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1 Introduction

The article is aimed at explaining the setup of the High Availability (HA) functionality on the Controller. HA is a system or component that is continuously operational for a desirably long length of time. Edgecore’s HA mechanism uses redundancy to achieve high availability with minimum impact during service transition. HA 1+1 can be configured to provide redundancy for one Controller. Once the HA links have been established, all system configurations, user databases, user online status, system resource status, managed AP profile are synchronized between the Active AC and the Standby AC. Furthermore, the Standby AC uses a HA link monitoring module to check the status of the Active ACs. During an event that an Active AC is not responding via the HA interface, this module will regard this AC as no longer providing service and take over network service.

In this article, HA 1+1 and 2+1 will be illustrated. Detailed configurations are shown in the following chapters.

2 HA Basics

2.1 Requirements

1. All EWSs have to be of the same firmware version and model.
2. EWS (Active) WAN must have a static IPv4 address.
3. EWS (Active) needs to have NTP server enabled.
4. EWS (Active) and EWS (Standby) HA ports (LAN1) need to be connected directly.
5. EWS (Active) WAN1 and WAN2 can only be enabled with Fiber port, Ether port or 10G port.
6. EWS (Active)’s LAN1 is not used in PLM.
### 2.2 HA Parameters

#### Status
The main on/off switch for the HA functionality. Enable/Disable HA here.

#### Number of Active(s)
Select the Number of Actives from dropdown list. For HA 1+1, select one; for HA 2+1, select two.

#### Mode
Select the mode of the controller—Active or Standby.

#### HA Port IP Address/Subnet Mask
Enter the Port IP Address and Subnet Mask for HA here. Default value is set to 172.31.0.1/255.255.0.0.

#### Peer IP Address
Enter the Peer’s Port IP Address for HA here. Note that HA only supports for the WAN connection with a static IP Address.

#### Shared Key
The required key for the handshake between the Active and Standby. The key is a numeric number 6-9 digits long.

#### Sync & Swap
This function is only available for 1+1 HA on the Standby Controller. Clicking the button switches the Standby Controller to Active Controller.
2.3 HA Port

For most EWS models, LAN1 is used as the HA port. EWS5206 is one exception that uses LAN3 as the HA port. Please check which LAN port is used as the HA port for your EWS model prior to configuring for HA.

The function of LAN1/HA port depends on whether HA is enabled or disabled and is determined through software.

When HA is enabled, LAN1 port becomes the dedicated HA port.

When HA is disabled, LAN1 functions normally as a LAN port.

In other words, once HA is configured, LAN1 of the AC will act as the HA port and will no longer preform normal LAN port functions.
3 HA 1+1 Configuration

3.1 Network Structure

In HA 1+1, two EWS-Controllers are used, where one is in “Active” mode (Active AC) and the other one in “Standby” mode (Standby AC). When the Active AC malfunctions, the Standby AC will take over and become the new Active AC, and the new Active AC will take on all the settings of the previous Active AC.
3.2 Configure AC #1 (Active)

a. First, go to System > WAN and set the WAN port to “Static”.

b. Go to System > General > System, check if the system time is correct and use AC #1 as NTP server.

c. Go to System > High Availability and configure the settings as shown in the screenshot below. When HA is active, LAN1 of the AC becomes the HA interface. The HA Port IP Address/HA Port Subnet Mask can be configured as desired. However, make sure it does not conflict with the WAN port or any Service Zone on AC. The Shared Key allows the AC to only synchronize data within the HA group. Apply the settings and reboot the AC.
3.3 Configure AC #2 (Standby)

a. Make sure AC #1 (Active) has successfully boot up before configuring AC #2 (Standby). Go to System > High Availability, enable High Availability and configure the settings as shown in the screenshot below. Select Standby. Similarly, the HA Port IP Address/HA Port Subnet Mask can be configured as desired as long as it does not conflict with the WAN port or any Service Zone on AC.
b. Click Apply. Make sure the LAN1 ports of both ACs are directly connected before rebooting AC #2.

3.4 Confirm HA status on both ACs

a. After AC #2 reboots, go to System > High Availability Configuration on AC #1 (Active) to see the current HA status. The current HA status of AC #2 (Standby) can also be found by clicking the “Goto” button.

After clicking “Goto”, Status should show “Peer is detected”.

![Diagram showing HA status on both ACs]
4 HA 2+1 Configuration

4.1 Network Structure

In HA 2+1, three EWS-Controllers are used, where two are in “Active” mode (Active AC) and the other one in “Standby” mode (Standby AC). This means that the Standby AC can be the backup for either
one of the two Active ACs.

Similarly, when one of the Active AC malfunctions, the Standby AC will take over and become the new Active AC, and the new Active AC will take on all the settings of the previous Active AC.

Note that when and if the malfunctioned Active AC comes back to operation, this AC would have the same HA IP Address/Subnet Mask as the AC (previously the Standby AC) that has replaced this AC, causing an IP address conflict.

Edgecore switch prevents this issue by blocking the traffic for the malfunctioned AC after the AC has malfunctioned. So for HA 2+1 and also HA 3+1 scenarios, an Edgecore switch has to be used.

Note that if the malfunctioned Active AC can’t come back to operation, this AC should be taken down. No matter the malfunctioned Active AC is repaired or replaced by another AC, called a Standby AC, all ACs need to be reconfigured. The detailed configurations are shown in Section 4.2, 4.3 and 4.4.

In this example, AC #1 and AC #2 are the Active ACs and AC #3 is the Standby AC, and both AC #1 and AC #2 have dual WAN connections. All the WAN/LAN ports of the ACs should be connected to the Edgecore switch, where all the WAN ports belong to the same VLAN group, and all the HA ports belong to the same VLAN group. Note that AC #1 and AC #2 can have different VLANs for their LAN connections.

When selecting the Edgecore switch, the LAN port of the Edgecore switch should be noticed. In this case, the minimum number of LAN ports required is 16. There are three ACs, two for Active ACs and one for Standby AC. Each AC needs four ports, two for WAN, one for HA and one for LAN. Therefore, a total of 12 ports are required for three ACs. Besides, two ports as uplink and two ports as downlink.

4.2 Configure AC #1 and AC #2 (Active)

a. Go to System > WAN on both AC#1 and AC#2 to configure WAN port settings. Similar to HA 1+1, WAN ports of both AC #1 and AC #2 should be configured as Static. See the table below for WAN configurations.
b. Go to System > General > System and set both AC#1 and AC#2 as NTP server.

Use both AC#1 and AC#2 as NTP server.

c. Go to System > High Availability. Make sure the HA interface does not conflict with WAN ports or any Service Zone on AC #1, AC #2 and AC #3.

AC #1 HA settings.
4.3 Configure AC #3 (Standby)

Make sure both AC #1 and AC #2 have successfully boot up before configuring AC #3.

a. Go to System > High Availability, enable High Availability and select Standby. Configure the settings as shown in the screenshot below.

b. Enable Switch Support and configure the settings as shown in the screenshot below. The switch has to be managed (Switch Management) before it can be selected from the drop-down menu. Note that the Standby LAN Port(s) will take on VLANs in either #1 Active LAN Port VLAN ID(s) or #2 Active LAN Port VLAN ID(s), depending on which one has
malfunctioned, in the same order. In other words, if AC #1 malfunctions, Standby LAN Port(s) 4, 8, 12, 20 will take on VLANs 1, 2, 128, 256, respectively.

**AC #3 HA Switch Support settings**

c. Clicking Apply. Make sure the LAN1 ports of both ACs are directly connected before rebooting AC #3.

### 4.4 Confirm HA status of ACs

a. After AC#2 reboots, go to **System > High Availability Configuration** and click “Goto” to access the Stand-By page.

![Image of Stand-By page]

After clicking “Goto”, Status should be “Peer is detected”.
5 Reporting

HA report can be sent via Email. Go to **Status > Reporting > Notification Settings**

### Notification Settings

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<th>3</th>
<th>4</th>
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### Remarks

Please contact Edgecore’s Technical Support Team at ecwifi@edge-core.com for additional inquiries.