CISCO™

Managing Duplicate IP Addresses in the Field Technical Reference

Overview and Background

Introduction

Through the years, Cisco engineers have noticed a steady flow of reports from the field whereby the Digital Network Control System (DNCS) assigns an IP address to a Digital Home Communications Terminal (DHCT), even though that IP address is still in use with another DHCT. This duplication of IP address assignments has resulted in a substantial amount of chronic non-responding DHCTs in the field, as well as a potential loss of revenue to system operators.

Two main causes for this issue have been identified:

- Billing systems routinely place DHCTs into an administrative state of *out-of-service* to address subscriber non-payment issues.

- Site support staff assigns an administrative state of *out-of-service* to two-way DHCTs, then back to *in-service two-way*, in an attempt to fix various subscriber-based field issues.

Purpose

This document serves to explain what happens internally on the DNCS when a DHCT is assigned a status of *out-of-service*. Additionally, this document offers guidance to system operators on how to properly handle subscriber non-payment and DHCT headend troubleshooting issues.

Audience

This document is written for system operators and headend administrators of the DBDS who are responsible for maintaining an accurate administrative status of DHCTs in their inventory. Field service engineers who assist in maintaining the headend will also find this bulletin to be useful.

Document Version

This is the first formal release of this document.

DHCT Out-of-Service Implications

When the administrative status of a DHCT is changed from *in-service two-way* or *in-service one-way* to *out-of-service*, the IP address of that DHCT is removed from the DNCS database. Removing this data from the database signals to the DNCS that the IP address is now available for reprovisioning.

While it appears, from a DNCS perspective, that the IP address was correctly provisioned to a new DHCT, the physical IP address is still in use on the network by the previous DHCT. The DHCT with the newly provisioned IP address will be unable to complete the sign-on process and will ultimately become a chronic non-responder until the IP address is released from the DHCT's stored cache via a reboot.

Recommended Practices for DHCT Out-of-Service Assignments

As stated earlier in this bulletin, Cisco engineers have identified two main scenarios under which DHCTs are erroneously placed into an administrative state of *out-of-service*. They are:

- Billing systems routinely place DHCTs into an administrative state of *out-of-service* to address subscriber non-payment issues.

- Site support staff assigns an administrative state of *out-of-service* to two-way DHCTs, then back to *in-service two-way*, in an attempt to fix various subscriber-based field issues.

Cisco engineers offer the following recommendations for system operators to follow in order to address these two scenarios:

Subscriber Non-Payment

If a subscriber falls into a non-payment condition, system operators should remove the brick package from that subscriber's DHCT. The brick package, when removed from a DHCT, removes all services from that DHCT. The subscriber is then forced to telephone the cable company to correct the issue. The subscriber's DHCT should remain with an administrative status of two-way while it is in the subscriber's home.

DHCT Troubleshooting

A system operator should avoid assigning a status of *out-of-service* to a DHCT that is connected to the headend. However, if the system operator feels that an *out-of-service* status MUST be assigned to a DHCT that is in the subscriber's home, then the system operator MUST follow this action by rebooting the DHCT so that the DHCT releases the IP address from its non-volatile random access memory (NVRAM). The system operator must then verify that the reboot request (either manual or remotely) did, in fact, reset the DHCT. Rebooting the DHCT will remove the IP address from the physical network, which eliminates the chance of the DHCT creating a future duplicate IP address issue.

For a DHCT with an administrative status of *out-of-service* to be handled properly by the system, that DHCT MUST no longer be in the field and MUST not be "on account" from a billing system's perspective. A DHCT should NEVER be assigned a status of *out-of-service* while still connected to the RF network without being followed by a reboot.

For Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.