



# About Home Agent Service Manager

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Cisco Systems offers mobile operators a seamless roaming solution based on the Cisco Mobile Wireless Home Agent (HA) part of the Cisco Mobile Exchange framework. The Home Agent Service Manager (HA SM) facilitates service activation or de-activation in Cisco Home Agent devices in Cisco Mobile Exchange networks. The HA SM also helps you troubleshoot and debug, connectivity, and performance issues.

The main components of the HA SM are:

- Inventory—See [Chapter 3, “Using Inventory”](#)
- Service Manager—See [Chapter 4, “Using Service Manager”](#)
- Tools—See [Chapter 5, “Using Tools”](#)

This section provides information on the following:

- [About Home Agent, page 1-1](#)
- [Key Features in Home Agent Service Manager, page 1-4](#)
- [Prerequisites to Using the Home Agent Service Manager, page 1-5](#)

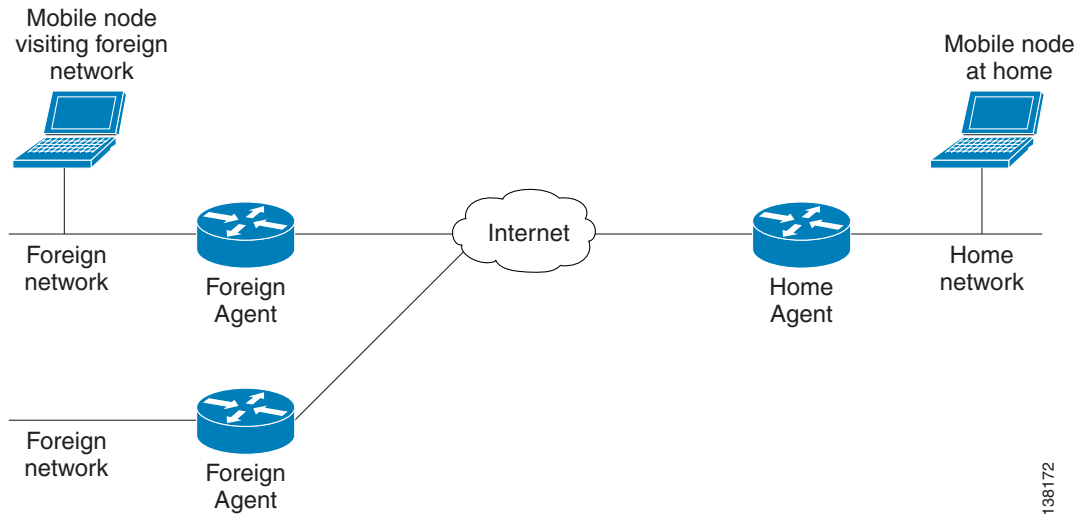
## About Home Agent

In Mobile Internet Protocol (Mobile IP), a mobility agent is a router that facilitates Internet traffic forwarding for a mobile node (MN) when it changes its point of attachment from one network or subnet to another. The two types of mobility agents are: a Home Agent and a Foreign Agent.

The Home Agent (HA) is a router on the home network of the MN that maintains information about the current location of the MN, as identified in its care-of address (CoA). The CoA is a temporary IP address of the MN on a foreign or visited network. The HA redirects packets by tunneling them to the MN at its current location.

The Foreign Agent (FA) is a router on a foreign network that assists the MN in informing its HA of its current care-of address. The FA detunnels and delivers packets to the MN that the HA tunnels. The FA also acts as the default router for packets for packets that the MN generates while it is connected to the foreign network.

The HA, in conjunction with the Packet Data Servicing Node (PDSN) and FA, allows a mobile station with Mobile IP client function, to access the Internet or corporate intranet by using Mobile IP-based service access. Mobile IP extends user mobility beyond the coverage area of the current PDSN or FA. [Figure 1-1](#) shows a Home Agent in a Mobile IP network.

**Figure 1-1 Home Agent in a Mobile IP Network**

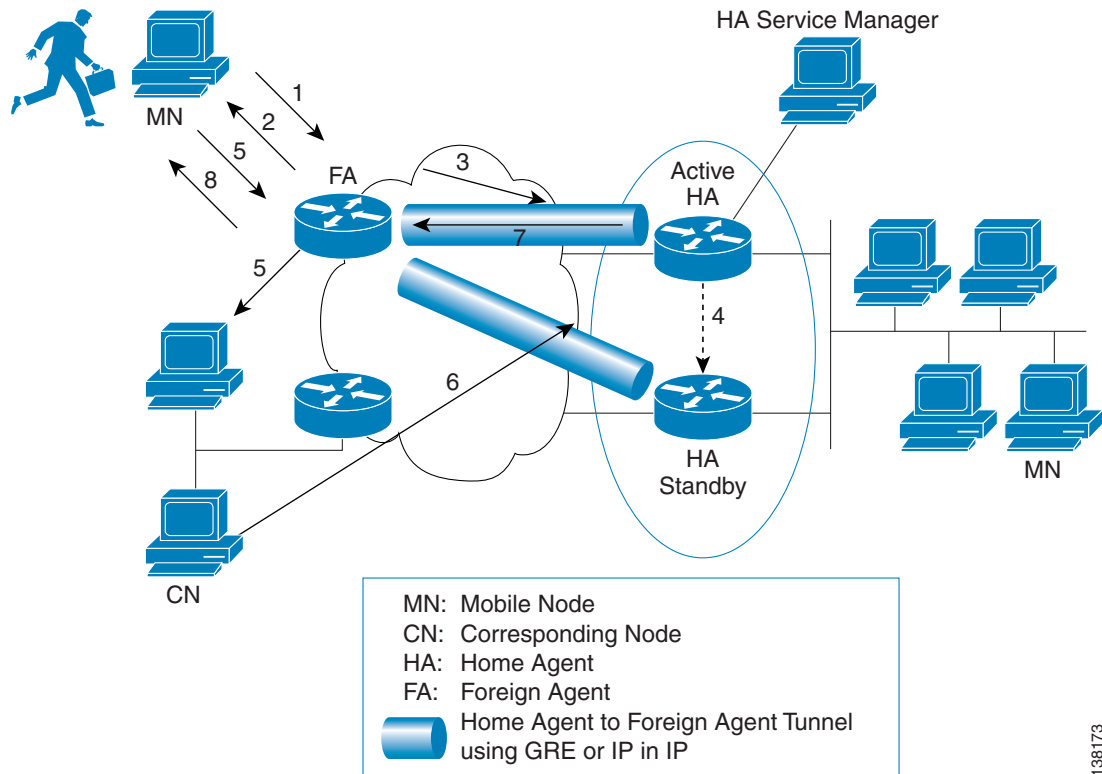
Home Agent identifies a host device by a single IP address; even if the device moves its physical point of attachment from one network to another. As a result, subscribers with mobile devices can roam to another network without restarting applications, or terminating and re-establishing a connection.

The Home Agent, then, is the anchor point for mobile nodes for which Mobile IP or Proxy MobileIP services are provided. Traffic is routed through the Home Agent, and it also provides Proxy Address Resolution Protocol (ARP) services. In the case of reverse tunneling, traffic from the MN is also routed through the Home Agent. Data packets addressed to the MN are routed to its home network, where the Home Agent now intercepts and tunnels them to the CoA of the mobile node.

The Cisco Mobile Wireless Home Agent is deployed at the mobile operator's data center. The Home Agent resides on the Cisco 7206VXR or the Cisco Catalyst Series Multiprocessor WAN Application Module (MWAM), which is used in the Cisco Catalyst 6500 Series and the Cisco 7600 Series platforms. The Home Agent routes all traffic that is sent to the subscriber's terminal, regardless of the network where the traffic originates. Likewise, the Home Agent also routes traffic from the subscriber's terminal, regardless of its ultimate destination. As a result, the subscriber retains a constant connection and remains addressable; even while roaming across different access networks.

## Communicating With Mobile Nodes

Figure 1-2 Communication Between Home Agent and a Mobile Node



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The sequence of events in the communication process between a mobile node and a Home Agent is:

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- Step 1** The Mobile node discovers a FA and they agree on services.
  - Step 2** The Mobile node obtains CoA.
  - Step 3** The Mobile node registers with active HA. The HA assigns an IP address to the mobile node. A Point to Point Protocol (PPP) link is established between the MN and the FA, and an IP-in-IP or generic routing encapsulation (GRE) tunnel is set up between the FA and the HA.
  - Step 4** The active HA duplicates each mobility binding to the standby Home Agent.
  - Step 5** The Mobile node connects to a destination IP host (corresponding node) with its home address as the source IP address. The packets that MN sends are routed directly to the corresponding node.
  - Step 6** The Corresponding node sends packets to the MN via the HA.
  - Step 7** The HA (active or standby) tunnels these packets to FA.
  - Step 8** The FA forwards the packets to the mobile node by using the CoA.
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# Key Features in Home Agent Service Manager

Table 1-1 describes the key features of HA Service Manager.

**Table 1-1** Key Features in Home Agent Service Manager

Feature	Menu Option	Description
Inventory		Synchronizes with the Device Credentials Repository (DCR) to keep the inventory updated.
Group Management	Inventory > Group Mgmt	Use this feature to: <ul style="list-style-type: none"> <li>• View all devices in an HA device group</li> <li>• Create, modify, and delete an HA device group</li> </ul> See <a href="#">Managing HA Device Groups, page 3-1</a> , for more information.
<b>Service Manager</b>		
Display Configuration	Service Manager > Display Config	Displays HA-specific configurations commands of specified HA devices in the selected group.
Sync Report	Service Manager > Sync Report	You can check the latest status of the master device and other devices in a group, from RME or DCR. You also use this feature to compare HA-specific configurations of: <ul style="list-style-type: none"> <li>• Master device with all other devices in the group.</li> <li>• Master device with a device in the group.</li> <li>• Any two devices in a group.</li> </ul> See <a href="#">Generating Sync Reports, page 4-5</a> .

**Table 1-1** Key Features in Home Agent Service Manager (continued)

Feature	Menu Option	Description
<b>Service Activation</b>		You use this feature to activate the following services in an HA device group:
Local IP Pool	Service Activation > Local IP Pool	
Virtual Networks	Service Activation > Virtual Networks	<ul style="list-style-type: none"> <li>• Configure local IP pools</li> </ul>
Home Address Assignment: <ul style="list-style-type: none"> <li>• With Network Access Identifier (NAI)</li> <li>• Without NAI</li> </ul>	<ul style="list-style-type: none"> <li>• Service Activation &gt; Home Address Assignment &gt; With NAI</li> <li>• Service Activation &gt; Home Address Assignment &gt; Without NAI</li> </ul>	<ul style="list-style-type: none"> <li>• Configure virtual networks</li> <li>• Assign home addresses with and without NAI</li> </ul>
Security Associations	Service Activation > Security Associations	<ul style="list-style-type: none"> <li>• Configure security associations for the mobile host, Home Agent, or Foreign Agent</li> </ul>
HA VRF	Service Activation > HA VRF	<ul style="list-style-type: none"> <li>• Configure VPN Routing and Forwarding (VRF) support on an HA device group</li> </ul>
Hot Lining	Service Activation > Hot Lining	<ul style="list-style-type: none"> <li>• Enable Hot-Lining</li> </ul>
ODAP Manager: <ul style="list-style-type: none"> <li>• Generic Client Configuration</li> <li>• Pool Configuration</li> </ul>	Service Activation > ODAP Manager: <ul style="list-style-type: none"> <li>• Service Activation &gt; ODAP Manager &gt; Generic Client Config</li> <li>• Service Activation &gt; ODAP Manager &gt; Pool Config</li> </ul>	<ul style="list-style-type: none"> <li>• Configure ODAP client parameters and ODAP client pools</li> <li>• Configure HA-DNS server address assignment and IP reachability</li> </ul>
Home Agent Domain Name System (HA-DNS)	Service Activation > HA-DNS	See <a href="#">Activating Services on HA Devices, page 4-11</a> .
Batch Mode Operation	Service Manager > Batch Configuration	Use this feature to: <ul style="list-style-type: none"> <li>• Apply multiple service activation configurations to a device.</li> <li>• Save the generated configuration commands and download them later.</li> </ul> See <a href="#">Managing Batch Configurations, page 4-40</a> .

## Prerequisites to Using the Home Agent Service Manager

You should complete several tasks before you use the HA SM. Please see the Release Notes for Mobile Wireless Center for Cisco Mobile Exchange at [http://www.cisco.com/en/US/products/ps6401/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps6401/prod_release_notes_list.html). View the section on “Limitations, Restrictions, and Prerequisites.”



### Note

Failure to read and understand the material on limitations, restrictions, and prerequisites could cause unexpected results when using the HA SM.

