



# Customer Specific Dial Plan

---

- [Prerequisites](#), page 1
- [Dial Plan Workflow](#), page 2
- [Determine Customer-Specific Dial Plan Requirements for Cisco Unified Communications Domain Manager 8.1\(x\)](#), page 2
- [Determine Customer-Specific Dial Plan Requirements for Cisco Unified Communications Domain Manager 10.6\(1\)](#), page 19

## Prerequisites



---

**Note**

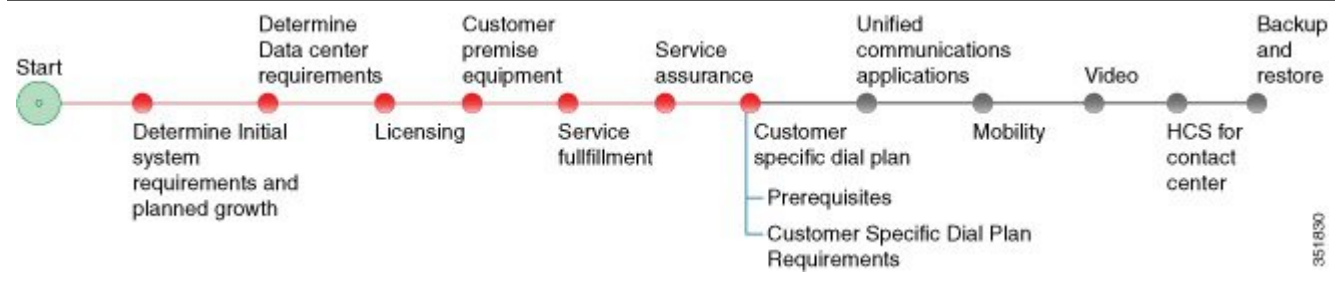
This section of the document starts the planning part that is repeated with each on-boarding.

---

Before you plan the dial plan processes for your Cisco HCS installation, make sure that you:

- Review and have access to the *Cisco Hosted Collaboration Solution, Release 10.6(1) Solution Reference Network Design Guide*.
- Complete the actions outlined in previous sections of this guide including:
  - Initial system requirements and planned growth
  - Data center requirements
  - Licensing requirements
  - Customer premise equipment requirements
  - Service fulfillment requirements
  - Service assurance requirements

## Dial Plan Workflow



## Determine Customer-Specific Dial Plan Requirements for Cisco Unified Communications Domain Manager 8.1(x)

For end customers, the dial plan is designed to handle a significant portion of the corporate dialing schemes. The Cisco HCS Dial Plan for Cisco Unified Communications Domain Manager 8.1(x) (Unified CDM) includes a standardized model on how to handle intrasite, intersite, and PSTN calls, generally using a site + extension methodology. It also spans advanced routing requirements of elements like central versus local breakout for PSTN calls and also handles the different numbering requirements across multiple countries.

The intersection point between the dial plan and Unified CDM comes in the definition of standard telephony services that abstract Unified Communications Manager configurations into simpler choices that correspond to the feature plans a service provider wants to offer, and end customer wants to consume. For example, the partitions, calling search spaces, and translation patterns are predefined based on a choice of simple outbound, inbound, call forwarding, and time of day settings, which in Unified CDM are exposed as service types. These services are combined into feature packages and templates that define a user or line telephony services.

Certain aspects of dial plan are decided on per customer basis while other parts are determined globally. Consider all of these factors when planning for dial plan as part of your deployment. See the latest version of the *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x) Guide* for more detailed information about dial plans.

### Procedure

- Step 1** For each customer, do the following:
- [Determine Dial Plan Model for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 3 for each customer:
    - Generic (G1) dial plan
    - Flat (G2) dial plan
    - Shared Instance (G3) dial plan
  - [Plan Multiple Service Provider Support for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 5, if required.

- c) [Determine Country-Specific Dial Plans for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 7, if required.
- d) [Plan a New Country Dial Plan](#), on page 9, if required.
- e) [Determine Customer Dialing Requirements for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 12.
- f) [Plan Path Selection](#), on page 12.
- g) [Determine Extension Addressing in Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 12.
- h) [Determine Emergency Calling](#), on page 14.
- i) [Determine Inter-site Calling Customization Requirements for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 14.
- j) [Determine Intrasite Calling Customization Requirements Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 15.
- k) [Determine Short Code Dialing for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 15.
- l) [Determine Voice Mail Numbering for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 16.
- m) [Determine Enhanced Number Translation Template Use in Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 16.

**Step 2** Define the following at the global level:

- a) [Determine Time of Day Routing for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 18.
  - b) [Determine Class of Service and Restrictions for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 18.
- 

## Determine Dial Plan Model for Cisco Unified Communications Domain Manager 8.1(x)

Depending on the dial plan model that you select, the Cisco HCS dial plan creates directory numbers (Cisco Unified Communications Manager Internal DNS) consisting of a Site Location Code (SLC) + extension number, or just the extension number on Cisco Unified Communications Manager clusters. You can configure the SLC with or without an intersite prefix (ISP).

### Procedure

Review the key differences outlined in the following table to determine which dial plan model to use based on the dial plan characteristics you require. If you require multiple dial plan support, you must create individual service providers for each dial plan. Refer to [Plan Multiple Service Provider Support for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 5 for more information.

**Table 1: Key Differences in Cisco Unified Communications Domain Manager 8.1(x) G1 and G2 Dial Plan Models**

Dial Plan model	Description	Key differences
Generic (G1)	The G1 dial plan allows you to customize your dial plan. All directory numbers, voice mail pilots, and mailbox numbers follow the SLC plus extension format.	<ul style="list-style-type: none"> <li>• A standalone ISP is not supported, but rather, the ISP is implemented as the first digit of the SLC (for example, 8). For sample G1 numbering, refer to <a href="#">Determine Extension Addressing in Cisco Unified Communications Domain Manager 8.1(x)</a>, on page 12.</li> </ul>
Flat (G2)	Flat dialing consists of extension dialing of up to 11 digits across all locations. The dial plan supports unique directory number assignment across locations. All directory numbers, voice mail pilots and mailbox numbers follow the extension format when they are provisioned from the Cisco Unified Communications Manager.	<ul style="list-style-type: none"> <li>• The SLC is removed from the Cisco Unified Communications Manager internal number format. For sample G2 numbering, refer to <a href="#">Determine Extension Addressing in Cisco Unified Communications Domain Manager 8.1(x)</a>, on page 12.</li> <li>• No short code dialing within a site (location).</li> <li>• Need to group subscribers for emergency dialing and administrative purposes.</li> <li>• No need for intersite prefix (ISP) across locations.</li> <li>• For a flat dial plan, the extensions and the internal DNs are the same. Extensions under flat dial plan cannot overlap and must be unique across all locations for a customer.</li> </ul>

**Table 2: Shared Instance Key Differences in Dial Plan Models**

Dial Plan model	Description	Key differences
Shared Instance Dial Plan (G3)	Used for the market. In small medium business deployments, multiple customers are deployed on one instance of Cisco Unified Communications Manager Virtual Machine.	<ul style="list-style-type: none"> <li>• Available from 9.2(1) SU1 onwards.</li> <li>• Based on G2 plan which is modified to support customer-specific dialing and routing.</li> <li>• IMS ISC trunk is not available.</li> <li>• Forced on-net feature is not available.</li> <li>• For sample G3 numbering, refer to <a href="#">Determine Extension Addressing in Cisco Unified Communications Domain Manager 8.1(x)</a>, on page 12.</li> <li>• Useful for Shared Instance application model, where multiple customers are served by one application cluster. For more information on the Shared Instance feature, see <i>Cisco Hosted Collaboration Solution, Release 10.6(1) Solution Reference Network Design Guide</i>.</li> </ul>

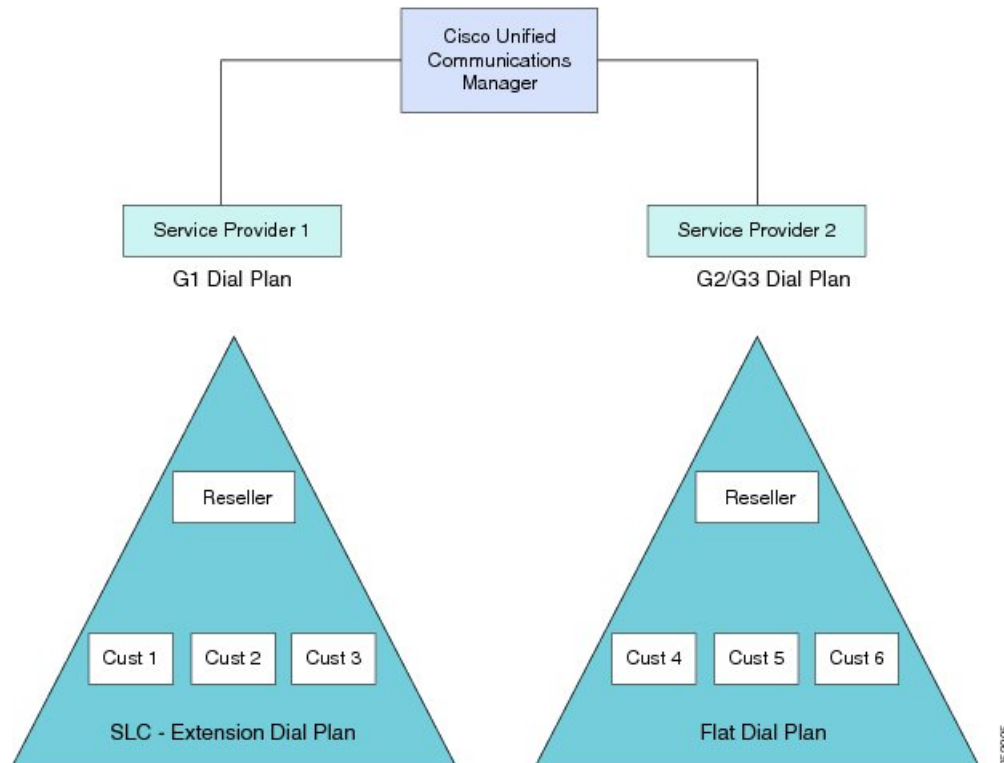
## Plan Multiple Service Provider Support for Cisco Unified Communications Domain Manager 8.1(x)

The Cisco Unified Communications Domain Manager supports one Cisco HCS dial plan model per service provider, but you can configure it to support multiple service providers (SPs) by creating multiple logical SP domains. The multiple service provider configuration can support two or more dial plans. If you require several dial plans, use the multiple service provider configuration described in this section.

The following figure shows a logical representation of multiple service providers. Customers 1, 2, and 3, and any future customers added under SP1 use the G1 generic dial plan (SLC+Extension) configuration. Customers

4, 5, and 6 and any future customers added under SP2 use the G2 or Shared Instance flat dial plan (Extension only) configuration.

**Figure 1: Multiple Service Provider Support**



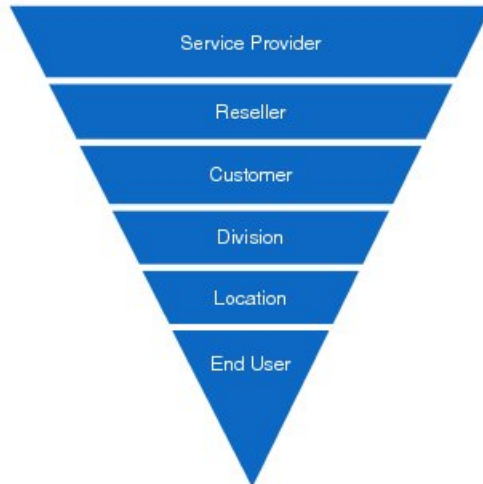
## Considerations When Deploying Multiple Service Providers

Role-based access control (RBAC) stays within a service provider domain. Cisco Unified Communications Domain Manager maintains different hierarchy levels at which configuration objects are managed. As a service provider you can plan for the following hierarchy levels as required:

- Provider
- Reseller
- Customer
- Division
- Location
- Building

- User (end user)

**Figure 2: Hierarchy levels**



Use these guidelines to plan the hierarchy levels:

- The internal system super user maintains visibility and control of all service provider hierarchical domains for the entire system.
- Each service provider domain can have administrators at the different provider, reseller, customer, and location levels but are constrained to their parent service provider. For example, service provider Admin1 in service provider 1 cannot manage or provision elements for service provider 2 and vice versa.

## Determine Country-Specific Dial Plans for Cisco Unified Communications Domain Manager 8.1(x)

In Cisco HCS, a country dial plan consists of translation and route patterns to handle the following:

- All local, long distance, and international calls
- Emergency calls
- Service calls
- Special calls such as Freephone, Premium, Mobile
- Call blocking based on class of service
- Call routing through local gateway and or central breakout

At the provider level, you need to determine the countries to be supported. By default, the base data and country dial plan model file package contains the dial plan model files for North America and Great Britain. If you are a service provider with a customer in another country, you must also plan to use country-specific dial plan model files.

If you are multi-country provider who requires multiple country dial plans, you need to determine the additional country dial plans required.

If a country-specific dial plan model file does not exist for the country, you can download the dial plan model file for a country that has a similar dial plan, and then customize it, or you can contact your Cisco representative to have a new country dial plan created.

**Table 3: Country Dial Plans Available for Cisco Unified Communications Domain Manager 8.1(x)**

Argentina (ARG)	Italy (ITA)
Australia (AUS)	Japan (JPN)
Austria (AUT)	Mexico (MEX)
Belgium (BEL)	Netherlands (NLD)
Brazil (BRA)	Norway (NOR)
China (CHN)	Poland (POL)
Czech Republic (CZE)	Portugal (PRT)
Denmark (DNK)	Russia (RUS)
Finland (FIN)	Singapore (SGP)
France (FRA)	Spain (ESP)
Germany (DEU)	Sweden (SWE)
Great Britain (GBR)	Switzerland (CHE)
Hong Kong (HKG)	Thailand (THA)
India (IND)	Turkey (TUR)
Indonesia (IDN)	United States (USA)
Ireland (IRL)	
Israel (ISR)	
Ireland (IRL)	

If a new country dial plan is required, contact your Cisco representative for assistance. Provide the information that is outlined in [Plan a New Country Dial Plan](#), on page 9 to your Cisco representative.

Additional country-specific Dial Plan templates are released to Cisco partners as they become available.



**Note**

The available country dial plans adhere to the specific country dial plan rules and Cisco HCS model best practices. However, it is a partner's responsibility to validate and fully test these country modules in the specific country prior to any commercial launch.

## Plan a New Country Dial Plan

You can build your own country dial plan instead of using one of the country dial plan templates.

**Note**

Do not modify the default models; contact Cisco for assistance.

If you need to create a new customized country dial plan, determine the information about your plan using this procedure. Contact your Cisco representative and provide the following information.

### Procedure

**Step 1** Gather basic contact information:

- Company name and ID
- Primary contact name, telephone number and email address

**Step 2** Gather basic country dial plan information:

- ISO 3166 Alpha-3 country code. This is a 3-digit code. Example: Australia = AUS. Refer to <http://countrycodes.org/>.
- ISO 3166-1 Numerical country code, for example Belize = 84. Refer to <http://countrycodes.org/>.
- Dialing plan type:
  - OPEN—Uses different dialing arrangement for local and long distance telephone calls.
  - CLOSED—The subscriber's full number is used for all calls, even in the same area.

**Step 3** Determine the user locale for the country.

<http://software.cisco.com/download/release.html?mdfid=284329957&flowid=33682&softwareid=282074333&release=9.0%281.1000-1%29&relind=AVAILABLE&rellifecycle=&reltype=all>

**Step 4** Determine the network locale for the country.

These are the tones and cadence for a particular country. Default is English, United States. Network locale is identified in the Cisco Unified Communications Manager.

**Step 5** Determine the PSTN access number used in the country.

The PSTN prefix is defined on a country basis. It is specified for each service provider for each country and applies to all customer locations in a country. When the caller dials a PSTN number with a PSTN access prefix (typically a 9 in the United Kingdom and United States), this tells the dial plan that the caller is making an

off-net call. When the caller dials the PSTN breakout number, the dial plan routes the call to the correct PSTN breakout location, whether it is a central or a local PSTN gateway.

- Step 6** Determine National Dialing prefix (NDD) used in the country.  
The NDD prefix is the access code used to place a call within that country from one city to another (when calling another city in the same vicinity, this may not be necessary). Refer to [http://www.exportbureau.com/telephone\\_codes/international\\_dialcode.html](http://www.exportbureau.com/telephone_codes/international_dialcode.html).
- Step 7** Determine International Dialing prefix (International Direct Dialing) used in the country.  
An international call prefix is the part of a telephone number used to dial out of a country when making an international call. It is synonymous with international access code or exit code. Refer to [http://en.wikipedia.org/wiki/List\\_of\\_international\\_call\\_prefixes](http://en.wikipedia.org/wiki/List_of_international_call_prefixes).
- Step 8** Determine which of the following call types will be used for local breakout (LBO):
- International Dialing—Dialing to another country
  - National Dialing—Dialing within the country
  - Subscriber Dialing—Local dialing
  - Emergency Dialing—Dialing to emergency services such as police, fire, ambulance
  - Freephone/Toll free Dialing/Special Services—Any customers can dial the same number to reach a business subscribing to a number with no charge to the calling party. For example, 800 or 866 toll-free dialing in Canada and the United States, or Freephone service in most other countries.
  - Mobile Dialing—In many countries, mobile phones are assigned dedicated mobile phone codes within the country's telephone numbering plan. Some countries that do not use area codes allocate specific number ranges to mobile phones that are easily distinguishable from landlines. One exception is the North American Numbering Plan which assigns subscriber numbers to mobile phones within geographic area codes, and are not easily distinguishable from landlines.
  - Personal Communications Service (PCS) networking—Several types of wireless voice and wireless data communications systems, typically incorporating digital technology, providing services similar to advanced cellular mobile or paging services. PCS can also be used to provide other wireless communications services, including services that allow people to place and receive communications while away from their home or office, as well as wireless communications to homes, office buildings and other fixed locations.
  - Premium Rate Dialing (blocked)—Telephone numbers for telephone calls during which certain services are provided that create additional charges to the caller's bill. Blocking services are offered to allow telephone customers to prevent access to these number ranges from their telephones.
  - Service Calls—Number assignments that are typically distributed to public safety professionals in order to resolve, correct or assist in a particular situation. This may be emergency services, or information or assistance services such as Operator assistance.
- Step 9** For each of the selected Call Types, determine which of the following prefixes you require (as many as apply):
- Carrier Access Code (CAC)—Gives telephone users the possibility of opting for a different carrier on a call-by-call basis - sometimes called 10-10 calls.
  - Calling Line Identification Presentation (CLIP)—Transmits a caller's number to the called party's telephone equipment during the ringing signal or when the call is being set up but before the call is answered.

- Calling Line Identification Restriction (CLIR)— Enables restriction of the per-line calling line identification presentation setting.
- Combination CAC and CLIR.
- Combination CAC and CLIP.

- Step 10** For each pattern, determine if you want AllDay hours or StandardHours in this partition. The generic Cisco HCS model supports two time periods: AllDay (Monday - Sunday: 00:00 to 24:00) or StandardHours (Monday - Friday: 07:00 to 18:00).
- Step 11** For each pattern, determine if you want blocking in this partition.
- Step 12** Determine Carrier Access Code (CAC) if applicable. Gives telephone users the possibility of opting for a different carrier on a call-by-call basis. These consist of the digits 101 followed by the four-digit CIC. The CAC is dialed as a prefix immediately before dialing a long-distance phone number.
- Step 13** Determine subscriber (local dialing) dial plan patterns.
- Step 14** Determine service codes dial plan pattern, if applicable.
- Step 15** Determine Freephone /Toll Free dial plan patterns, if applicable.
- Step 16** Determine Premium Dialing dial plan patterns, if applicable.
- Step 17** Determine Mobile Dialing dial plan patterns, if applicable.
- Step 18** Determine Carrier Select dial plan patterns, if applicable.
- Step 19** Determine Special Rate dial plan patterns, if applicable.
- Step 20** Determine Personal Communications Service (PCS) Number dial plan patterns, if applicable.
- Step 21** Determine if you require Calling Line Identification Presentation (CLIP) If applicable. Transmits a caller's number to the called party's telephone equipment during the ringing signal or when the call is being set up but before the call is answered.
- Step 22** Determine your Primary Emergency Number.  
Different countries around the world have a single emergency number that is used throughout the entire country; for example, 911 in the USA, 999 in the UK, and 000 in Australia. If your country has several emergency numbers, you need to know the most important emergency number.
- Step 23** Determine the three highest priority emergency numbers.
- Step 24** Determine the rest of the emergency numbers required (as many as apply to a maximum of 12).
- Step 25** Determine whether each pattern is needed for Survivable Remote Site Telephony (SRST).
- Step 26** Determine if you plan to enforce E.164 rules for a new country dial plan. If yes, determine the following:
- Minimum area code length
  - Maximum area code length
  - Minimum local number length
  - Maximum local number length
- Step 27** Determine if you want outgoing prefix digits converted to E.164.
- Step 28** Determine if you want Cisco to manage routing transformation for the called number.  
**Note** If you want customized routing, you will need to contact Cisco Advanced Services.
- Step 29** Determine if you want Cisco to generate a Plus Dialing National pattern.
- Step 30** Determine if you want Cisco to generate a Plus Dialing International pattern.
-

## Determine Customer Dialing Requirements for Cisco Unified Communications Domain Manager 8.1(x)

- 1 If you selected Generic (G1) Dial Plan model (in [Determine Dial Plan Model for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 3), determine Site Location Code (SLC) for the customer.
- 2 Determine if intersite prefix (ISP) is used (Optional) and the ISP number for the customer. This information will be required during customer onboarding. The ISP is a single digit number in the range 0 to 9 and must be unique within the customer's network. The ISP is deployment-configurable to any value, but must not overlap with the PSTN dialing prefix or emergency number. The ISP is an optional configurable value within a customer's dial plan.



### Note

Customer-wide means that the same ISP must be used for all of a customer's sites. If the first site that is provisioned begins with the digit 8, then all other sites should also begin with the digit 8. Under one service provider, you can have the ISP as 7 for one customer and 8 for another customer.

## Plan Path Selection

### Procedure

- Step 1** Determine if you will use a local gateway on a site basis or use centralized breakout (CBO) through aggregation. Once at aggregation, the call is routed by the service provider.
- Step 2** If a local gateway is added, then determine the call types that will be used to route calls through local breakout (LBO) at each site. The remaining call types are routed by CBO (aggregation). For more information on the call types, refer to [Plan a New Country Dial Plan](#), on page 9.

## Determine Extension Addressing in Cisco Unified Communications Domain Manager 8.1(x)

When planning to add a site, determine extension addressing to specify how many digits are used to identify extensions.

Extension number ranges chosen should not overlap with the intersite prefix (for the G1 dial plan) or with the PSTN access number. To prevent overlap, do not use extension number ranges starting with a PSTN access prefix such as 9, or the chosen intersite prefix, commonly 8. Overlap between extension numbers and the emergency number at any location must be avoided.

Refer to the following table for an example directory number format for the Generic (G1) dial plan. Note that a standalone ISP is not supported, but instead, you would implement the ISP as the first digit of the Site

Location Code (SLC) (shown as 8 in the table). You can also have various digits as the first digits of the SLC; an ISP does not have to be used.

**Table 4: Generic (G1) Dial Plan example directory number format**

Customer	SLC	Extension	Cisco Unified Communications Manager Configured DN range
<b>Customer 1</b>			
Location 1	80101	1000-1999	801011000-801011999
Location 2	80102	2000-2999	801022000-801022999
<b>Customer 2</b>			
Location 1	80201	1000-1999	802011000-802011999
Location 2	80202	2000-2999	802022000-802022999

Refer to the following table for an example directory number format for the Flat (G2) dial plan. Note that the number range is not site-specific. Extension numbers can be comingled; some of the numbers from Location 1 can be assigned to Location 2 and vice versa.

**Table 5: Flat (G2) Dial Plan example directory number format**

Customer	Extension	Example of a DN configured on Cisco Unified Communications Manager
<b>Customer 1</b>		
Location 1	16023421000-16023429999	16023429236
Location 2	13363421000-13363429999	13363425022
<b>Customer 2</b>		
Location 1	12123423000-12123423999	12123423044
Location 2	2000-2999	2050

Refer to the following table for an example directory number format for the Shared Instance dial plan. Note that you can overlap the extension range across locations, but the same extension cannot be assigned at another location. If the same extension is used across locations, you will need to provision it as a shared line in Cisco Unified Communications Manager.

**Note**

Short code dialing from voice mail is not supported.

**Table 6: Shared Instance Dial Plan Example Directory Number Format**

Customer	Extension	Example of a DN configured on Cisco Unified Communications Manager
<b>Customer 1</b>		
Location 1	2000-2099, 3000-3099	2000-2049, 3000-3079
Location 2	2000-2099, 3000-3099	2050-2099, 3080-3099
<b>Customer 2</b>		
Location 1	2000-2099, 3000-3099	2000-2049, 2050, 2055, 3000-3079
Location 2	2000-2099, 3000-3099	2051-2054, 2056-2099, 3080-3099

## Determine Emergency Calling

Determine how emergency calling will be handled. The available options are:

- local PSTN handoff
- central PSTN handoff
- Cisco Emergency Responder (CER)

For more information on CER, see the latest version of *Cisco Hosted Collaboration Solution, Release 10.6(1) Solution Reference Network Design Guide*.

## Determine Inter-site Calling Customization Requirements for Cisco Unified Communications Domain Manager 8.1(x)

You can customize these intersite dialing requirements:

- If an Intersite Prefix (ISP) is required and it is included in the Site Location Code (SLC), then directory numbers will include the ISP.
- If an ISP is not required for intersite dialing, then the directory numbers do not include ISPs.
- If an ISP is required, but it is not included in the SLC, then directory numbers do not include ISPs.

Determine your intersite calling customization requirements. Intersite requirements are set using Enhanced Number Translation templates in Cisco Unified Communications Domain Manager 8.1(x). For more

information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.

In Cisco Unified Communications Domain Manager 10.6(1), intersite calling customization requirements are specified by the administrator when creating a customer dial plan. For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.

## Determine Intrasite Calling Customization Requirements Cisco Unified Communications Domain Manager 8.1(x)

You can create translation patterns for extension dialing with or without an extension prefix. Extension Prefix is used if the first digit of an extension conflicts with PSTN prefix or any other dialing. For example, if extension range 9xxx conflicts with PSTN prefix 9. In order to avoid conflict, another digit is prefixed to the extension. Extension prefix is not included in the DN.

Determine your intrasite calling customization requirements. Intrasite requirements are set using Enhanced Number Translation templates in Cisco Unified Communications Domain Manager 8.1(x). For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.

In Cisco Unified Communications Domain Manager 10.6(1), intrasite calling customization requirements are specified by the administrator when creating a customer dial plan. For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.

## Determine Short Code Dialing for Cisco Unified Communications Domain Manager 8.1(x)

Short code dialing (internal group speed calling) is used at a customer site for commonly used services such as help, operator, and maintenance. You might want to set up short code dialing to reach commonly used services quickly. For more information on short code dialing, see the *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.



---

**Note** Only intracompany short code dialing is available.

---

Determine your short code dialing plan. Short code dialing requirements are set using Enhanced Number Translation templates in Cisco Unified Communications Domain Manager 8.1(x). For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.

In Cisco Unified Communications Domain Manager 10.6(1), short code dialing customization requirements are specified by the administrator when creating a customer. For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.

## Determine Voice Mail Numbering for Cisco Unified Communications Domain Manager 8.1(x)

**Determine the voice mail numbering scheme for forwarding calls to voice mail and accessing voice mail messages from the PSTN.** For each Cisco Unified IP Phone line that exists on the leaf cluster that requires voicemail, there is also a voice mailbox definition on the Cisco Unity Connection. On Cisco Unity Connection, the voice mailbox definition is associated to the telephony integration/leaf cluster that contains the line definition. The leaf clusters have a voicemail Pilot Number defined that helps to route calls to the Cisco Unity Connection. With this scenario, each leaf cluster can use the same number for the voicemail pilot number.

**Determine if you require a short code (internal speed call number) for voice mail access.** Short code dialing requirements are set using Enhanced Number Translation templates in Cisco Unified Communications Domain Manager 8.1(x). For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.

## Determine Enhanced Number Translation Template Use in Cisco Unified Communications Domain Manager 8.1(x)

Enhanced Number Translation (ENT) templates allow you to customize translation and route patterns on a customer basis, or on a customer location basis when using the Cisco Unified Communications Domain Manager 8.1(x). You can create additional templates based on customer needs. Contact your Cisco representative for support. Refer to the *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)* for details on how to customize and use the templates. Refer to the following table to determine which of the templates you require for a customer or customer location.

Template name	Description	Used by which dial plans?
Intrasite G1 Template	Sets up extension dialing (no extension prefix). This is the current capability provided by the standardized G1 model.	G1
Intersite G1 Template	Sets up Intersite dialing when ISP is included in the SLC. This is the current capability provided by the standardized G1 model. You can also use this template for customers that do not require ISP for intersite calls.	G1
Intrasite ExtPfx Template	Creates translation patterns for extension dialing that requires an extension prefix. This is a variation of extension dialing translation patterns.	G1
Allow Call Template	Creates translation patterns to allow calls to certain numbers (per customer) even when a particular call type is blocked. For example, if a user is blocked from making national (long distance) calls, this template allows calls to certain destinations.	All



Template name	Description	Used by which dial plans?
Block Call Template	Creates blacklist or blocking translation patterns (per customer or location as required). This is similar to the Allow Call Template; however, this template is used to block calls to certain destinations.	All
Short Call (SC) Template	Creates short codes (group speed calling internal only) to commonly used services such as help, operator, and maintenance.	All
Voice Mail (VM) Dialing Template	Creates a short code for voice mail access.	All
ICT RP Template	Creates intercluster route patterns for a multicluster customer. In the G2 flat dial plan or G3 plan, the intercluster route patterns are not created by the standardized model.	G2, G3
TEHO RP Template	Creates per-country route patterns used in Tail End Hop Off (TEHO) environments. TEHO allows you to yield significant savings by routing a call across the Cisco global WAN to the gateway at the local site, then the call 'hops off' to the PSTN and completes as a local call.	All
IMS VM RP Template	Use this template to identify the specific voice mail route pattern to allow internal voice mail access for IMS-Integrated Mobile clients.	G1, G3 <b>Note</b> This particular template is not available to Shared Instance (G3) dial plan subscribers.
Local Calling Template	Several countries have variable length local dialing. For example, in India and Mexico, the length of area code plus the local number is fixed at 10, but they have variable length area codes from two to four digits. If the length of the area code is two digits, then the length of the local number is eight digits.  If the length of the area code is three digits, then the length of the local number is seven digits. And if the length of the area code is four digits, then the length of the local number is six digits. You can use the local template to customize translation patterns for each location.	All

Enhanced Number Translation templates are not used in . To customize translation patterns and route patterns on a customer basis, you can create custom schemas or use one of the default schemas predefined in Cisco Unified Communications Domain Manager 10.6(1). For more information on custom schemas, refer to *Cisco*

*Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*

## Determine Time of Day Routing for Cisco Unified Communications Domain Manager 8.1(x)

The Dial Plan Model in Cisco Unified Communications Domain Manager 8.1(x) supports two time periods and schedules. Choices are as follows:

- AllDay (Monday - Sunday: 00:00 to 24:00)
- StandardHours (Monday - Friday: 07:00 to 18:00)

Select one or the other depending on when most calls are made. Time of Day is defined at a global level.

For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.

## Determine Class of Service and Restrictions for Cisco Unified Communications Domain Manager 8.1(x)

Cisco Unified Communications Domain Manager 8.1(x) uses class of service to assign calling restrictions to an end user. The class of service is mapped by the dial plan model to a calling search space and partitions that are understood by Cisco Unified Communications Manager.

For Cisco Unified Communications Domain Manager 8.1(x) customers, the classes of service map to partitions, calling service spaces, and time periods and are defined in an Excel worksheet. Plan the class of service types that are required for your users:

- Temporary Out of Service Class of Service—Only allows emergency dialing
- International 24 hours Enhanced—No Restrictions
- International 24 hours Standard—Premium Rate and Personal Communication Service (PCS) calls are blocked
- International Working Hours Enhanced—No restrictions during standard working hours
- International Working Hours Standard where Premium Rate calls and PCS calls are blocked during standard working hours
- National 24 hours Enhanced where International calls are blocked
- National 24 hours Standard where Premium Rate, PCS, and International calls are blocked
- National 24 hours Restricted when Premium Rate, PCS, International, and Mobile calls are blocked
- National Working hours Enhanced where International calls are blocked during standard working hours
- National Working hours Standard where Premium Rate, PCS, and International calls are blocked during standard hours
- National Working hours Restricted when Premium Rate, PCS, International, and Mobile calls are blocked during standard working hours

- Local 24 hours Enhanced where the Premium Rate, PCS, International, Mobile, and National calls are blocked
- Internal only where only on-net calls are allowed
- Internal Calls with CLIR where only on-net calls with Calling Line Identification Restriction are allowed

For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 8.1(x)*.

## Determine Customer-Specific Dial Plan Requirements for Cisco Unified Communications Domain Manager 10.6(1)

The Dial Plan Model is completely redesigned for Cisco Unified Communications Domain Manager 10.6(1) to leverage templates and workflows using json files to implement the model. The new model is flexible and is designed to simplify dial plan management wherever possible.

The Dial Plan Model in Cisco Unified Communications Domain Manager 10.6(1) consists of four basic, predefined call types:

- Directory Number = Site Location Code (SLC) + Extension, no Inter Site Prefix (ISP) in SLC
- Directory Number = SLC + Extension with ISP as part of SLC
- Directory Number = SLC + Extension and without ISP, can be with or without Extension Dialing Prefix (EDP)
- Directory Number = Flat Dial Plan (no SLC)

These four dial model types encompass all the functionality that was available on the previous Dial Plan Model, but in order to offer flexibility for partners, the four types can be extended to develop custom schemas. Customization is managed through discrete, selectable elements in Cisco Unified Communications Domain Manager 10.6(1).

The Dial Plan Model provides flexible features such as

- Dynamic Class of Service (COS)
- Country Dial Plans
- Blocked / Non-blocked numbers
- Call manager groups
- Flexible routing
- Per-site PSTN prefix

In Cisco Unified Communications Domain Manager 10.6(1), the administrator is asked at either the customer or site level to fill in a template which determines the Dial Plan model that is delivered to the Cisco Unified Communications Manager and sites. For more information, see the sections listed here, or refer to *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.

## Procedure

---

- Step 1** For each customer, do the following:
- Determine which type(s) of dial plans (Type 1 to Type 4) you require.
  - [Plan Multiple Service Provider Support for Cisco Unified Communications Domain Manager 10.6\(1\), on page 20](#), if required.
  - [Determine Country-Specific Dial Plans for Cisco Unified Communications Domain Manager 10.6\(1\), on page 22](#), if required.
  - [Plan a New Country Dial Plan](#), on page 9, if required.
  - [Determine Customer Dialing Requirements for Cisco Unified Communications Domain Manager 10.6\(1\), on page 23](#).
  - [Plan Path Selection](#), on page 12.
  - [Determine Extension Addressing for Cisco Unified Communications Domain Manager 10.6\(1\), on page 24](#).
  - [Determine Emergency Calling](#), on page 14.
  - [Determine Inter-site Calling Customization Requirements for Cisco Unified Communications Domain Manager 8.1\(x\), on page 14](#).
  - [Determine Intrasite Calling Customization Requirements Cisco Unified Communications Domain Manager 8.1\(x\), on page 15](#).
  - [Determine Short Code Dialing for Cisco Unified Communications Domain Manager 8.1\(x\), on page 15](#).
  - [Determine Voice Mail Numbering in Cisco Unified Communications Domain Manager 10.6\(1\), on page 25](#).
- Step 2** Define the following:  
This step is performed at the customer level in Cisco Unified Communications Domain Manager 10.6(1).
- [Determine Time of Day Routing in Cisco Unified Communications Domain Manager 10.6\(1\), on page 26](#).
  - [Determine Class of Service and Restrictions in Cisco Unified Communications Domain Manager 10.6\(1\), on page 26](#).
- 

## Plan Multiple Service Provider Support for Cisco Unified Communications Domain Manager 10.6(1)

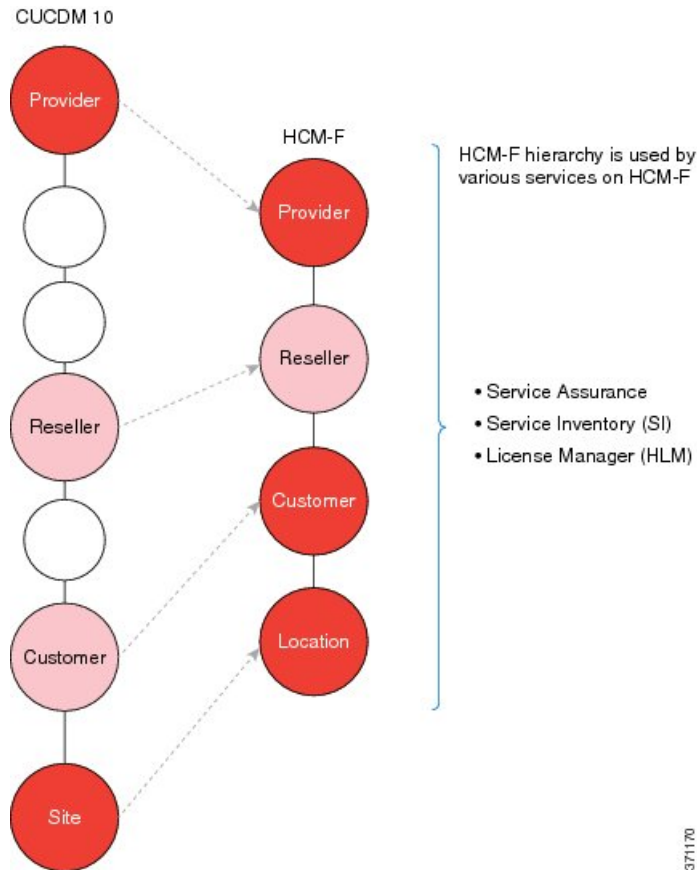
There is no support for multiple service providers in . Cisco Unified Communications Domain Manager 10.6(1)

### Role-Based Access Control (RBAC)

Partners deploying Cisco HCS require the ability to be able to restrict certain management actions to a specific set of users.

The following roles are predefined for use in Cisco HCS:

<b>Role</b>	<b>FF</b>	<b>SA</b>	<b>Read Permission</b>	<b>Update Permission</b>
Partner Admin	Y	Y	Y	Y
Partner Operator	Y	Y	Y	N
Partner FF Admin	Y	N	Y	Y
Partner FF Operator	Y	N	Y	N
Partner SA Admin	N	Y	Y	Y
Partner SA Operator	N	Y	Y	N
Partner Admin	Y	Y	Y	Y
Partner Operator	Y	Y	Y	N
Partner FF Admin	Y	N	Y	Y
Partner FF Operator	Y	N	Y	N
Partner SA Admin	N	Y	Y	Y
Partner SA Operator	N	Y	Y	N
Partner Admin	Y	Y	Y	Y
Partner Operator	Y	Y	Y	N
Partner FF Admin	Y	N	Y	Y
Partner FF Operator	Y	N	Y	N
Partner SA Admin	N	Y	Y	Y
Partner SA Operator	N	Y	Y	N

**Figure 3: Role-Based Access Control Hierarchy**

In the preceding figure, note that administrators of each level have access to the information in all hierarchy levels below them.

See the *Cisco Hosted Collaboration Solution, Release 10.6(1) Customer Onboarding Guide* for more information.

## Determine Country-Specific Dial Plans for Cisco Unified Communications Domain Manager 10.6(1)

In Cisco Unified Communications Domain Manager 10.6(1), a country dial plan consists of translation and route patterns to handle the following:

- All local, long distance, and international calls
- Emergency calls
- Call blocking based on class of service
- Call routing through local gateway and or central breakout

At the provider level, you need to determine the countries to be supported. By default, the base data and country dial plan model file package contains the dial plan model files for North America and Great Britain. If you are a service provider with a customer in another country, you must also plan to use country-specific dial plan model files.

If you are multi-country provider who requires multiple country dial plans, you need to determine the additional country dial plans required.

If a country-specific dial plan model file does not exist for the country, you can download the dial plan model file for a country that has a similar dial plan, and then customize it, or you can contact your Cisco representative to have a new country dial plan created.

**Table 7: Country Dial Plans Available for Cisco Unified Communications Domain Manager 10.6(1)**

Great Britain (GBR)	United States (USA)
---------------------	---------------------

If a new country dial plan is required, contact your Cisco representative for assistance. Provide the information that is outlined in [Plan a New Country Dial Plan](#), on page 9 to your Cisco representative.



**Note**

The available country dial plans adhere to the specific country dial plan rules and Cisco HCS model best practices. However, it is a partner's responsibility to validate and fully test these country modules in the specific country prior to any commercial launch.

## Determine Customer Dialing Requirements for Cisco Unified Communications Domain Manager 10.6(1)

- 1 If you selected Type 1 to Type 3 Dial Plan model (in [Determine Dial Plan Model for Cisco Unified Communications Domain Manager 8.1\(x\)](#), on page 3), determine Site Location Code (SLC) for the customer.
- 2 For Type 1 Dial Plan, determine if intersite prefix (ISP) is used (Optional) and the ISP number for the customer. For Type 2, determine the ISP number for the customer. This information will be required during customer onboarding.  
The ISP is a single digit number in the range 0 to 9 and must be unique within the customer's network. The ISP is deployment-configurable to any value, but must not overlap with the PSTN dialing prefix or emergency number. The ISP is an optional configurable value within a customer's dial plan.



**Note**

Customer-wide means that the same ISP must be used for all of a customer's sites. If the first site that is provisioned begins with the digit 8, then all other sites should also begin with the digit 8. Under one service provider, you can have the ISP as 7 for one customer and 8 for another customer.

## Determine Extension Addressing for Cisco Unified Communications Domain Manager 10.6(1)

When planning to add a site, determine extension addressing to specify how many digits are used to identify extensions.

Extension number ranges chosen should not overlap with the intersite prefix or with the PSTN access number. To prevent overlap, do not use extension number ranges starting with a PSTN access prefix such as 9, or the chosen intersite prefix, commonly 8. Overlap between extension numbers and the emergency number at any location must be avoided.

Refer to the following table for an example directory number format for the Type 1 to 3 dial plans. Note that a standalone ISP is not supported, but instead, you would implement the ISP as the first digit of the Site Location Code (SLC) (shown as 8 in the table). You can also have various digits as the first digits of the SLC; an ISP does not have to be used.

**Table 8: Type 1 to Type 3 Dial Plan example directory number format**

Customer	SLC	Extension	Cisco Unified Communications Manager Configured DN range
<b>Customer 1</b>			
Location 1	80101	1000-1999	801011000-801011999
Location 2	80102	2000-2999	801022000-801022999
<b>Customer 2</b>			
Location 1	80201	1000-1999	802011000-802011999
Location 2	80202	2000-2999	802022000-802022999

Refer to the following table for an example directory number format for the Type 4 dial plan. Note that the number range is not site-specific. Extension numbers can be comingled; some of the numbers from Location 1 can be assigned to Location 2 and vice versa.

**Table 9: Type 4 Dial Plan example directory number format**

Customer	Extension	Example of a DN configured on Cisco Unified Communications Manager
<b>Customer 1</b>		
Location 1	16023421000-16023429999	16023429236



Customer	Extension	Example of a DN configured on Cisco Unified Communications Manager
Location 2	13363421000-13363429999	13363425022
<b>Customer 2</b>		
Location 1	12123423000-12123423999	12123423044
Location 2	2000-2999	2050

Refer to the following table for an example directory number format in a Shared Instance dial plan deployment, using the Type 4 dial plan. Note that you can overlap the extension range across locations, but the same extension cannot be assigned at another location. If the same extension is used across locations, you will need to provision it as a shared line in Cisco Unified Communications Manager.

**Note**

Short code dialing from voice mail is not supported.

**Table 10: Shared Instance Deployment (Type 4) Dial Plan Example Directory Number Format**

Customer	Extension	Example of a DN configured on Cisco Unified Communications Manager
<b>Customer 1</b>		
Location 1	2000-2099, 3000-3099	2000-2049, 3000-3079
Location 2	2000-2099, 3000-3099	2050-2099, 3080-3099
<b>Customer 2</b>		
Location 1	2000-2099, 3000-3099	2000-2049, 2050, 2055, 3000-3079
Location 2	2000-2099, 3000-3099	2051-2054, 2056-2099, 3080-3099

## Determine Voice Mail Numbering in Cisco Unified Communications Domain Manager 10.6(1)

**Determine the voice mail numbering scheme for forwarding calls to voice mail and accessing voice mail messages from the PSTN.** For each Cisco Unified IP Phone line that exists on the leaf cluster that requires voicemail, there is also a voice mailbox definition on the Cisco Unity Connection. On Cisco Unity Connection, the voice mailbox definition is associated to the telephony integration/leaf cluster that contains the line

definition. The leaf clusters have a voicemail Pilot Number defined that helps to route calls to the Cisco Unity Connection. With this scenario, each leaf cluster can use the same number for the voicemail pilot number.

**Determine if you require a short code (internal speed call number) for voice mail access.** For Cisco Unified Communications Domain Manager 10.6(1), short code dialing customization requirements are specified by the administrator at the customer level. For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.

## Determine Time of Day Routing in Cisco Unified Communications Domain Manager 10.6(1)

The Dial Plan Model in Cisco Unified Communications Domain Manager 10.6(1) is completely customizable at the customer level. Each custom time schedule appears on the Cisco Unified Communications Manager Admin Time Schedule as a customer ID-name given to the schedule (for example CU7-workdayschedule).

For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.

## Determine Class of Service and Restrictions in Cisco Unified Communications Domain Manager 10.6(1)

Cisco Unified Communications Domain Manager uses class of service to assign calling restrictions to an end user. The class of service is mapped by the dial plan model to a calling search space and partitions that are understood by Cisco Unified Communications Manager.

For Cisco Unified Communications Domain Manager 10.6(1) customers, Classes of Service are defined at the customer level and can be used site-to-site. Call Types and Route Options (Allowed, Blocked) are defined for the Class of Service. When Class of Service is specified for a particular site (must have been previously defined in "Add a Class of Service" and "Define Call Types" at the site level, this sends partitions, translation patterns and calling search spaces to the Cisco Unified Communications Domain Manager.

For more information, see *Cisco Hosted Collaboration Solution, Release 10.6(1) Dial Plan Management Guide for Cisco Unified Communications Domain Manager, Release 10.6(x)*.