Octel digital networking is used to exchange network messages to and from the Seattle Octel and Detroit and New York, with Octel analog networking configured as the failback transmission method.
- Octel analog networking is used to exchange network messages to and from the Seattle Octel and Montreal, because of the differences in digital networking between Aria and Serenade.
- Subscribers in Seattle fall into three distinguishable phone number/network address ranges: 2065254xxx, 2065255xxx and 206326xxxx. All local phone extensions and mailboxes are 5 digits.
- The subset of subscribers chosen for migration from the Seattle Octel to the Seattle Cisco Unity is the group of subscribers with network addresses that fit the 206326xxxx pattern.

Figure 5: Changes to the Network Node Configuration to Accommodate a Migration to Cisco Unity



In Figure 5 we see the Octel server configuration changes that were required to support the migration of the Seattle subscribers with a network address range of 206326xxxx to Cisco Unity.

On the Detroit, New York, and Montreal Octel servers a new Octel analog networking node profile was created for a new serial number (59999) assigned to Cisco Unity and the Bridge. The network addressing prefix assigned to this profile is 206326, and 5-digit mailbox lengths have been specified. Note that these node profiles contact the Bridge at phone number 2065252222. The phone number for the Seattle Octel is still 2065250000.

On the Detroit, New York, and Montreal Octel servers the 206326 network addressing prefix was removed from the node profiles for serial number 10010.

In order to allow subscribers who are homed on the Seattle Octel server to send network messages to Seattle Cisco Unity subscribers, a new Octel analog networking node profile was created for new serial number 59999, assigned to Cisco Unity and the Bridge. The network addressing prefix assigned to this profile is 6, and 5-digit mailbox lengths have been specified. This allows continued use of the 5-digit message addressing expected by the Seattle Octel subscribers when they send messages to the migrated subscribers now on Cisco Unity.

> Note: This network addressing would conflict with the old Octel mailboxes of the migrated Seattle subscribers. If the 6xxxx mailboxes are not deleted immediately, the mailbox numbers should be changed so that they do not conflict. Alternatively, the network addressing could be configured so that Seattle Octel subscribers address messages to Seattle Cisco Unity subscribers by using the number 206326xxxx.

The phone number on the Seattle Octel that is configured for the Seattle Cisco Unity Bridge is 52222. Because these servers are on the same phone system, it is necessary only to dial the extension of the Bridge server.

Note that Cisco Unity and the Bridge have separate phone numbers, in contrast to the Octel servers, where the same access phone number is used for Octel analog networking and for regular caller access to the server. The phone lines connected to the Bridge are in a separate extension group than those for accessing Cisco Unity. Any remote Octel server that will communicate via Octel analog networking with the Bridge needs to be configured with the Bridge access phone number.

Figure 6: Node Profiles for Seattle on the Other Octel Servers, Post Migration

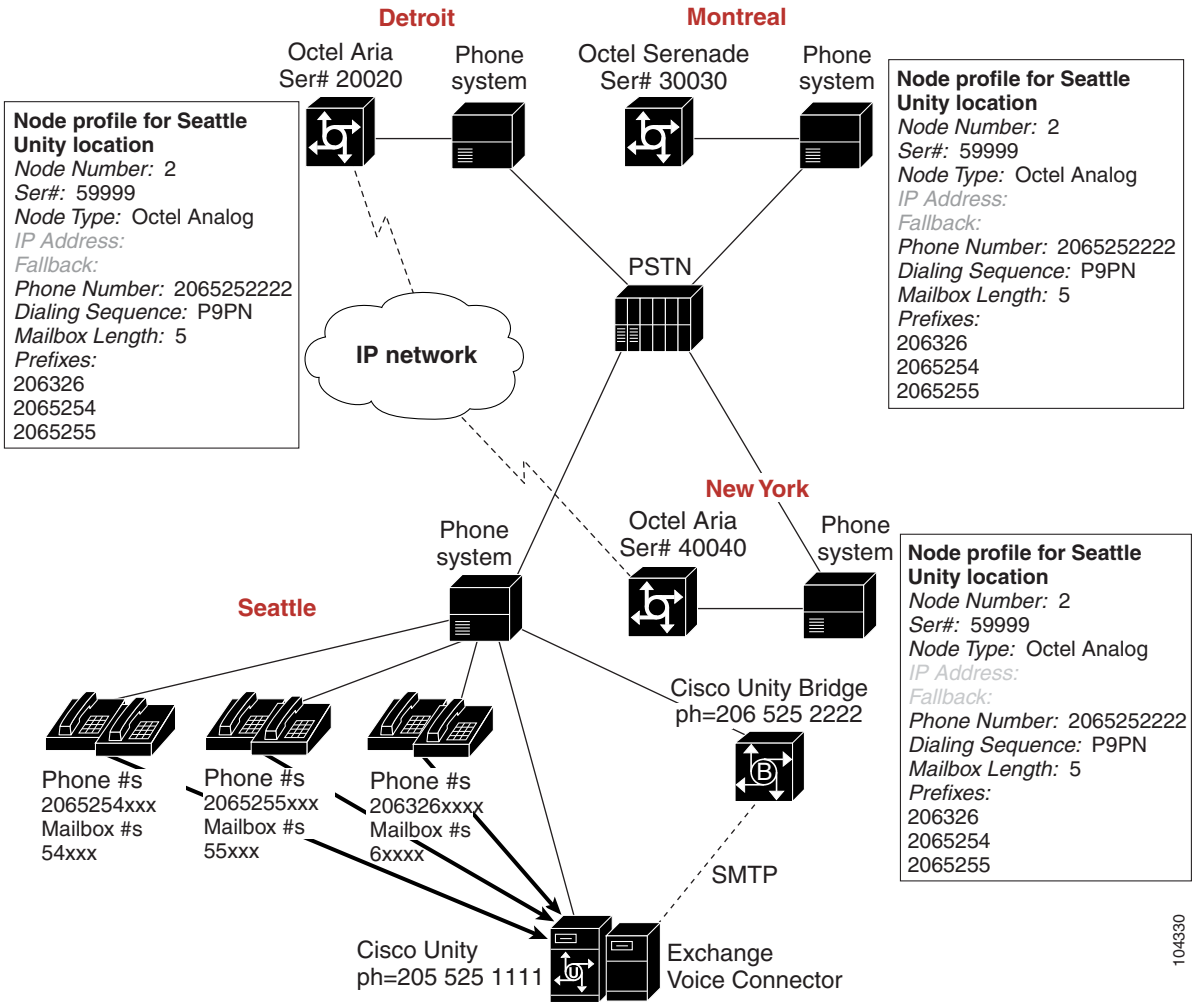


Figure 6 shows the node profiles for Seattle on the other Octel servers at the point at which the remaining subscribers from the Seattle Octel have migrated to Cisco Unity.

On the Detroit, New York, and Montreal servers, the node profile for serial number 10100 is no longer used.

The remaining network addressing prefixes for Seattle (2065254 and 2065255) have now been added to the serial number 59999 analog networking profiles.

At this point, all Cisco Unity subscribers formerly homed on the Seattle Octel that have been migrated to the Seattle Cisco Unity are configured with a legacy mailbox value that is the same as their former Octel mailbox, and with a node serial number value of 59999.

The Cisco Unity bridgehead server is configured with Bridge delivery locations for Detroit, New York, and Montreal with the applicable serial numbers.

The Cisco Unity Bridge is configured with Octel Node profiles for Detroit, New York, and Montreal with the applicable serial numbers and access phone numbers.

The Cisco Unity Bridge is configured with a Unity Node profile for serial number 59999.

Typical Single Server Migration Steps

After the initial Octel server has been migrated to Cisco Unity, a fairly consistent set of steps can be followed to migrate subscribers on any one of the remaining Octel servers in the network to Cisco Unity. Specific details vary, depending on the server type (for example, Aria vs. Serenade) and on the existing transmission type (digital vs. analog). The number of Octel servers to which configuration changes need to be made decreases as the migration progresses. Other than that, the steps to migrate subscribers from the second Octel server to Cisco Unity are the same steps needed to migrate subscribers from the twentieth Octel server, or the fiftieth, and so on.

In Figure 7 and Figure 8, details of the Octel and Cisco Unity node profiles on the Bridge have been added, and the Bridge delivery locations are configured in Cisco Unity. We will be migrating New York next, so those are the node profiles we will look at on the Octel servers.

The steps to migrate the New York subscribers from the Octel server to Cisco Unity are as follows:

- Delete from the Cisco Unity bridgehead server any existing Bridge subscribers that represent New York Octel subscribers. If necessary, export subscriber information for these Bridge subscribers before deleting them, by using the Subscriber Information Dump tool. Information from this export (for example, public distribution list membership, and primary and alternate extensions) can be used when importing the Cisco Unity subscriber accounts for New York on the New York Cisco Unity server(s).
- Create/import Cisco Unity subscribers for New York on the New York Cisco Unity server(s). These subscriber accounts should all have their Unity Node Serial Number set to 40040 (the serial number of the former New York Octel server), and their Legacy Mailbox IDs set to whatever their mailbox numbers were on the New York Octel server. These properties are used when the New York subscribers send messages to or receive messages from the remaining Octel subscribers in the network via the Cisco Unity Bridge. The Cisco Unity primary and alternate IDs for these subscribers can be set to whatever is desired within the Cisco Unity network, without affecting their identity within the Octel network.
- Delete the Octel Node for the New York Octel server from the Bridge.
- Add a Unity Node for the former New York Octel serial number to the Bridge (40040).
- Modify the networking profile for New York on the Detroit Octel. The node type needs to be changed to Octel analog (from digital) and the access phone number should be that of the Cisco Unity Bridge in Seattle.

- Modify the networking profile for New York on the Montreal Octel. The node type is already Octel analog, so the only change necessary is to configure the access phone to that of the Cisco Unity Bridge in Seattle.
- Delete the Bridge delivery location for New York from the Cisco Unity bridgehead.
- Remove the New York Octel server from the IP network. The system can be left up and running for some period of time so that subscribers can call in and retrieve any messages left on the system.

Figure 7: Network Configuration Prior to New York Migration to Cisco Unity

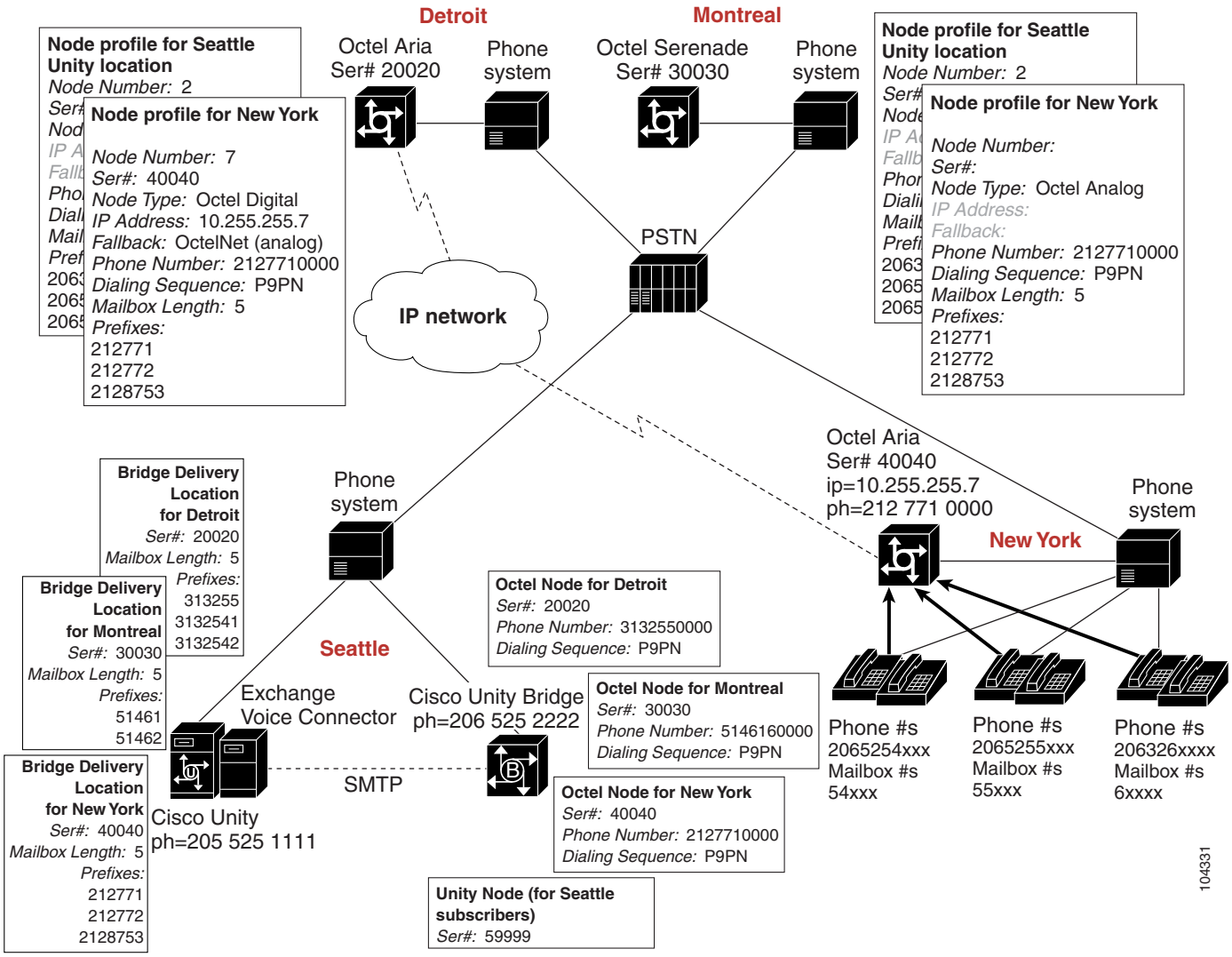
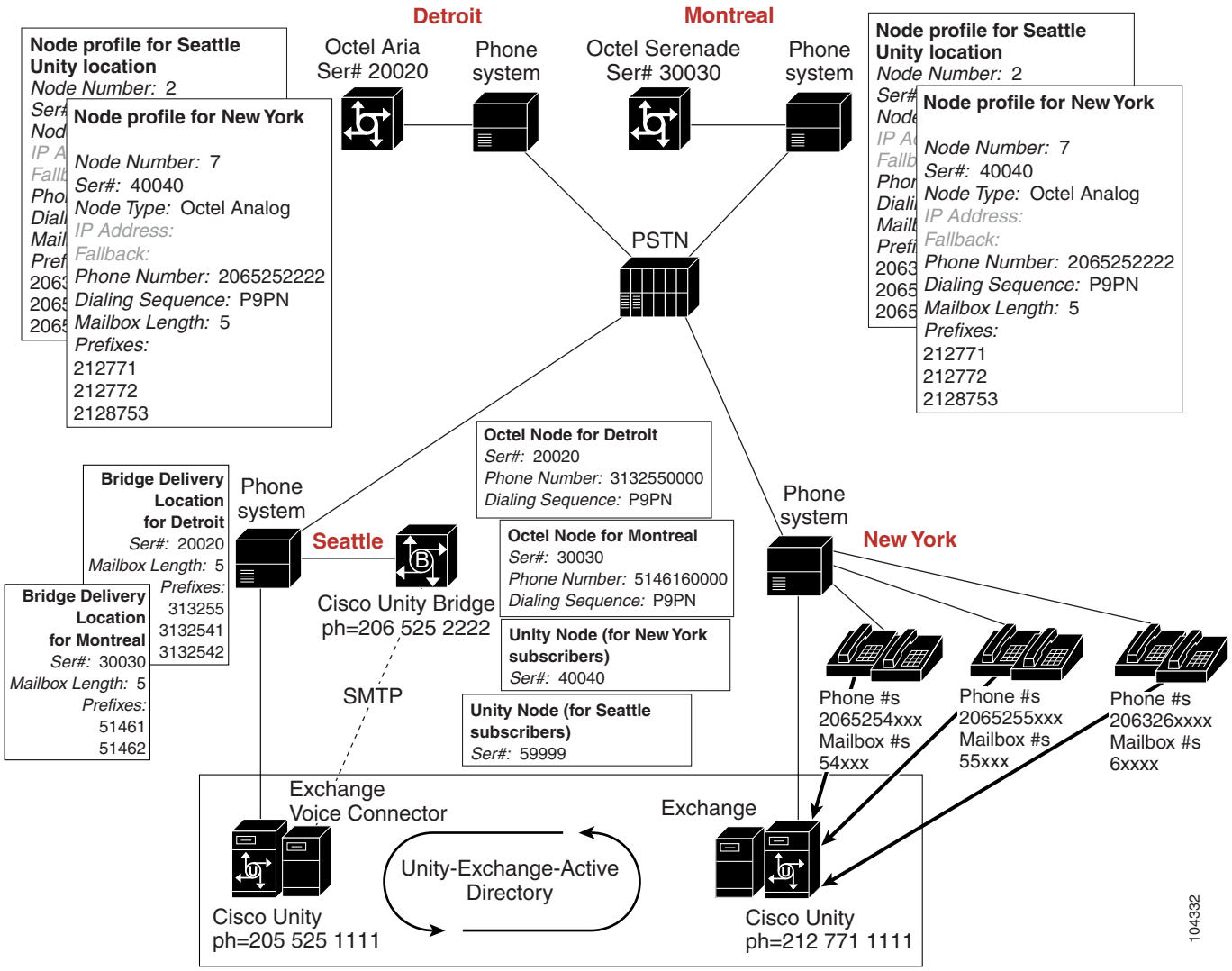


Figure 8: Network Configuration After the New York Migration to Cisco Unity



Octel Server Node Profile Considerations When Multiple Bridges Are in Use for the Same Cisco Unity Network

An Octel analog network is point-to-point. What this means is that if subscribers on all Octel servers need to be able to send a message to anyone in the network, each server is configured to contact and communicate with every other node. When Cisco Unity and the Bridge are used to communicate with Octel servers in the

network, there are some differences in the way analog traffic routing is set up, especially during an Octel-to-Cisco Unity network migration, where numerous Octel serial numbers will be represented by Cisco Unity and the Bridge(s). The best way to illustrate this is to consider a scenario where multiple Bridges represent Cisco Unity in the Octel analog network, and where Cisco Unity represents more than one serial number.

First, consider the following example of an Octel analog network prior to introduction of Cisco Unity and the Bridge.

Figure 9: Octel Analog Network with Ten Servers

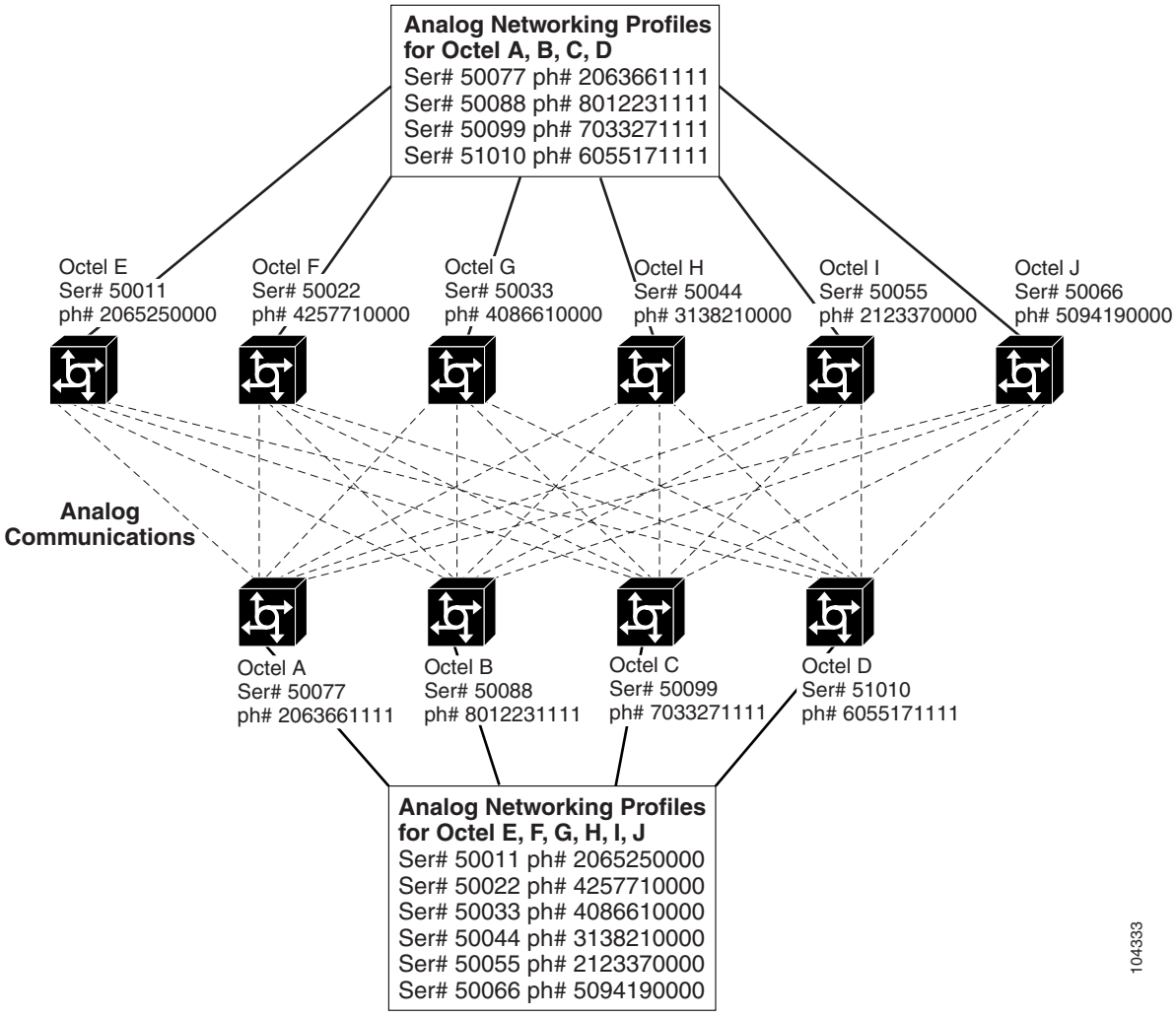


Figure 9 illustrates an Octel analog network with 10 servers, or nodes. The illustration shows a subset of the analog routes: the routes necessary for Octel A, B, C, or D to communicate with Octel E, F, G, H, I, or J.

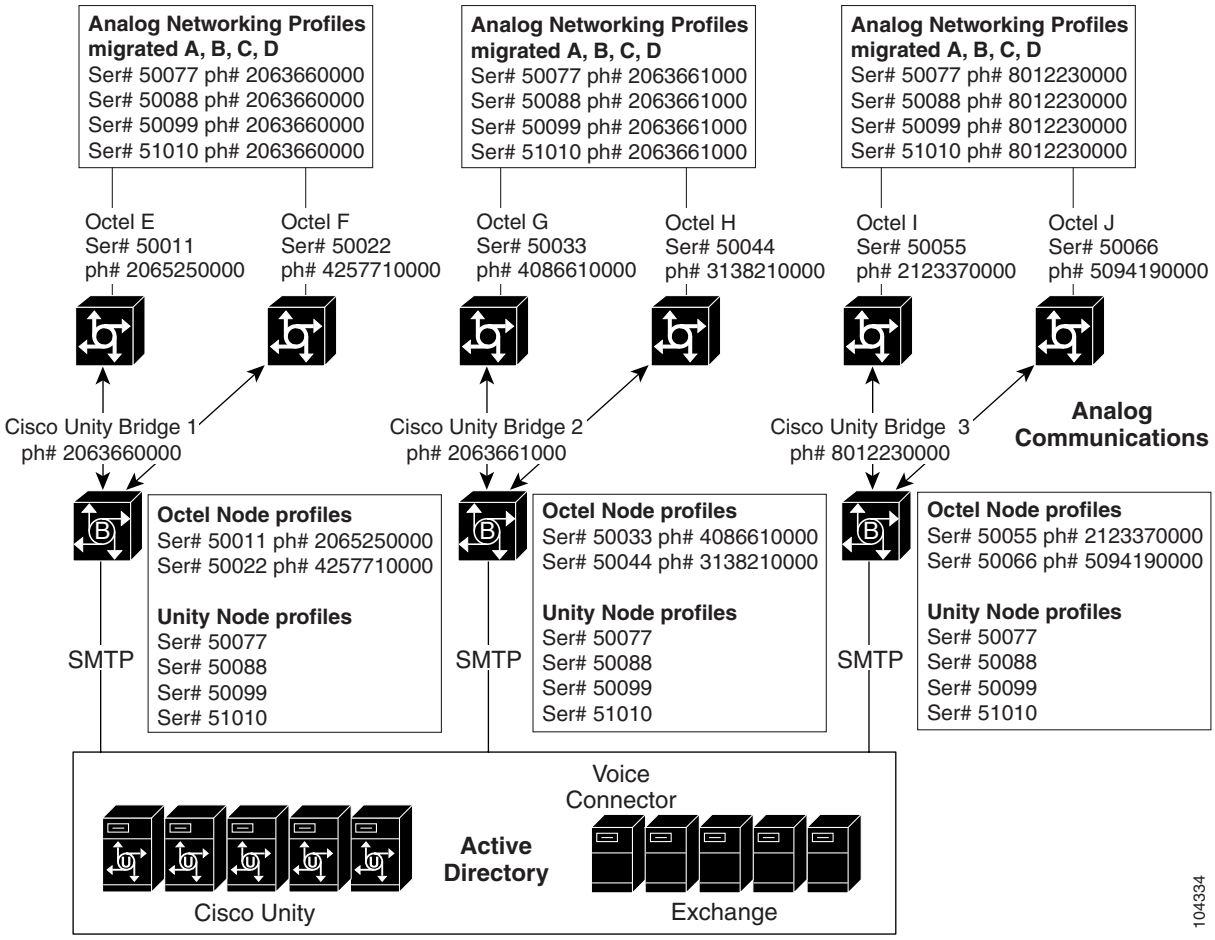
Observe that the analog networking profiles necessary to communicate with Octel A, B, C, or D are configured identically on the Octel E, F, G, H, I, and J servers. Likewise, the analog networking profiles necessary to communicate with Octel E, F, G, H, I, or J are configured identically on the Octel A, B, C, and D servers.

Each analog networking profile configured on any server has a different phone number, which is the phone number required to call that particular server.

If a new Octel server (for example, Octel K) were added to the analog network, a new analog networking profile would be configured on every other server in the network. All analog networking profiles for Octel K would be configured with the same phone number, which is the phone number needed to contact Octel K.

Figure 10 shows the same analog network, midway through an Octel-to-Cisco Unity network migration.

Figure 10: Same Analog Network, Midway Through the Migration



In Figure 10, the subscribers from Octel A, B, C, and D have been migrated to Cisco Unity. Three Bridge servers are configured for communication with the rest of the Octel network.

Analog Networking Profiles on Octel E and F

- The phone numbers specified for A, B, C, and D are identical on each profile.
- Every node profile that is configured to communicate with Cisco Unity has the phone number of Bridge 1, because Bridge 1 is configured to communicate with Octel E and F.

Analog Networking Profiles on Octel G and H

- The phone numbers specified for A, B, C, and D are identical on each profile.
- Every node profile that is configured to communicate with Cisco Unity has the phone number of Bridge 2, because Bridge 2 is configured to communicate with Octel G and H.

Analog Networking Profiles on Octel I and J

- The phone numbers specified for A, B, C, and D are identical on each profile.
- Every node profile that is configured to communicate with Cisco Unity has the phone number of Bridge 3, because Bridge 3 is configured to communicate with Octel I and J.

Observe that the phone numbers used to communicate with Cisco Unity are not the same on every Octel in the network. Each Octel in the network communicates with only one of the Bridges. Octel E and F always communicate with Bridge 1, G and H with Bridge 2, and I and J with Bridge 3.

Keep this in mind if your migration will utilize more than a single Bridge server. When subscribers on an Octel server are migrated to Cisco Unity, and when Cisco Unity takes on representation of the former Octel server serial number for those subscribers, the phone number changes for that profile on the other Octel servers in the network must be based on the Bridge with which the Octel will communicate.

For example, if Octel E were next to be migrated to Cisco Unity, the request to update the phone numbers on the other Octel servers in the network would be as follows:

- Change phone number for ser# 50011 profile on Octel F to 2063660000 (Bridge 1)
- Change phone number for ser# 50011 profile on Octel G to 2063661000 (Bridge 2)
- Change phone number for ser# 50011 profile on Octel H to 2063661000 (Bridge 2)
- Change phone number for ser# 50011 profile on Octel I to 8012230000 (Bridge 3)
- Change phone number for ser# 50011 profile on Octel J to 8012230000 (Bridge 3)

Determining Where to Physically Locate the Bridge(s)

When making decisions about the physical location of the Bridge server(s), there are a number of factors to consider. Ideally, the Bridge server(s) should be located where:

- The phone system capacity is capable of handling the traffic
- Phone system reliability is optimal
- Service personnel will have physical access
- It is cost effective in terms of phone calls to the Octel servers
- SMTP network connectivity to the Exchange server(s) that host the Voice Connector(s) is reliable and efficient

If a single location meets all of the above criteria, then the decision is straightforward. When a location meets some but not all of the above criteria, then you will have to weigh the pros and cons of the potential locations.

For example, suppose a location meets all of the above criteria except that it is not the most cost effective in terms of phone calls to the Octel servers. To get an idea of the potential cost of long distance charges for phone calls between the Bridge and Octel servers, you will need to look at message traffic patterns on the Octel network. Additionally, for organizations that use Cisco CallManager (which routes calls over a private IP phone network), the long distance charges will only be incurred when the network or WAN bandwidth is unavailable and Cisco CallManager routes calls over the PSTN. In this case, you would also need to look at Cisco CallManager reports.

When making the decision, consider not just the initial phase of a network migration, but all phases. Message traffic between the Bridge and Octel servers will be greatest midway through the migration. Also consider the length of each phase of the migration.

For example, assume that 70 percent of the Octel to Cisco Unity migration will happen in a short period of time, followed by a long period of interoperation between the Bridge and the remaining Octel servers, followed by a rapid migration of the final 30 percent of the Octel servers. It may be best to consider the physical deployment of the Bridge servers based on the middle phase of the migration, when 70 percent of the subscribers are on Cisco Unity, and 30 percent are still using Octel.

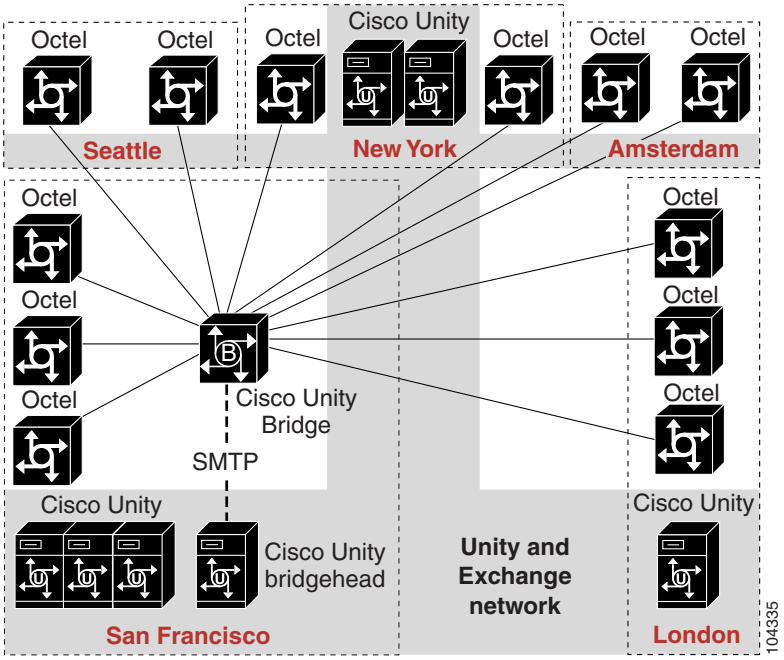
Expected traffic load is usually the most obvious factor in deciding whether more than one Bridge server will be necessary. But there may be situations where more than one Bridge is deployed based simply on the desired analog call traffic flow. When using multiple Bridges, consider whether it is better to:

- Centrally locate the servers for ease of maintenance, or
- Place them in separate locations to take advantage of the lowest cost phone call routing.

Figures 11 through 14 show different physical locations for the Bridge midway through a migration. These approaches are not intended as recommendations but are meant as aids in visualizing the possibilities.

Note: Only one Bridge server in the Cisco Unity network can be configured to communicate with a particular Octel node. When multiple Bridge servers are used in the same Cisco Unity network, determine which Bridge servers and which Octel nodes will communicate. Distribute the Octel Node profiles on the Bridge servers accordingly. Configure the Bridge delivery locations on the bridgehead to be consistent with this distribution.

Figure 11: One Bridge Server in San Francisco



In Figure 11, because the majority of subscribers are in San Francisco, it makes sense to put at least one Bridge server in San Francisco so that all calls between the Bridge and San Francisco Octel servers are local (or made by Cisco CallManager over the LAN).

Figure 12: One Bridge Server in San Francisco and One in London

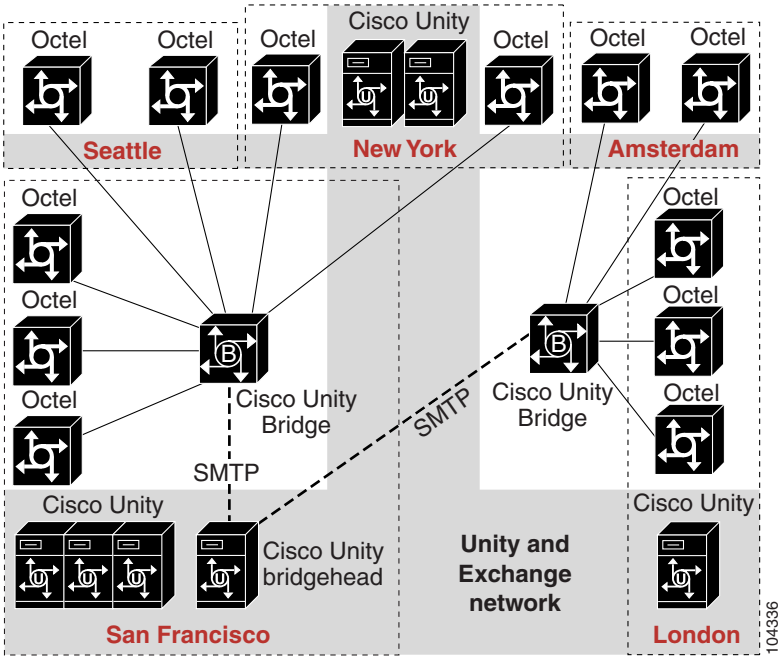


Figure 12 shows a Cisco Unity Bridge server in San Francisco, and one in London. Octel message traffic patterns suggested it would be more cost effective to put a Bridge server in London, rather than relying on a single server in San Francisco. This way, messaging between subscribers in San Francisco and London is via SMTP. This layout also avoids international toll charges between all sites in the U.S. and Europe.

Figure 13: Two Bridge Servers in San Francisco

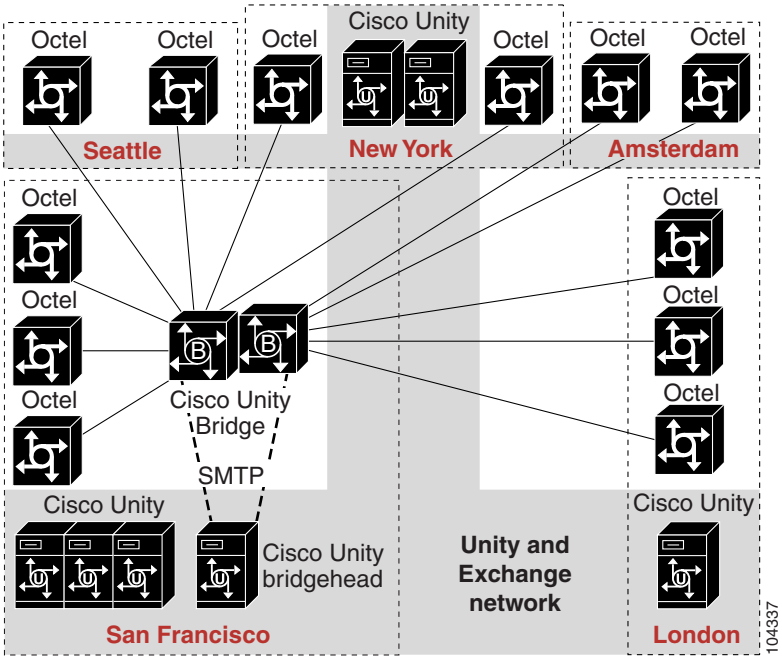


Figure 13 shows two Cisco Unity Bridge servers in San Francisco. In this case, it was determined that message traffic would not be too heavy between the U.S. and Europe, and therefore it made more sense to deploy two Bridge servers in San Francisco. The Bridge server that messages with Europe was configured to make calls during off hours, when the long distance toll charges are lower.

Figure 14: A Bridge Server in San Francisco, New York, and London

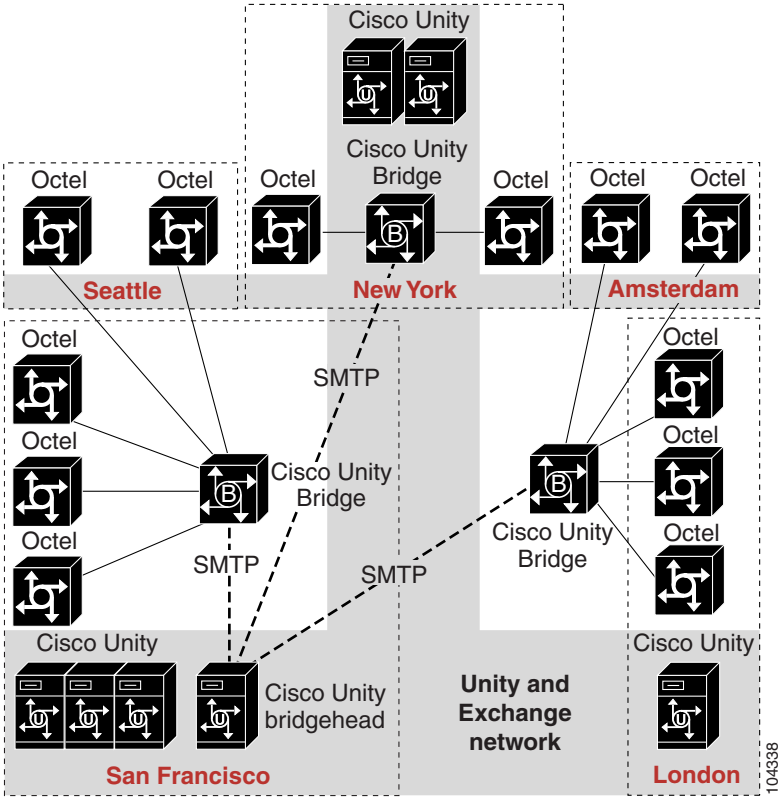


Figure 14 shows three Cisco Unity Bridge servers. In this case, it was decided that message traffic volume would be high enough to justify having a Bridge server in San Francisco, one in New York, and one in London.

Workgroup vs. Domain for the Cisco Unity Bridge Server

It is not necessary for the Cisco Unity Bridge server to be a member server in a domain. Configuration of the Bridge as a workgroup member is sufficient. The Cisco Unity Bridge does not store or search for subscriber directory information in Active Directory. All subscriber directory information is stored locally in the starfish.mdb MS Access database.

Configuration of the Bridge as a member server in a domain may be preferable when use of domain accounts and permissions is desired, or in situations where doing so aids in server name resolution or authentication.

Configuring the Bridge as a domain controller is not a supported configuration.