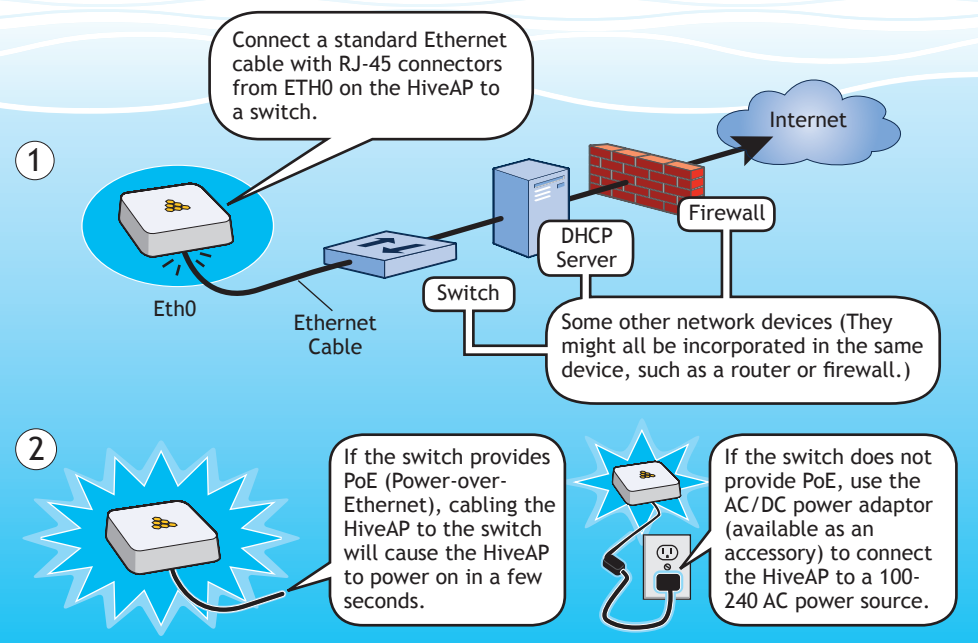# Aerohive QuickStart
for the HiveAP 100 Series

This QuickStart guide explains how to set up a HiveAP 100 series device as a managed HiveAP and how to mount it on a ceiling or wall.
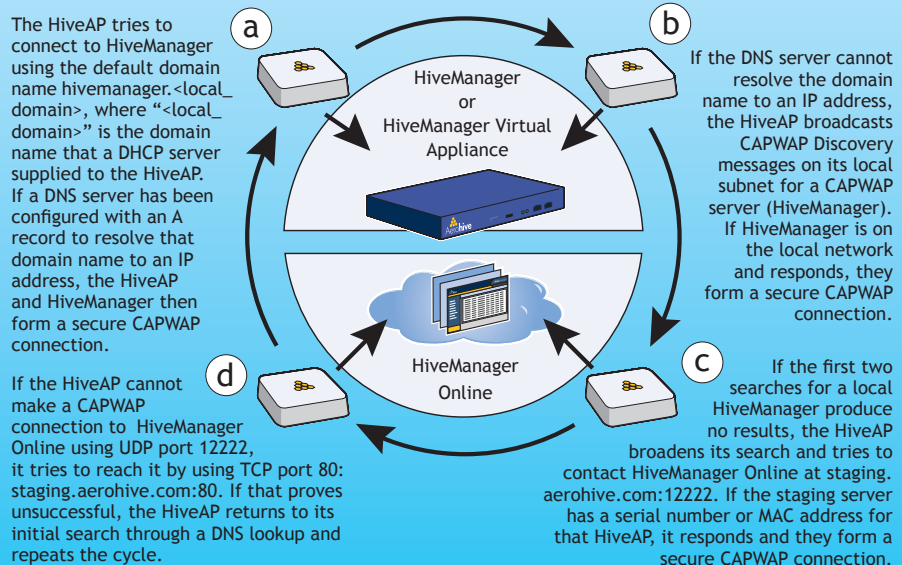
① Connect a standard Ethernet cable with RJ-45 connectors from ETH0 on the HiveAP to a switch.

Internet

Firewall

DHCP Server

Switch

Some other network devices (They might all be incorporated in the same device, such as a router or firewall.)

Eth0

Ethernet Cable

② If the switch provides PoE (Power-over-Ethernet), cabling the HiveAP to the switch will cause the HiveAP to power on in a few seconds.

If the switch does not provide PoE, use the AC/DC power adaptor (available as an accessory) to connect the HiveAP to a 100-240 AC power source.

Connecting to HiveManager

③ Cable the HiveAP to an Ethernet network—a HiveAP connected directly to the network like this is called a portal—or place it within radio range of a portal so that it forms a wireless link through the portal to the wired network. This kind of HiveAP is called a mesh point. By default, a HiveAP acts as a DHCP client and gets its network settings automatically from a DHCP server. (You can also configure it with static network settings through the CLI. See the next section, "Using the Virtual Access Console".)

CAPWAP (Control and Provisioning of Wireless Access Points) is a protocol that access points use to contact a management device and communicate with it. After getting its network settings through DHCP, the HiveAP then acts as a CAPWAP client and sends CAPWAP Discovery messages until HiveManager, acting as the CAPWAP server, responds. A mesh point initially forms a hive with its portal using a default hive called hive0. Through this link, the mesh point can reach the network and get its network settings from the DHCP server. Then it can form a CAPWAP connection with HiveManager. (To add mesh points after changing the hive name, first connect them to the wired network. Next, push the configuration with the new hive name and password to them from HiveManager. Finally, deploy them as mesh points.)

When a HiveAP goes online for the first time without any specific CAPWAP server configuration entered manually or received as a DHCP option, it progresses through the cycle of CAPWAP connection attempts shown below.

The HiveAP tries to connect to HiveManager using the default domain name hivemanager.<local_domain>, where "<local_domain>" is the domain name that a DHCP server supplied to the HiveAP. If a DNS server has been configured with an A record to resolve that domain name to an IP address, the HiveAP and HiveManager then form a secure CAPWAP connection.

If the HiveAP cannot make a CAPWAP connection to HiveManager Online using UDP port 12222, it tries to reach it by using TCP port 80: staging.aerohive.com:80. If that proves unsuccessful, the HiveAP returns to its initial search through a DNS lookup and repeats the cycle.

a HiveManager or HiveManager Virtual Appliance

d HiveManager Online

b If the DNS server cannot resolve the domain name to an IP address, the HiveAP broadcasts CAPWAP Discovery messages on its local subnet for a CAPWAP server (HiveManager). If HiveManager is on the local network and responds, they form a secure CAPWAP connection.

c If the first two searches for a local HiveManager produce no results, the HiveAP broadens its search and tries to contact HiveManager Online at staging. aerohive.com:12222. If the staging server has a serial number or MAC address for that HiveAP, it responds and they form a secure CAPWAP connection.

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If the HiveAP forms a CAPWAP connection with the staging server and its serial number or MAC address has been assigned to a VHM (virtual HiveManager) and that VHM has already been created, the staging server automatically redirects the CAPWAP connection to that VHM. The staging server does this by sending the HiveAP the VHM domain name as its new CAPWAP server. If the HiveAP is currently using HTTP, the staging server also sends it the configuration needed to continue using HTTP. Finally, if the HiveAP is accessing the network through an HTTP proxy server, the staging server also saves those settings on the HiveAP so that it can reach the VHM using HTTP through the HTTP proxy server.

If the serial number or MAC address is in the staging server but the VHM has not yet been created, then the HiveAP remains connected to the staging server. The VHM admin must manually reassign it to a VHM later after the VHM has been created.
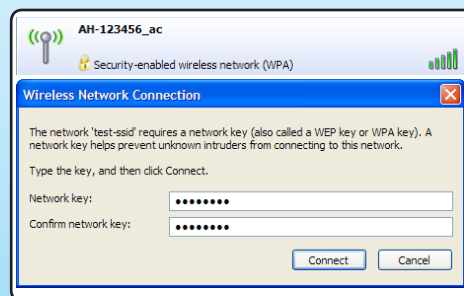
If the staging server does not have the serial number or MAC address of the HiveAP, then an ACL (access control list) on the staging server ignores the CAPWAP connection attempt, and the HiveAP repeats the cycle shown above.

Using the Virtual Access Console

The virtual access console is a way of accessing the CLI on a HiveAP wirelessly through a special SSID that the HiveAP, by default, automatically activates for administrative access when it has no configuration and cannot reach its default gateway. As explained in the previous section, after connecting a HiveAP to the network and powering it on, it acts as a DHCP client and tries to get its network settings automatically from a DHCP server in VLAN 1. However, if there is no DHCP server in that VLAN, if the native VLAN for the network segment is not 1, or if you just want to assign the HiveAP a static IP address, then you can access the CLI through the virtual access console SSID and define the network settings yourself.
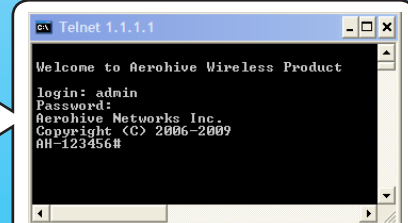
The default virtual access console SSID name is "<hiveap_hostname>_ac". The default host name of a HiveAP consists of "AH-" plus the last six digits of its MAC address; for example, AH-123456. In this case, the name of the default virtual access console SSID would be "AH-123456_ac". By default, this SSID uses *aerohive* as the PSK (preshared key) for authenticating user access. To access the virtual access console, do the following:

④ Using your wireless client, scan for wireless networks. If you are within range, an SSID such as "AH-123456_ac" appears.

Select the SSID, and when prompted to enter a network key, type *aerohive*, and then click **Connect**.

AH-123456_ac
Security-enabled wireless network (WPA)

Wireless Network Connection

The network 'test-ssid' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.

Type the key, and then click Connect.

Network key: ••••••••
Confirm network key: ••••••••

Connect   Cancel

Beacons

⑤ Check the IP address of the default gateway that the DHCP server on the HiveAP assigned your client. Then make an SSH or Telnet connection to the HiveAP at that IP address. When prompted to enter your credentials, enter the default Aerohive login name (*admin*) and password (*aerohive*).

Beacons

Wireless Client

```
C:\>ipconfig

Windows IP Configuration

Ethernet adapter Wireless
Network Connection:

   Connection-specific DNS Suffix  . :
   IP Address. . . . . . . : 1.1.1.2
   Subnet Mask . . . . . . : 255.255.255.0
   Default Gateway . . . : 1.1.1.1

C:\>telnet 1.1.1.1
```

```
Telnet 1.1.1.1

Welcome to Aerohive Wireless Product

login: admin
Password:
Aerohive Networks Inc..
Copyright (C) 2006-2009
AH-123456#
```

---

⑥ After logging in to the virtual access console, you can view the status of various functions and make configuration changes. Here are some commonly used commands.

Use these commands:	To do the following:
show interface	Check the status of both wired and wireless interfaces
show interface mgt0	See the network settings (IP address, netmask, default gateway) and VLAN ID of the mgt0 interface
no interface mgt0 dhcp client	Disable the DHCP client
interface mgt0 ip <ip_addr> <netmask>	Set the IP address and netmask of the mgt0 interface
interface mgt0 native-vlan <id>	Set the native (untagged) VLAN that the switch infrastructure in the surrounding wired and wireless network uses
show capwap client	See CAPWAP client settings and status
capwap client server name <string>	Set the IP address or domain name of the CAPWAP server (HiveManager)
capwap client vhm-name <string>	Set the VHM (virtual HiveManager) to which the client belongs
show hive	See the hive name
show hive <string> neighbor	Check for any neighboring hive members
hive <string> ...	Create a hive and set its parameters
show ssid	See a list of all SSID names
ssid <string> ...	Configure an SSID
interface { wifi0	wifi1 } ssid <string>	Bind an SSID to a wireless interface in access mode

To see a list of commands, and their accompanying CLI Help, type a question mark (?). For example, to see all the show commands, enter show ?

If you want to find a command that uses a particular character or string of characters, you can do a search using the following command: show cmds | include <string>, where <string> is the word or string of characters you want to find.

Device- and platform-specific CLI reference guides are available online. (To learn how to access them, see "Where to go for more information" elsewhere in this document.)

Status LEDs

The status indicator has been incorporated into the Aerohive logo on the top of the HiveAP 110 and 120. It is illuminated by various colors to indicate different states of activity. The meanings of the colors are explained below.

- **Dark**: There is no power or the status indicator is disabled.
- **Blue**: (solid) The device is booting up or there is no backhaul link; (flashing) the device is shutting down
- **Green**: The default route is through the backhaul Ethernet interface, but not all conditions for normal operations (white) have been met.
- **Yellow**: The default route is through a backhaul wifi interface, but not all conditions for normal operations (white) have been met.
- **White**: The device is powered on and the firmware is operating normally; that is, a wireless interface in access mode is up, a wired or wireless backhaul link is up, and the HiveAP has a CAPWAP connection to HiveManager.
- **Purple**: A new image is being loaded from HiveManager or a management AP.
- **Orange**: An alarm indicating a firmware or hardware issue has occurred.

For locations where the status indicator might be a distraction or attract unwanted attention, you can adjust its brightness level from bright (the default) to soft to dim. You can even turn it off completely. In HiveManager, choose the brightness level that you want from the LED Brightness drop-down list on the Configuration > Management Services > Management Options page. Through the CLI, enter [no] system led brightness { soft | dim | off }. The four settings are shown below.

Bright   Soft   Dim   Off
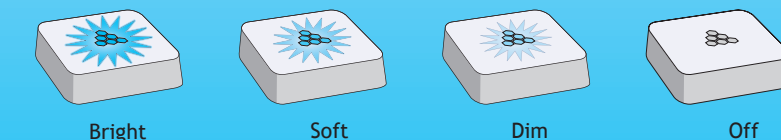
Mounting the HiveAP

Using the track clip, you can mount the HiveAP to the tracks of a dropped ceiling grid. Using just a pair of screws, you can mount the HiveAP to any flat surface that can support its weight (1.75 lb., 0.8 kg). Both mounting options are explained below.

Note: In addition to these methods, you can also mount the HiveAP on a table using the set of four rubber feet that ship with the product. Simply peel the rubber feet off the adhesive sheet and press them against the underside of the HiveAP in its four corners.

Ceiling Mount

To mount the HiveAP to a track in a dropped ceiling, use the appropriate track clip for the width of the ceiling track. Two clips ship with the HiveAP: one for 1"-wide (2.54 cm) tracks and one for 1/2"-wide (1.27 cm) tracks.

1 Nudge the ceiling tiles slightly away from the track to clear some space, and slide one tab of the track clip over the edge of the track. Making sure that the tips of the track clip prongs are positioned against the middle of the track, press upward on the other tab until it clears the track edge. Keeping the prongs away from the track edges until both tabs grip the track ensures that the clip does not snap into place prematurely with only one tab in position.

a Position the clip so one tab is over the edge of the ceiling track. (Note that the ceiling track is shown as transparent.)
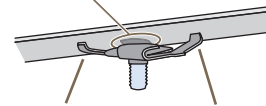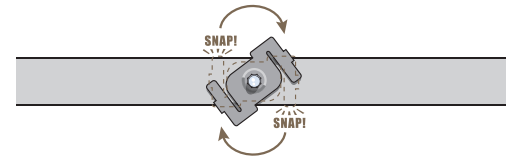
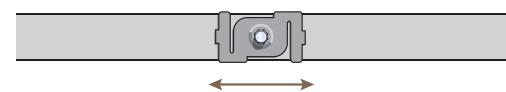The two prongs press upward against the middle of the ceiling track.
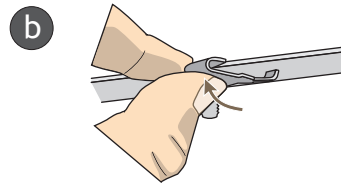
b Press the other tab upward, flexing the prongs against the track until the tab clears the edge of the track.
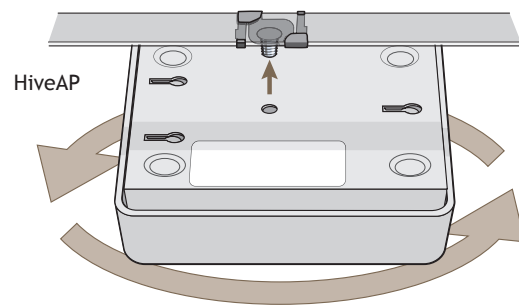
2 Twist the clip until the prongs snap into place and grip the edges of the track.

3 If necessary, slide the clip along the track to position it exactly where you want it to be.

4 With the HiveAP upside down, lift it until the threaded stud on the track clip enters the hole in the HiveAP. Revolve the HiveAP until it is securely attached to the clip.
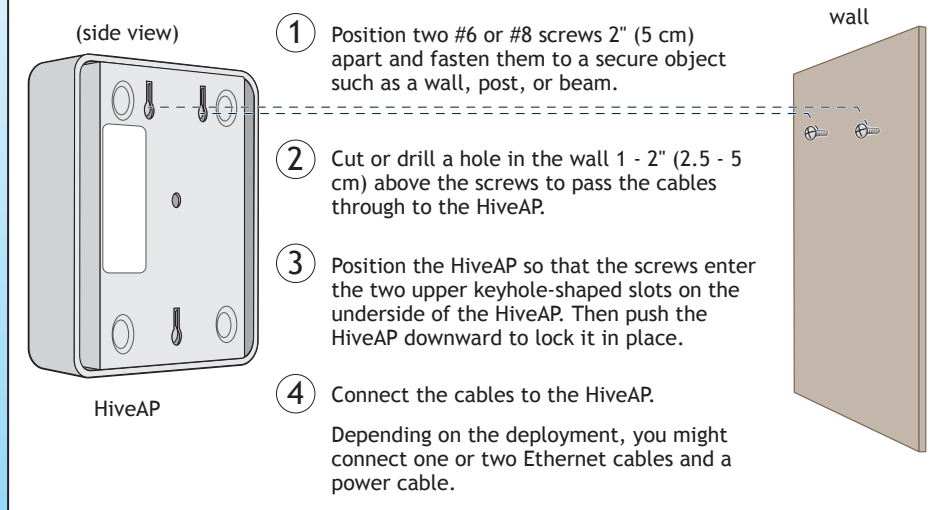
HiveAP

When you have the HiveAP in the correct location, cut or drill a hole in the ceiling through which you can then pass the Ethernet and power cables. Pass the cables through the hole and attach them to the HiveAP. When done, adjust the ceiling tiles back into position.

Note: For dropped ceilings with recessed tracks, Aerohive provides an optional ceiling mount accessory kit for the HiveAP 100 series (AH-ACC-BKT-120). For information, refer to HiveAP 100 Mounting Instructions for Recessed Ceiling Tracks, which accompanies the kit.

Surface Mount

You can attach the HiveAP to any flat surface that supports its weight. First, attach two screws to the surface. Then, make a hole in the wall a few inches or centimeters above the screws so that you can pass the cables through the wall to the HiveAP. Finally, attach the device to the screws, and connect the cables.
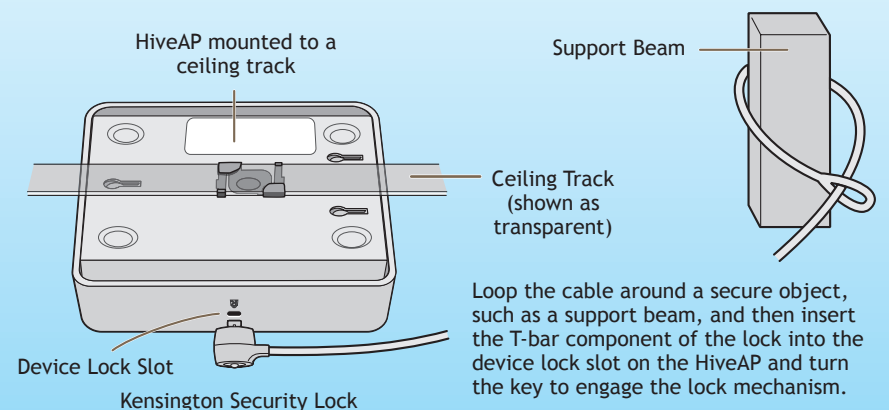
Mount the HiveAP on a wall as explained below.

(side view)   wall

HiveAP

1 Position two #6 or #8 screws 2" (5 cm) apart and fasten them to a secure object such as a wall, post, or beam.

2 Cut or drill a hole in the wall 1 - 2" (2.5 - 5 cm) above the screws to pass the cables through to the HiveAP.

3 Position the HiveAP so that the screws enter the two upper keyhole-shaped slots on the underside of the HiveAP. Then push the HiveAP downward to lock it in place.

4 Connect the cables to the HiveAP.

Depending on the deployment, you might connect one or two Ethernet cables and a power cable.

Instead of passing the cables through a hole in the wall, you can also simply run them along the wall from the port side of the HiveAP, which is located at the top of the device when it is mounted on a wall.

Locking the HiveAP

To lock the HiveAP to a secure object, use a Kensington lock and cable. Loop the cable around a securely anchored object, insert the Kensington lock in the device lock slot in the HiveAP, and engage the locking mechanism.

HiveAP mounted to a ceiling track

Support Beam

Ceiling Track (shown as transparent)

Device Lock Slot

Kensington Security Lock

Loop the cable around a secure object, such as a support beam, and then insert the T-bar component of the lock into the device lock slot on the HiveAP and turn the key to engage the lock mechanism.

Deployment and Configuration Tips

The following are some tips and suggestions to help you troubleshoot a few common problems that might arise when setting up the HiveAP 100 series device:

- If the client fails to authenticate to an SSID using a PSK (preshared key), check that the PSK on the client matches that on the HiveAP and reset one or both keys if necessary.
- If you manage the HiveAP through HiveManager Online and it does not show up on the Monitor > Access Points > HiveAPs page, do the following:
  - Check if the HiveAP is still listed in the staging server (click **Navigate MyHive > Staging Server > Monitor > HiveAP**). If so, select it, and then click **Redirect** to move it to your HiveManager Online system.
  - Check connectivity to HiveManager Online:
    ```
    ping staging.aerohive.com
    ping hm-online.aerohive.com
    ```
  - Ensure that any intervening firewalls allow one of the following sets of services from the HiveAP to HiveManager Online:
    CAPWAP (UDP 12222), SSH (TCP 22), and HTTPS (TCP 443)
    or
    HTTP (TCP 80) and HTTPS (TCP 443)
- If a client cannot form an association, check that the client is within range and that it is configured to use the same authentication method as the SSID. For example, if the client is configured to use Open or WEP authentication but the SSID is set for WPA or WPA2, the client will not be able to associate with the HiveAP. To see the security settings for an SSID, click **Configuration > SSIDs**, and look at the Access Security column on that page.
- If the client associates and authenticates itself, but the HiveAP cannot forward traffic, check that the HiveAP is assigning the correct user profile and, if so, that it is also assigning the correct VLAN. To see the user profile and VLAN that a HiveAP assigns a client, enter `show ssid <string> station`, and check the UPID (user profile ID) and VLAN columns. If those are correct, then check that the client has received its network settings through DHCP. To check connectivity to the DHCP server, make a console or SSH connection to the HiveAP, send a probe, and see if it elicits a response: `interface mgt0 dhcp-probe vlan-range <vlan1> <vlan2>`. Also check that the VLAN configuration for the port on the connecting switch is correct.

To remove all settings and return the configuration to its factory default settings, enter the `reset config` command or use a pin to press the Reset button on the chassis and hold it down for at least 5 seconds.

Where to go for more information

Technical Documentation
Aerohive provides various technical documents for its products. For information about CLI commands, see the CLI reference guides available in HTML format. For information about HiveManager and HiveAP hardware and software topics, see the *Aerohive Deployment Guide* (PDF). The deployment guide contains information about HiveAPs and HiveManager appliances, WLAN deployment considerations, and detailed configuration instructions for commonly used features. For instructions about setting up a HiveAP to manage other HiveAPs through the HiveUI, see the *Aerohive QuickStart: HiveAP as a Management AP* (PDF). To access Aerohive product documentation, visit www.aerohive.com/techdocs.

HiveManager Help System
The HiveManager Help system contains a wealth of information about all the features you can configure through HiveManager. To access it, click the Help icon in the upper right corner off the GUI. A Help topic that pertains to the currently active GUI page appears. To see other Help topics, use the table of contents to browse the system or the search tool to find information about a specific subject.

Support Site
Access technical support services, documentation, and software at www.aerohive.com/support/login.html. After submitting an account registration, you will be sent a user name and password to enter when logging in. You can contact Support for assistance through the web site, by email (support@aerohive.com), or by phone (+1 408.907.3186 or 866.365.9918).

Training
Aerohive offers courses covering the Aerohive cooperative control concepts, the installation and configuration of Aerohive products, and how to troubleshoot issues and optimize performance. For more information, visit www.aerohive.com/support/training.html.

Aerohive also offers CBT (computer-based training) modules. CBTs are online flash tutorials that explain Aerohive concepts and walk you through configuration procedures step by step. You can use CBTs to familiarize yourself with the HiveManager GUI and learn how to configure HiveAPs. Aerohive CBTs are available for free online at www.aerohive.com/techdocs.

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