CHAPTER 11

Home Agent Accounting

This chapter discusses concepts related to accounting on the Cisco Mobile Wireless Home Agent, and provides details about how to configure this feature.

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Overview of HA Accounting

This feature is primarily developed to allow the HA to interoperate with the Service Selection Gateway (SSG) in the CMX solution. However, this feature can also be used without SSG interaction.

Release 3.0 supports the following enhancements to the Accounting feature:

- Home Agent Accounting in a Redundant Setup
- Packet count and Byte count in Accounting Records
- Additional Attributes in the Accounting Records
- Additional Accounting Methods—Interim Accounting is Supported.

As byte count and packet count is performed on the HA, this accounting feature does not need the SSG in the network to generate full accounting information.

The HA Accounting feature includes the following activities:

- The HA sends an Accounting Start record when the first binding for a mobile is created.
- The HA sends an Accounting Stop record when the last binding for a mobile is deleted.
- The HA sends an Accounting Update when Handoff occurs .

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- If Re-registration fails for an existing binding, a watchdog message is sent with an appropriate reject code for an authenticated NAI.

The following attributes are sent in Accounting Records:

- NAI in Username attribute (1)
- MN IP Address in Framed IP Address attribute (8)

  Home Agent IP Address(26/7, 3gpp2 attribute)

  Care-of-address in Tunnel End Point (66)

  Network Access Server (NAS) IP Address attribute (4)

  Accounting Status Type attribute (40)

  Accounting Session ID (44)

  Accounting Terminate Cause(49) - only in accounting stop

  Accounting Delay Time(41)

  Acct-Input-Octets (42)

  Acct-Output-Octets (43)

  Acct-Input-Packets (47)

  Acct-Output-Packets (48)

  Acct-Input-Gigawords(52)

  Acct-Output-Gigawords(53)

  Registration flags in “mobileip-mn-flags” cisco-avpair attribute

  Vrf name in “mobileip:ip-vrf” cisco-avpair attribute

  “mobileip:mn-reject-code” cisco-avpair attribute (only in accounting-stop and accounting update, when an RRQ is rejected.)

Use the following commands to enable the HA accounting features:

ip mobile home-agent accounting *method name*

Synching Accounting Counters with HA Redundancy Setup

redundancy [**virtual-network address** *address*]

When you configure the command, the byte and packet counts for each binding are synced to the standby unit using an accounting update event, if and only if the byte counts have changed since the last sync. Time-of-the-day accounting is not supported.

60 *method*

the cisco-avpair radius attribute “mobileip-rfswat=1” in RADIUS accounting records. This attribute is included only in the first accounting record of a binding generated after a failover, and if that binding was created before the failover.

For example, when a binding is created, an accounting start is sent for the binding. After a while, the active reloads and the standby takes over. After some time, the standby sends an accounting update to the RADIUS server for the binding. Cisco-avpair radius attribute “mobileip-rfswat=1” is added to this accounting record by the Home Agent.

The command to enable this feature is:

ip mobile home-agent redundancy *group* *HA address*

Basic Accounting Messages

Since all the traffic passes through the SSG, it has all of the statistical information; however, it does not have Mobile IP session information. The Home Agent has the Mobile IP session information, and sends that information to the SSG.

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Network Access Identifier (NAI): This is the MN's name. It looks similar to abc@service_provider1.com

Network Access Server (NAS) IP

Framed IP Address

Point Of Attachment (POA)

System Accounting in HA

initialization after reloading a box), and if there is no active Home Agent at that time.

An accounting-off could be sent when the active Home Agent is taken out of service (graceful or otherwise), and if there is no standby Home Agent to provide the Home Agent service. Note that, accounting-off is not guaranteed.

An accounting-off is not sent when the standby Home Agent is taken out of service (graceful or otherwise).

Messages Not Sent By Mobile IP Home Agent

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Configuring HA Accounting

commands are required. By default, the HA Accounting feature will be disabled; the HA will not send accounting messages to the AAA server unless configured. To enable the HA Accounting feature, perform the following tasks:

	Command	Purpose
Step 1	`Router(config)# ip mobile home-agent accounting` *list*	*list*
Step 2	*method* **redundancy** [**virtual-network address** *address*]	
Step 3	*method list name group name*	
Step 4	**aaa accounting update newinfo**	
Step 5		
Step 6		
Step 7		
Step 8		

HA Accounting Configuration Examples

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```
ip mobile home-agent accounting mylist address 10.3.3.1
ip mobile host 10.3.3.2 3.3.3.5 interface Ethernet2/2
ip mobile secure host 10.3.3.2 spi 1000 key ascii test algorithm md5 mode prefix-suffix
!



!
!
radius-server host 172.16.162.173 auth-port 1645 acct-port 1646
radius-server retransmit 3
radius-server key cisco
!
```

These are RADIUS commands. The first line specifies the RADIUS server address. Make sure the HA can reach the AAA server and has proper access privileges.

Here is a sample HA Accounting configuration:

ACTIVE HA:

```
router#show run
Building configuration...

Current configuration : 4927 bytes
!
! Last configuration change at 05:12:03 UTC Thu Oct 13 2005
!
version 12.3
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname cisco7200
!
boot-start-marker
boot-end-marker
!
!
aaa new-model
!
!
aaa authentication ppp default local group radius
aaa authorization config-commands
aaa authorization ipmobile default group radius
aaa authorization network default local group radius
aaa authorization configuration default group radius
aaa accounting update newinfo periodic 2
aaa accounting network mylist start-stop group radius
aaa accounting system default start-stop group radius
!
```

```
!
aaa session-id common
!
resource manager
!
no ip subnet-zero
!
!
ip cef
no ip dhcp use vrf connected
ip dhcp ping packets 0
!
!
ip dhcp-server 99.107.0.13
vpdn-group 1
! Default L2TP VPDN group
! Default PPTP VPDN group
 accept-dialin
  protocol any
  virtual-template 1
!
!
no virtual-template snmp
!
!
username cisco7200 password 0 cisco
!
interface Loopback1
 ip address 11.0.0.1 255.0.0.0
!
interface FastEthernet0/0
 description "LINK TO HAAA.................!"
 ip address 150.2.13.40 255.255.0.0
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 duplex half
 no cdp enable
 standby 4 ip 150.2.0.252
 standby 4 priority 110
 standby 4 preempt delay reload 300
 standby 4 name cisco1
!
interface FastEthernet1/0
 no ip address
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 shutdown
 duplex half
 no cdp enable
!
interface FastEthernet2/0
 description "LINK TO PDSN.................!"
 ip address 7.0.0.10 255.0.0.0
 no ip route-cache cef
 no ip route-cache
 duplex half
 standby 2 ip 7.0.0.2
 standby 2 priority 110
 standby 2 preempt delay reload 300
 standby 2 name cisco
!
interface FastEthernet3/0
```

```
 no ip address
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 shutdown
 duplex half
 no cdp enable
 bridge-group 4
 bridge-group 4 spanning-disabled
!
interface Ethernet6/0
 description ""LINK TO REFLECTOR...."
 ip address 99.107.0.19 255.255.0.0
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 duplex half
 no cdp enable
 standby 3 ip 99.107.89.67
 standby 3 priority 110
 standby 3 preempt delay reload 300
 standby 3 name reflector
!
interface Ethernet6/1
 description "LINK TO TFTP....."
 ip address 1.7.130.10 255.255.0.0
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 duplex half
 no cdp enable
!
interface Ethernet6/2
 no ip address
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 shutdown
 duplex half
 no cdp enable
!
interface Ethernet6/3
 no ip address
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 shutdown
 duplex half
 no cdp enable
!
interface Ethernet6/4
 no ip address
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
 shutdown
 duplex half
 no cdp enable
!
interface Ethernet6/5
 no ip address
 no ip route-cache cef
 no ip route-cache
 no ip mroute-cache
```

```
ip mobile host nai @ispxyz.com address pool local ispabc-pool virtual-network 40.0.0.0
255.0.0.0 aaa lifetime 250
ip mobile secure home-agent 7.0.0.2 spi 1001 key ascii cisco algorithm md5 mode
prefix-suffix
ip mobile secure home-agent 7.0.0.67 spi 1001 key ascii cisco algorithm md5 mode
prefix-suffix
!
no ip http server
!
!
ip radius source-interface Loopback1
access-list 120 deny   ip 40.0.0.0 0.255.255.255 40.0.0.0 0.255.255.255
access-list 120 permit ip any any
dialer-list 1 protocol ip permit
!
!
radius-server host 150.2.0.2 auth-port 1645 acct-port 1646
radius-server key cisco
radius-server vsa send accounting
radius-server vsa send accounting 3gpp2
radius-server vsa send authentication 3gpp2
!
control-plane
!
dial-peer cor custom
!
!
gatekeeper
```

STANDBY HA:

```
ip host PAGENT-SECURITY-V3 32.68.10.4 38.90.0.0
ip name-server 11.69.2.133
no ip dhcp use vrf connected
!
!
vpdn enable
vpdn ip udp ignore checksum
!
vpdn-group 1
! Default L2TP VPDN group
! Default PPTP VPDN group
 accept-dialin
  protocol any
  virtual-template 1
!
!
no virtual-template snmp
!
username mwt13-7200b password 0 cisco
!
interface Loopback1
 ip address 11.0.0.1 255.0.0.0
 no ip route-cache
!
interface FastEthernet0/0
 ip address 4.0.10.2 255.0.0.0
 no ip route-cache
 duplex half
 no cdp enable
!
interface FastEthernet1/0
 no ip address
 no ip route-cache
 duplex half
 no cdp enable
!
interface FastEthernet2/0
 description "LINK TO HAAA.............!"
 ip address 15.2.13.20 255.255.0.0
 no ip route-cache
 duplex full
 no cdp enable
 standby 4 ip 15.2.0.252
 standby 4 name cisco1
!
interface FastEthernet5/0
 description "LINK TO PDSN.............!"
 ip address 7.0.0.67 255.0.0.0
```

```
 no ip route-cache
 duplex full
 standby 2 ip 7.0.0.2
 standby 2 name cisco
!
interface Ethernet6/0
 description "LINK TO REFLECTOR....!"
 ip address 22.107.0.12 255.255.0.0
 no ip route-cache
 no ip mroute-cache
 duplex half
 no cdp enable
 standby 3 ip 22.107.89.67
 standby 3 name reflector
!
interface Ethernet6/1
 description "LINK TO TFTP....."
 ip address 1.7.130.2 255.255.0.0
 no ip route-cache
 duplex half
 no cdp enable
!
interface Ethernet6/2
 no ip address
 no ip route-cache
 shutdown
 duplex half
 no cdp enable
!
interface Ethernet6/3
 no ip address
 no ip route-cache
 shutdown
 duplex half
 no cdp enable
!
router mobile
!
ip local pool LNS-Pool 8.3.0.1 8.3.0.100
ip local pool ispabc-pool 40.0.0.101 40.0.0.255
ip default-gateway 10.1.2.13
ip classless
ip route 8.0.0.1 255.255.255.255 7.0.0.1
ip route 9.0.0.1 255.255.255.255 7.0.0.1
ip mobile home-agent accounting mylist broadcast
ip mobile home-agent redundancy cisco virtual-network address 7.0.0.2 periodic-sync
ip mobile virtual-network 40.0.0.0 255.0.0.0
ip mobile host nai @ispxyz.com address pool local ispabc-pool virtual-network 40.0.0.0
255.0.0.0 aaa lifetime 250
ip mobile secure home-agent 7.0.0.2 spi 1001 key ascii cisco algorithm md5 mode
prefix-suffix
ip mobile secure home-agent 7.0.0.10 spi 1001 key ascii cisco algorithm md5 mode
prefix-suffix
!
no ip http server
!
!
ip radius source-interface Loopback1
dialer-list 1 protocol ip permit
!
!
radius-server host 150.2.0.2 auth-port 1645 acct-port 1646
radius-server key cisco
radius-server vsa send accounting
```

```
radius-server vsa send accounting 3gpp2
radius-server vsa send authentication 3gpp2
!
control-plane

!
gatekeeper
 shutdown
!
alias exec shb sh ip mob bin
alias exec shr sh ip route
alias exec sht sh ip mob tun
alias exec shh sh ip mob host
alias exec clr clear ip mob bin all
!
line con 0
 exec-timeout 0 0
 length 0
 stopbits 1
line aux 0
 exec-timeout 0 0
 length 0
 stopbits 1
line vty 0 4
 password 7 0507070D
!
no scheduler max-task-time
ntp master 1
ntp update-calendar
ntp server 30.1.0.1
!
end
```

Verifying HA Accounting Setup

```
IP Mobility global information:

Home Agent

    Registration lifetime: 10:00:00 (36000 secs)
    Broadcast enabled
    Replay protection time: 7 secs
    Reverse tunnel enabled
    ICMP Unreachable enabled
    Strip realm disabled
    NAT Traversal disabled
    HA Accounting enabled using method list: mylist
    NAT UDP Tunneling support enabled
    UDP Tunnel Keepalive 110
    Forced UDP Tunneling disabled
    Standby groups
        cisco (virtual network - address 7.0.0.2)
    Virtual networks
        40.0.0.0 /8
```

```
Foreign Agent is not enabled, no care-of address

0 interfaces providing service
Encapsulations supported: IPIP and GRE
Tunnel fast switching enabled, cef switching enabled
Tunnel path MTU discovery aged out after 10 min
Radius Disconnect Capability disabled
```

router#