HP 560 802.11 ac Access Point Installation Guide

Abstract

This document describes the procedure to install and initially configure the HP 560 802.11 ac Access Point (HP 560). It is intended for professional installers who are trained in RF installation and knowledgeable in local regulations including building and wiring codes, safety, channel, power, indoor/outdoor restrictions, and license requirements for the country of use.



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Warranty

WARRANTY STATEMENT: To obtain a copy of the warranty for this product, see the warranty information website:

www.hp.com/support/Networking-Warranties

Contents

1	Overview	.4
	Product models	4
	Controllers	4
	Hardware overview	4
	Ports	5
		5 5
	Power	5 6
	Reset button	6
	Status LEDs	6
2	Installing the AP	.7
-	Unpacking the product	7
	Installing on a wall	7
	Installing on an electrical box	8
	Installing on a suspended ceiling	9
	Installing in a plenum	10
	Socuring the AP	10
	Removing the AP	11
S	Controllers	12
0	AP status IED states (with controller connection)	12
٨	Autonomous mode	1 4
4	AD status IED states in subserve mede	14
	Configuring the AP for autonomous mode	14
	Configure your computer	14
	Connect the cables and power on the AP	15
	Switch the AP to autonomous mode	15
	Log in	15
	Configure wireless protection	15
	Assigning an IP address to the AP	16
	Before performing additional configuration	10
5	Curre and a there recommends	17
C	Support and other resources	17
	Contacting HP	17
	Websites	17
	Controller part numbers	17
	Typographic conventions	18
6	Documentation feedback	19
Α	Regulatory information	20
· `	Plenum installation	20
	Turkey RoHS material content declaration	20
	Ukraine RoHS material content declaration	20

1 Overview

The HP 560 is a dual band 802.11 a/b/g/n/ac Access Point (AP). It is managed through its web-based management tool using Microsoft Internet Explorer 8 or later or Mozilla Firefox 17 or later.

Product models

HP 560: J9846A (WW), J9845A (AM), J9847A (JP), J9848A (IL)

Controllers

The AP can run as a standalone AP in autonomous mode; however, it is typically used with one of these controller families:

- MSM720, MSM760, MSM765 zl, MSM775 zl
- HP 10500/7500, HP 830, HP 870, HP WX5002/WX5004

NOTE: Both controller families cannot coexist on the same network. HP 10500/7500, HP 830, HP 870, and HP WX5002/WX5004 Controllers are not compatible with HP MSM7xx Controllers.

For more information, see "Controllers" (page 12) and "Controller part numbers" (page 17).

Hardware overview

Figure 1 Front and bottom view



- 1. Power/System OK LED
- 2. Ethernet LED
- 3. Radio 1 LED

- 4. Radio 2 LED
- 5. Cable lock hole
- 6. Retention screw hole

Figure 2 Back view



Ports

The following ports are located on the back of the HP 560 as shown in Figure 2 (page 5):

- **Ethernet port**: Auto-sensing 10/100/1000 BaseT Ethernet port with RJ-45 connector. The port supports IEEE 802.3af and 802.3at Power over Ethernet (PoE).
- **Console port**: A standard serial port with RJ-45 connector. To connect to a computer, use a standard serial cable. For more information, see "Console Ports" in the *Controller Configuration* and *Administration Guide* for your product.

Radios

The HP 560 features two radios:

- Radio 1: 5 GHz 802.11 a/n/ac
- Radio 2: 2.4 GHz 802.11b/g/n

Antennas

The HP 560 contains two 3-element MIMO antennas.

Power

The HP 560 is powered via port 1, using either PoE or PoE+.

Power operating mode

By default, the AP dynamically determines the available input power via hardware detection or LLDP, and sets radio operation mode as follows:

- If the available power is 802.3af: The 2.4 GHz radio operates in 2x2:2 mode, and the 5 GHz radio operates in 3x3:3 mode.
- If the available power is 802.3at: The 2.4 GHz and 5 GHz radios both operate in 3x3:3 mode.

If you are using a non-standard 802.3af+ or 802.3at+ device to power the unit, automatic detection might be unable to determine the actual available power. In this case you can configure the power operating mode to **High**, which forces the AP to operate in full-power mode (both operate in 3x3:3 mode).

The power operating mode can be set at the AP, group, or base group level and can be inherited. To set the power operating mode:

- For controller-managed APs, select Controlled APs > HP560 >> Configuration > Power
- For autonomous APs, select Configuration > Power

Select a power operating mode:

- Auto (default)
- High

Reset button

The reset button is accessible via a hole at the back of the AP. To reset the AP, insert a paper clip into the reset button hole, and press and quickly release the button. To reset the AP to factory defaults, press and hold the button until the status LEDs flash three times, and then release.

Status LEDs

There are four status LEDs on the front of the AP:

- Power/System OK
- Ethernet
- Radio 1
- Radio 2

LED behavior varies, depending on the AP operation mode (controller or autonomous). For details, see "AP status LED states (with controller connection)" (page 12) and "AP status LED states in autonomous mode" (page 14).

2 Installing the AP

The HP 560 is suited for indoor installation on a desktop, wall, ceiling, or in a plenum. The end user is responsible for ensuring that installation and use comply with local safety and radio regulations.

- () **IMPORTANT:** This device requires professional installation. Consult a professional installer trained in RF installation and knowledgeable in local regulations including:
 - Building and wiring codes
 - Safety regulations
 - Channel, power, and indoor/outdoor restrictions
 - License requirements for the intended country

It is critical to identify known RF absorbers, reflectors, and interference sources in the environment during the planning phase.

Unpacking the product

Inspect the package contents and verify that they are free from defects. The package contains:

- The HP 560 AP
- An AP mounting bracket
- A padlock bracket
- Two sets of AP bracket T-bar clips with screws
- Two mounting screws with wall anchors
- A retention screw
- An adapter bracket¹
- Documentation

NOTE: The AP bracket is two-sided. Install the AP on the side with the UP arrow. The other side, with the T-bar clip screw holes, faces the wall or T-bar. The AP bracket is mounted first, and then the AP is attached to the bracket.

Installing on a wall

When installing the AP on a wall, ensure that the mounting surface and the fasteners you use can support at least 0.9 kg (2 lb). Allow extra weight for cables.

^{1.} If you are replacing an existing device with an HP 560, you can use this bracket to connect the HP 560 mounting bracket to the existing mounting bracket.

1. Hold the mounting bracket with the UP arrow pointing up against the wall where you want to install it. Mark the location of the screw holes (wall anchors) and the cutout area.

NOTE: The holes that you use depend on the mounting surface. See Figure 3 (page 8).

Figure 3 AP mounting bracket



- 1. Adapter bracket mounting holes
- 2. Electric box mounting holes
- 3. AP bracket latch
- 4. AP retention tabs

- 5. Drywall mounting holes
- 6. Cutout area
- 7. AP bracket lock tab
- 8. T-bar clip screw holes
- 2. Drill two holes for the screws or wall anchors, typically 4.7 mm (3/16 inch) in diameter.
- 3. If necessary, drill a hole for the Ethernet cable in the marked cutout area. Alternately, you can feed the Ethernet cable from above and through the AP cable channel.
- 4. If you are using wall anchors, insert them into the holes that you drilled, and tap them flush with the wall surface.
- 5. If you are running the Ethernet cable through the wall, pull it through the hole in the wall and the AP bracket.
- 6. Use the mounting screws to attach the AP bracket to the wall.
- 7. Proceed to "Attaching the AP" (page 10).

Installing on an electrical box

- 1. Disconnect power from the electrical box and take any other needed security precautions.
- 2. Remove the electrical box cover and any contents.
- 3. Pull the Ethernet cable down into the box and through the hole in the AP bracket.
- 4. Hold the AP bracket with the UP arrow pointing up against the box, and use the countersunk screws to attach the AP bracket.
- 5. Proceed to "Attaching the AP" (page 10).

Installing on a suspended ceiling

Two sets of T-bar clips are included for installing the AP on a suspended ceiling:

- If the ceiling tiles are recessed, use the 12.5 mm set of T-bar clips (shown on the top of Figure 4 (page 9)).
- If the ceiling tiles are flush mount, use the 4.5 mm set of T-bar clips (shown on the bottom of Figure 4 (page 9)).
- WARNING! Areas above suspended ceilings can contain dangerous electrical cabling, gas Δ pipes, and other hazards. Make whatever safety arrangements are needed to ensure that you can work safely above the suspended ceiling. HP recommends that you use a non-conductive step ladder, such as one made of fiberglass.
 - Slide one of the T-bar clips into the AP bracket T-bar slot. Attach it using two self-tapping 1. screws. Select the bracket screw holes marked according to the width of your T-bar: 9/16 inch, 15/16 inch, or 1.5 inch. (The other T-bar clip attaches to the AP Bracket from above the suspended ceiling, after the bracket is in place on the T-bar.)

Figure 4 Attaching T-bar clips to the AP bracket



1. AP bracket 2. Recessed tile 12.5 mm T-bar clip

- 3. AP bracket T-bar slot
- 4. Flat tile 4.5 mm T-bar clip
- Remove/relocate two ceiling tiles, one on each side of the T-bar on which you are installing 2. the AP bracket.
- 3. Carrying a screw driver, the AP bracket with T-bar clip attached, the other T-bar clip, and two screws, position yourself above the T-bar on which you are installing the AP bracket.
- Attach the AP bracket onto the T-bar, slide the other T-bar clip into the AP bracket T-bar clip 4. slot, and then use the screws to attach it such that both T-bar clips grip the T-bar.
- Tighten all four T-bar clip screws fully and verify that the AP bracket is securely anchored to 5. the T-bar from both sides.
- Re-install the ceiling tile through which you will pass the Ethernet cable. 6.
- Using the cutout area in the AP bracket as a guide, drill or cut a hole in the ceiling tile large 7. enough to pass the Ethernet connector through.

Alternatively, you can run a cable under the ceiling tile and through the AP cable channel.

- 8. If the Ethernet cable is above the ceiling, feed the Ethernet cable down through the hole in the tile and through the hole in the AP bracket. Pull through an extra 60 cm (2 feet) of cable.
- 9. Proceed to "Attaching the AP" (page 10).

Installing in a plenum

To install the device in a plenum, you must use plenum-rated cables and attachment hardware. HP recommends that you install the HP 560 in a similar orientation as in a ceiling installation. However, a qualified installer can determine how to install and secure the HP 560 in a plenum in an appropriate and safe manner. See "Plenum installation" (page 20) and "Installing on a suspended ceiling" (page 9).

Attaching the AP

- 1. Connect the Ethernet cable to the AP.
- 2. Hold the bottom of the AP against the AP bracket, aligning the AP tab slots with the AP retention tabs on the AP bracket. Pull back any Ethernet cable slack at the same time.
- 3. While firmly holding the AP against the AP bracket, slide the AP toward the AP bracket lock tab so that the AP snaps onto the bracket. Do not let go of the AP until you confirm that it is securely in place.

Figure 5 Attaching the AP to the AP bracket



1. Lock tab3. AP tab slots snapped onto AP bracket retention tabs2. AP bracket4. AP bracket latch

Securing the AP

HP strongly recommends that as soon as the AP is installed, you install the retention screw that anchors the AP bracket to the AP (callout 2 on Figure 6 (page 11)).

Optionally, attach a cable lock in the cable lock hole or insert the tab of the supplied AP padlock bracket into the cable lock hole, and then align the AP padlock bracket hole with the AP bracket lock hole and install a user-supplied padlock.

Figure 6 Retention screw and padlock bracket



- 1. AP bracket
- 2. Retention screw
- 3. AP bracket lock tab
- Removing the AP

To remove the AP from the bracket:

- 1. Remove any locks and remove the retention screw.
- 2. While carefully holding the AP, insert a flat screwdriver into the cable channel between the channel wall and the AP bracket latch, releasing the AP from the bracket, while being careful to retain grip on the AP as you slide it away from the AP bracket lock tab.
- 3. Disconnect the Ethernet cable from the AP.

- 4. Padlock hole
- 5. AP padlock bracket
- 6. Cable lock hole

3 Controllers

The AP can run as a standalone AP in autonomous mode; however, it is typically used with one of these controller families:

- HP MSM720, MSM760, MSM765 zl, MSM775 zl
- HP 10500/7500, HP 830, HP 870, HP WX5002/WX5004

NOTE: Both controller families cannot coexist on the same network. HP 10500/7500, HP 830, HP 870, and HP WX5002/WX5004 Controllers are not compatible with HP MSM7xx Controllers.

IMPORTANT: If your HP 560 was ever used with an HP 10500/7500, HP 830, HP 850, HP 870, or HP WX5002/WX5004 controller; before you can use the AP with MSM software, you must follow the procedures described in *Instructions for Converting an Access Point from Unified-Controlled to Using MSM Software*, available at www.hp.com/support/manuals.

When used with a controller, the AP must establish a management tunnel with the controller. The controller manages the AP and provides all configuration settings.

When power is applied, the AP establishes a connection to the controller automatically if default settings are used on the AP and the controller, and both devices are on the same subnet. No further configuration is required.

After the discovery process is complete and the AP has established a secure management tunnel to the controller, the HP 560 power LED remains on and the Ethernet and radio LEDs flash to indicate the presence of traffic.

For more information about using AP controllers, see the controller configuration guide:

- MSM Controllers Configuration Guide
- HP 830 Series PoE+ Unified Wired-WLAN Switch and HP 10500/7500 20G Unified Wired-WLAN Module Fundamentals Configuration Guide
- H3C WX Series Access Controller Module Basic Configuration Guide
- HP 870 Unified Wired-WLAN Appliance Switch Switching Engine Fundamentals Configuration Guide

AP status LED states (with controller connection)

Status LED state	Description	
Power/System OK LED flashes every two seconds.	The AP is starting up.	
Power/System OK LED flashes once per second.	The AP is looking for an IP address, or building the list of VLANs on which to perform discovery. The management tool is available until discovery occurs.	
Power/System OK, Ethernet, and Radio LEDs flash in sequence from left to right.	The AP has obtained an IP address and is attempting to discover a controller.	
Power/System OK LED is on, Ethernet and Radio LEDs flash alternately.	The AP has found a controller and is attempting to establish a secure management tunnel with it.	
Power/System OK and Ethernet LEDs flash alternately and quickly, Radio LEDs are off.	The AP has received a discovery reply from two or more controllers with the same priority setting. It cannot connect with either controller until the conflict is resolved.	

Status LED state	Description
Power/System OK and Radio LEDs flash slowly.	The AP is attempting to establish a local mesh link to a master node.
Power/System OK and Ethernet LEDs flash slowly.	The AP is attempting to establish wired connectivity.

4 Autonomous mode

Autonomous mode is supported only with HP MSM software. In autonomous mode, the AP operates as a standalone unit. You configure and manage an autonomous AP by using its web-based management tool, as described in this section.

The management tool is organized with menus and sub-menus. Instructions for making menu selections, such as "select Network > DNS" instruct you to select the **Network** menu, and then the **DNS** sub-menu, as follows:



AP status LED states in autonomous mode

LED	State	Description
Power/System OK	Off	The AP has no power.
	Flashing	The AP is starting up. A power LED that continues to flash after several minutes indicates that the software failed to load. If this occurs, reset or power cycle the AP. If this condition persists, contact HP customer support.
	On	The AP is fully operational.
Ethernet	Off	The port is not connected or there is no activity.
	Flashing	The port is transmitting or receiving data.
Radio	Flashing	The radio is transmitting or receiving data.

Configuring the AP for autonomous mode

This procedure describes how to set a factory-default AP to autonomous mode, and then perform its initial configuration that enables you to establish a wireless connection through the AP to the Internet.

IMPORTANT: If your HP 560 was ever used with an HP 10500/7500, HP 830, HP 850, HP 870, or HP WX5002/WX5004 controller, you must configure the AP to use MSM software (autonomous mode) as described in *Instructions for Converting an Access Point from Unified-Controlled to Using MSM Software*, available at www.hp.com/support/manuals.

In autonomous mode, the AP is managed via its web-based management tool using Microsoft Internet Explorer 8 or later or Mozilla Firefox 9.0.1 or later. The browser must have SSLv3 enabled.

▲ CAUTION: Wireless protection: A factory-default AP that has been switched to autonomous mode has wireless protection options disabled. HP recommends that you configure your AP for wireless protection, using a method such as the procedure described in "Configure wireless protection" (page 15). See also "Wireless protection" in the MSM Access Points Configuration Guide.

NOTE: Do not power on the AP until directed to do so.

Configure your computer

- 1. Disconnect your computer LAN port and configure it to use a static IP address in the range **192.168.1.2** to **192.168.1.254**, and a subnet mask of **255.255.255.0**. Set the default gateway to **192.168.1.1**, and DNS server to **192.168.1.1**.
- 2. Disable any wireless connection on your computer.

Connect the cables and power on the AP

The HP 560 is powered via port 1, using either PoE or PoE+.

- 1. Connect the cables:
 - If using a PoE switch, use Ethernet cables to connect your computer and the AP to an unused factory-default PoE switch.
 - If using a PoE injector, use Ethernet cables to connect your computer to the data in port of the PoE injector and the AP to the data and power out port of the PoE injector.
- 2. Power on the AP by powering on the PoE switch or injector.

Initially, the AP power LED flashes once every two seconds.

3. Wait approximately a minute until the power LED begins flashing once per second before proceeding to the next step.

For information about the power operating mode, see "Power" (page 6).

Switch the AP to autonomous mode

NOTE: A factory-default AP is assumed.

- 1. In a web browser, enter the address: https://192.168.1.1.
- 2. A security certificate warning is displayed the first time you connect to the management tool. This is expected behavior. Select whatever option is needed in your web browser to continue to the management tool.
- 3. On the Login page, specify admin for both **Username** and **Password**, and then select **Login**. The AP management tool home page opens.
- IMPORTANT: If you do not see the Switch to Autonomous Mode button, you must follow the procedures in the separate document Instructions for Converting an Access Point from Unified-Controlled to Using MSM Software, even if your AP has never been adopted by a unified controller.
 - 4. Select **Switch to Autonomous Mode** and confirm the change.

The AP restarts in autonomous mode.

NOTE: To avoid a delay after switching modes, clear the ARP (address resolution protocol) cache on your computer. For example, from the Windows Start menu, select **Run** and enter **arp** -**a**, and then select **OK**.

Log in

- 1. Wait until the Power/System OK LED remains on.
- 2. On the Login page, specify admin for both Username and Password and then select Login.
- 3. Follow the License and Registration instructions.
- 4. If a Country prompt appears, select the country in which the AP will operate.

CAUTION: To ensure compliance, you must select the correct country.

5. When prompted, HP recommends that you change the password from the default. Passwords must be at least six characters long and include four different characters.

Configure wireless protection

HP recommends that you configure wireless protection. This section describes an example of how to configure type WPA or WPA2 protection. For more information, see "Wireless protection" in the Access Points Configuration Guide for your product.

To configure WPA or WPA2 protection:

- 1. Select VSC > HP, and then enable Wireless protection and set it to WPA.
- 2. Under **Mode**, select **WPA or WPA2**, and then under **Key source**, select **Preshared key** and specify a key of at least 20 characters.
- 3. Click **Save**.

Assigning an IP address to the AP

By default, the AP operates as a DHCP client. This means that if the network has a DHCP server, the AP automatically receives a new IP address in place of its default address of 192.168.1.1 upon connecting to the network. Use one of the following methods to assign an IP address to the AP:

- **Preconfigure the DHCP server to assign a specific IP address to the AP**. To do this you must specify the AP Ethernet MAC address and a reserved IP address on the DHCP server. The AP Ethernet MAC address is printed on the AP label identified as LAN MAC, and listed on the management tool Home page as Ethernet base MAC address.
- Let the DHCP server automatically assign an IP address. By default, the DHCP server assigns an IP address after the AP connects to the network. After the DHCP server assigns an IP address to the AP, you can find the IP address of the AP by looking for its Ethernet base MAC address in the DHCP server log.
- Assign a static IP address to the AP. The address must be on the same subnet as the network to which the AP connects.
 - 1. Select **Network** > **DNS**, and set the DNS server address. Select **Save**.
 - 2. Select Network > Ports > Bridge port.
 - 3. Select **Static**, and then **Configure**. For **IP address**, set an address that is on the same subnet as the network to which the AP will connect after installation. Respect any DHCP server-mandated static address ranges. Also set **Mask** and **Default gateway**.
 - 4. Select Save. Connection to the management tool is lost.

You can reconnect to the management tool by specifying the new IP address.

Testing the wireless network

In this example, the network must have a DHCP server and an Internet connection. Broadband routers typically include a DHCP server.

- 1. Disconnect your computer from the PoE switch or injector.
- 2. Power off the AP by disconnecting the Ethernet cable from the AP.
- 3. Use a standard Ethernet cable to connect the switch or the data in port of the injector to the network.
- 4. Reconnect and power on the AP. Use a standard Ethernet cable to reconnect the AP to the PoE switch or the data and power out port of the injector.
- 5. Enable the wireless network interface of your computer, and verify that it is set to obtain an IP address automatically.
- 6. By default, the AP creates a wireless network named HP in the 5 GHz band for 802.11 n and 802.11 a users. Connect your computer to this wireless network, specifying the preshared key you set in "Configure wireless protection" (page 15).
- 7. Confirm that you can browse the Internet using the wireless network.

Before performing additional configuration

Configure your computer LAN port and connect it to the same network as the AP. Re-launch the AP management tool at https://IP address where IP address is the AP IP address assigned in "Assigning an IP address to the AP" (page 16).

5 Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website: <u>www.hp.com/support</u>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Related information

The following documents provide related information:

- HP 560 802.11 ac Access Point Configuration and Administration Guide
- MSM Controllers Configuration Guide
- HP 830 Series PoE+ Unified Wired-WLAN Switch and HP 10500/7500 20G Unified Wired-WLAN Module Fundamentals Configuration Guide
- H3C WX Series Access Controller Module Basic Configuration Guide
- HP 870 Unified Wired-WLAN Appliance Switch Switching Engine Fundamentals Configuration Guide
- Instructions for Converting an Access Point from Unified-Controlled to Using MSM Software

You can find these documents on the Manuals page of the HP Support Center website:

www.hp.com/support/manuals

Enter your product name or number, and click **GO**.

Websites

HP Networking website: <u>www.hp.com/networking/</u>

Controller part numbers

- HP 10500/7500: JG639A, JG645A (TAA)
- HP 830: 24P JG640A, JG646A (TAA); 8P JG641A, JG647A (TAA)
- HP 870: JG723A, JG725A (TAA)
- HP WX5002: JD447B
- HP WX5004: JD448B
- HP MSM720: J9693A, J9694A, J9695A (TAA), J9696A (TAA)
- HP MSM760: J9420A, J9421A
- HP MSM765 zl: J9370A
- HP MSM775 zl: J9840A

Typographic conventions

Table 1 Document conventions

Convention	Element
Blue text: Table 1 (page 18)	Cross-reference links
Blue, underlined text: <u>www.hp.com</u>	Website addresses
Bold text	 Keys that are pressed Text typed into a GUI element, such as a box GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
Italic text	Text emphasis
Monospace text	 File and directory names System output Code Commands, their arguments, and argument values
<i>Monospace, italic</i> text	Code variablesCommand variables
Monospace, bold text	Emphasized monospace text

WARNING! Indicates that failure to follow directions could result in bodily harm or death.

() **IMPORTANT:** Provides clarifying information or specific instructions.

NOTE: Provides additional information.

6 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

A Regulatory information

For important safety, environmental, and regulatory information, see Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at <u>http://</u>www.hp.com/support/Safety-Compliance-EnterpriseProducts.

Plenum installation

The AP can be installed in a plenum. The HP 560 is suitable for use in environmental air space in accordance with Section 300-22(C) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057