Horizon Mobility® Network Discovery Overview

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1. Introduction

This document describes how RedSky's network discovery can be implemented in a customer environment. Since the advent of IP based phones and phone systems, administrators needed to support mobility. Horizon Mobility® provides an automated solution for Enhanced 9-1-1 (E911) Services for softphones utilizing MyE911® as well as HELD enabled endpoints.

2. Discovery Methods

MAC Address Mappings

This discovery method uses an endpoint's MAC address to determine location.

This method is beneficial for customers that wish to provide Enhanced 9-1-1 with a high level of granularity to endpoints that do not move often.

- Supported Input Formats: MM:MM:MM:SS:SS:SS, MM-MM-MM-SS-SS-SS, MM.MM.MM.SS.SS.SS, MM MM MM SS SS SS, and MMMMMMSSSSSS

Input format is not case sensitive.

LLDP Chassis and Port Mappings

This discovery method uses the network switch to determine location. The endpoint uses LLDP (Link Layer Discovery Protocol) to identify its neighbor and passes this information to RedSky Horizon Mobility®. When the LLDP information is received, Horizon Mobility® associates the endpoint with the location assigned to the switch and/or port.

There are three requirements for LLDP Mappings to be successfully implemented. First, the customer must know the location of a switch and/or port. Second, the endpoint and connected switch must support LLDP and pass the tags to the HELD Service. Any softphone using the MyE911® client meets this requirement. Lastly, LLDP Chassis and Port Mappings must be properly configured in Horizon Mobility®.

If the HELD request contains both Chassis ID and Port ID, Network Discovery returns the locations associated with the port. If the Port does not have a location associated with it, then Network Discovery returns the fallback location of the Chassis.

The HELD device view, under the Monitoring section in Horizon Mobility®, will also show the Chassis and Port ID received in the HELD request. This information can be useful when the Administrator does not have access to the switch, but still wants to make use of LLDP mappings.

This method is beneficial for customers that wish to provide a unique location for each phone, or for those customers who have IP segments which cannot be geographically grouped. If the customer does not require precise location of each endpoint or change control practices are not in place for patch panel management, this option is not recommended.

- Supported Input Formats for Chassis: Valid MAC address or IP address. HELD enabled devices will typically present LLDP information in base64 encoded format. Horizon Mobility® also supports inputting the chassis identifier information in the base64 encoded format. If inputting base64 encoded data, the casing of the characters does matter.
- Supported Input Formats for Port: Port is a free form input field. Horizon Mobility® also supports inputting the port identifier information in the base64 encoded format. If inputting base64 encoded data, the casing of the characters does matter.

BSSID Mappings

This discovery method uses the connected Wireless Access Point (WAP) to determine location. Basic Service Set Identifier (BSSID) is a 48bit identity used to identify a particular WAP within a wireless network, usually the BSSID is the MAC address of the WAP. There are two different categories available for BSSIDs, Corporate and Personal. When a BSSID is sent to the Horizon Mobility® service, the endpoint is associated with the location of the BSSID.

There are three requirements for the BSSID Mappings to be successfully implemented. First, the customer must know the location of a WAP. Second, the endpoint must pass the BSSID to the HELD Service. Any softphone using the MyE911® client meets this requirement. Lastly, BSSID Mappings must be properly configured in Horizon Mobility®.

This method is beneficial for customers that want to track the location of WIFI endpoints. If the customer has WAPs that service multiple floors within a building this method is not recommended.

- Supported Input Formats: 00:00:00:00:00:00, 00-00-00-00-00-00, 00.00.00.00.00.00, 00 00 00 00 00 00, and 000000000000

Layer 3 Network Discovery (IP Range)

This discovery method uses an endpoint's IP address to determine location. When a registration event is determined, the IP address of the endpoint is collected and mapped to a defined range. The endpoint is then associated with the location of the IP Range.

There are two requirements for Layer 3 Network Discovery to be successfully implemented. First, the customer must know the location of their IP Subnets. Second, the IP Ranges must be properly configured within Horizon Mobility®.

In order to insure there is no overlap in private IP space, the customer must also define their public IP addresses for corporate locations. The public IP address is used as a trusted source to check that the HELD request is coming from a corporate location. The source of the HELD

request will be checked against the public IP range. Only after a request passes the public IP check will the IP range mappings be utilized.

IP Ranges may be defined as small or as large as the customer is capable of defining. Horizon Mobility® uses a minimum and maximum IP address for all ranges, and the range does not have to comply with a specific IP subnet, for example 192.168.124.15 through 192.168.125.27 is valid.

This method is beneficial for customers that wish to provide Enhanced 9-1-1 with minimal effort. IP Range mappings are designed to be used only for corporate locations. Remote workers should utilize one of the other network discovery methods to automate device discovery.

- Supported Input Formats: IPv4 and IPv6 addresses are supported. Long form and short form IPv6 addresses are supported. If a long form IPv6 address is entered that can be abbreviated to short form, the system will automatically apply the abbreviation and display the short form.

3. Network Discovery Priority

Horizon Mobility® supports a hybrid technique of Network Discovery. This means that a customer has the ability to "mix and match" the network discovery method that best suits their requirements. However, the customer should be conscious of the order of operation. The prioritized order of Network Discovery is as follows:

1. MAC Address Mapping
2. LLDP Port Mapping
3. LLDP Chassis Mapping
4. BSSID Personal Mapping
5. BSSID Corporate Mapping
6. Layer 3 Network Discovery (IP Range)
7. Off Wifi BSSID Mapping

4. Implementation

RedSky offers a wide range of network discovery methods. Planning and consideration must be taken to have a successful E911 implementation. Import templates can be downloaded directly from the Horizon Mobility® web portal. Please consult with your implementation team for best practices or how you can best apply the methods in your environment.