



Document ID: 118878

Updated: Sep 11, 2015

Contributed by Cisco TAC Engineers.



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## Introduction

This document describes how to adjust the Max-Forwards value (hop count) in order to prevent Error Code 483 occurrences on the Cisco TelePresence Video Communication Server (VCS).

## Problem

The Max-Forwards header (hop count) is a parameter that travels with a packet and decrements by one each time the packet passes through a network element (gateway or proxy). When a packet is forwarded via a zone, the lower of the two values (the original hop count or the hop count that is configured for that zone) is used. This occurs with all zones through which a packet passes.

**Example:** A packet with a Max-Forwards value of 57 comes in from a Microsoft Lync environment. It enters a neighbor zone that has its hop count set to 15 (the Max-Forwards value changes to 15) before it goes on to a Cisco Unified Communications Manager zone that has a hop count of 70 (the Max-Forwards value reduces by one to 14).

If the hop count from the source location to the destination is greater than the Max Forwards value that is set at the source, and the Max Forwards value hits **0** before it reaches the destination, the packet does not travel any further. This can generate the **Error Code 483: Too many hops**.

For H.323, the hop count only applies to search requests. For Session Initiation Protocol (SIP), the hop count applies to all of the requests that are sent to a zone, which affects the Max-Forwards field in the request.

The hop counts are configured on a per-zone basis. There are two main types of zones: those that are automatically generated, such as Cisco Unified Communications Manager

- Automatically generated zones require edits via the CLI interface.
- Manually configured zones can be edited by with either the Web interface or the CLI.

Manually generated zones are configured with a hop count that is set to 15 by default, which is adequate for *on-premises* networks where the topology is known. When business-to-business communication is required (where packets move outside to cloud based or internet services) and the network structures are unknown, Cisco recommends that the hop count values be increased to 70.

**Note:** If your hop count values are set higher than necessary, there is a risk that you might enter a loop on your network. In these situations, a search request is sent around the network until the hop count reaches 0, which consumes resources unnecessarily. In order to prevent this, set the **Call loop detection mode** to **On**.

## Solution

This section describes how to adjust the hop count value for automatically and manually generated zones.

**Tip:** You can use either the CLI or the Web interface in order to configure the hop count for a manually configured zone.

### Use the Web Interface

Complete these steps in order to edit the hop count value via the Web interface:

1. Use an Admin account and navigate to **Configuration > Zones > Zones**.
2. Click the name of the zone that you want to configure, and the **Edit Zone** page appears.
3. Enter the hop count value that you want to use for this zone into the **Hop count** field of the Configuration section. The default value for manually configured zones is 15, but 70 is recommended when traffic is moves across unknown networks, such as cloud or internet services.

Complete these steps in order to edit the hop count values within the Web interface for Microsoft Lync B2BUA configurations:

1. Navigate to **Application > B2BUA > Microsoft Lync > Configuration**.
2. Set the Configuration to **Enabled**.
3. Click **Show advanced settings**.

4. Change the hop count as required (default is 70).

## Use the CLI

The automatically generated, line-side neighbor zones might also require adjustment. These edits are completed via the CLI.

Complete these steps in order to edit the hop count value via the CLI:

1. Enter this command into the CLI in order to obtain the IDs for the system-generated zones:

```
xconfig zones zone // systemGenerated
```

2. For each ID that has a value of **yes**, enter this command into the CLI in order to view the currently configured hop count value:

```
xconfig zones zone HopCount
```

3. If the hop value is set to the default value (15), enter this command into the CLI in order to increase the value to 70:

```
xconfig zones zone HopCount: "70"
```

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