



Partitions and Calling Search Spaces

Partitions and calling search spaces provide the capability for implementing calling restrictions and creating closed dial plan groups on the same Cisco Unified CallManager.

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Understanding Partitions and Calling Search Spaces

A partition comprises a logical grouping of directory numbers (DNs) and route patterns with similar reachability characteristics. Devices that are typically placed in partitions include DNs and route patterns. These entities associate with DNs that users dial. For simplicity, partition names usually reflect their characteristics, such as “NYLongDistancePT,” “NY911PT,” and so on.

A calling search space comprises an ordered list of partitions that users can look at before users are allowed to place a call. Calling search spaces determine the partitions that calling devices, including IP phones, softphones, and gateways, can search when attempting to complete a call.

When a calling search space is assigned to a device, the list of partitions in the calling search space comprises only the partitions that the device is allowed to reach. All other DNs that are in partitions not in the device calling search space receive a busy signal.

Partitions and calling search spaces address three specific problems:

- Routing by geographical location
- Routing by tenant
- Routing by class of user

Partitions and calling search spaces provide a way to segregate the global dialable address space. The global dialable address space comprises the complete set of dialing patterns to which Cisco Unified CallManager can respond.

Partitions do not significantly impact the performance of digit analysis, but every partition that is specified in a calling device search space does require that an additional analysis pass through the analysis data structures. The digit analysis process looks through every partition in a calling search space for the best match. The order of the partitions that are listed in the calling search space serves only to break ties when equally good matches occur in two different partitions. If no partition is specified for a pattern, the pattern goes in the null partition to resolve dialed digits. Digit analysis always looks through the null partition last.

You can associate partitions with a time schedule and a time zone. Associating a partition to a time schedule and a time zone allows configuration of time-of-day routing for calls that are coming into a partition and the partition's associated calling search spaces. Refer to [“Time-of-Day Routing”](#) for more information.

If you configure a calling search space both on an IP phone line and on the device (IP phone) itself, Cisco Unified CallManager concatenates the two calling search spaces and places the line calling search space in front of the device calling search space. If the same route pattern appears in two partitions, one contained in the line calling search space and one contained in the device calling search space, then Cisco Unified CallManager selects the route pattern that is listed first in the concatenated list of partitions (in this case, the route pattern that is associated with the line calling search space).

**Note**

Cisco recommends avoiding the configuration of equally matching patterns in partitions that are part of the same calling search space or part of different calling search spaces that are configured on the same phone. This practice avoids the difficulties related to predicting dial plan routing when the calling search space partition order is used as a tie breaker.

Before you configure any partitions or calling search spaces, all directory numbers (DN) reside in a special partition named <None>, and all devices are assigned a calling search space also named <None>. When you create custom partitions and calling search spaces, any calling search space that you create also contains the <None> partition, while the <None> calling search space contains only the <None> partition.

**Note**

Any device making a call can explicitly reach any dial plan entry that is left in the <None> partition. To avoid unexpected results, Cisco recommends that you do not leave dial plan entries in the <None> partition.

Examples

Calling search spaces determine partitions that calling devices search when they are attempting to complete a call.

For example, assume a calling search space named “Executive” includes four partitions: NYLongDistance, NYInternational, NYLocalCall, and NY911. Assume that another calling search space named “Guest” includes two partitions, NY911 and NYLocalCall.

If the Cisco IP Phone that is associated with a phone or line is in the “Executive” calling search space, the search looks at partitions “NYLongDistance,” “NYInternationalCall,” “NYLocalCall,” and “NY911” when it attempts to initiate the call. Users who are calling from this number can place international calls, long-distance calls, local calls, and calls to 911.

If the Cisco Unified IP Phone that is associated with a phone or line is in the “Guest” calling search space, the search looks only at the “NYLocalCall” and “NY911” partitions when it initiates the call. If a user who is calling from this number tries to dial an international number, a match does not occur, and the call cannot be routed.

Guidelines and Tips

Use the following tips and guidelines when setting up partitions and calling search spaces:

- Use concise and descriptive names for your partitions. The `CompanynameLocationCalltypePT` format usually provides a sufficient level of detail and is short enough to enable you to quickly and easily identify a partition. For example, `CiscoDallasMetroPT` identifies a partition for toll-free inter-LATA (local access and transport area) calls from the Cisco office in Dallas.

For more information about partition names and how they affect the number of partitions that are allowed, see the [“Partition Name Limitations” section on page 15-4](#).

- To ensure that dialing privileges are uniform for all lines on a given phone, you may configure the calling search space on the IP phone itself and not on the individual lines of the phone. This practice prevents users from choosing another line on the phone to bypass calling restrictions.
- When configuring call forward features on an IP phone line, do not choose a calling search space that can reach the PSTN. This practice prevents users from forwarding their IP phone lines to a long-distance number and dialing their local IP phone number to bypass long-distance toll charges.

Dependency Records

If you need to find specific information about partitions and calling search spaces, click the Dependency Records link that is provided on the Cisco Unified CallManager Administration Partition Configuration and Calling Search Space Configuration windows. If the dependency records are not enabled for the system, the dependency records summary window displays a message.

Partition Dependency Records

The Dependency Records Summary window for partitions displays information about calling search spaces, route patterns, and directory numbers that are using the partition. To find more information, click the record type, and the Dependency Records Details window displays.

Calling Search Space

The Dependency Records Summary window for calling search spaces displays information about phones, gateways, voice-mail ports, and device pools that are using the calling search space. To find more information, click the record type, and the Dependency Records Details window displays.

For more information about Dependency Records, refer to [Accessing Dependency Records](#) in the *Cisco Unified CallManager Administration Guide*.

Partition Name Limitations

A calling search space (CSS) clause that call processing uses internally limits the maximum number of partitions. The CSS clause comprises the list of partitions in the calling search space by name. The CSS clause that call processing uses comprises a combination of a device CSS and the CSS for the directory number (DN) or route pattern that is associated with the device (for example, a line on a phone).

The maximum length of the combined CSS clause (device and pattern) comprises 1024 characters, including separator characters between partition names (for example, “partition 1:partition 2:partition 3”). Because the CSS clause uses partition names, the maximum number of partitions in a CSS varies depending on the length of the partition names. Also, because the CSS clause combines the CSS of the device and the CSS of the route pattern, the maximum character limit for an individual CSS specifies 512 (half of the combined CSS clause limit of 1024 characters).

When you are creating partitions and calling search spaces, keep the names of partitions short relative to the number of partitions that you plan to include in a calling search space. Refer to “[Calling Search Space Configuration Settings](#)” in the *Cisco Unified CallManager Administration Guide* for examples of the maximum number of partitions that can be added to a calling search space if the partition names are of fixed length.

Where to Find More Information

Related Topics

- [Understanding Route Plans](#), page 17-1

Additional Cisco Documentation

- [Calling Search Space Configuration](#), *Cisco Unified CallManager Administration Guide*
- [Partition Configuration](#), *Cisco Unified CallManager Administration Guide*
- [Calling Search Space Configuration](#), *Cisco Unified CallManager Administration Guide*
- [Time-of-Day Routing](#), page 16-1
- [Time Period Configuration](#), *Cisco Unified CallManager Administration Guide*
- [Time Schedule Configuration](#), *Cisco Unified CallManager Administration Guide*

Additional Cisco Documentation

- *Cisco Unified Communications Solution Reference Network Design*