



FortiAP 221C

QuickStart Guide



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Table of Contents

Package Contents	1
Mounting Your FortiAP Unit	2
Connecting Your FortiAP Unit	4
Configuring Your FortiAP Unit	5
Technical Specifications	7
LED Specifications	8
Cautions and Warnings	9
Regulatory Notices	12
Documentation and Links	14
Register Your Product	15
Product License Agreement	16

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Package Contents

Fortinet's FortiAP wireless thin access points deliver secure, identity-driven WiFi client access that creates a fortified WLAN network that is centrally managed by a FortiGate or FortiWiFi platform.

Your box contains the following:

- FortiAP 221C

- QuickStart Guide (with Mounting Template)

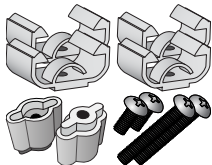
- Mounting Bracket

- T-Rail Mounting Hardware Kit

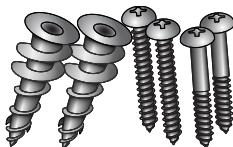
- Wall/Ceiling Mounting Hardware Kit



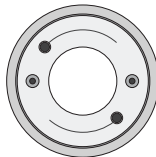
T-Rail Mounting
Hardware Kit



Wall/Ceiling Mounting
Hardware Kit



Mounting
Bracket



QuickStart Guide



Note: Accessories may not be exactly as shown.

Mounting Your FortiAP Unit

Using the provided hardware, the FortiAP unit can be attached to a ceiling or wall.

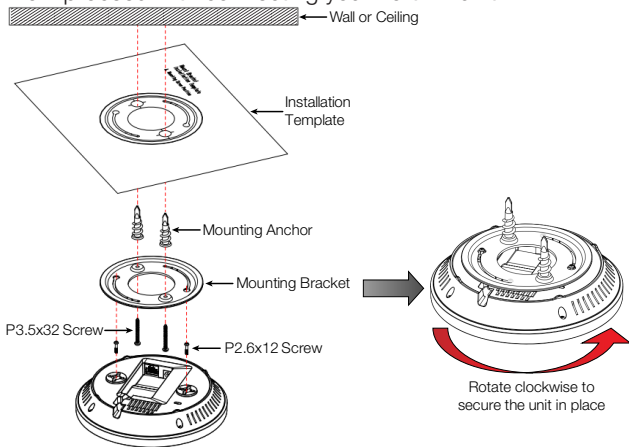
To attach the unit to a ceiling or wall using the mounting bracket:

1. Attach the mounting bracket to the wall or ceiling using the Mounting Template and the provided wall/ceiling mounting hardware kit (P3.5x32 screws and Mounting Anchors).
2. Insert the provided P2.6x12 screws into the bottom cover of the FortiAP unit.
3. Leave enough of the screws exposed to ensure that the unit can be attached to the mounting bracket.

If extra space is required, use the provided spacers and long screws from the T-rail mounting hardware kit to increase the space between the unit and the mounting bracket.

4. Mount the FortiAP unit on the mounted mounting bracket by rotating the unit clockwise about 90 degrees to secure it in place.

You can now proceed with connecting your FortiAP unit.

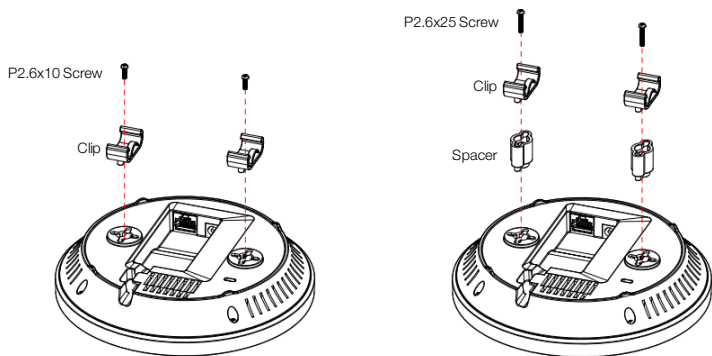


To attach the unit to a ceiling using the provided T-rail connectors:

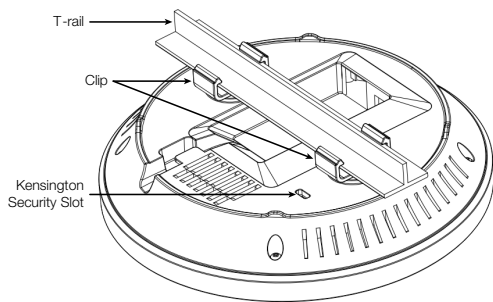
1. Attach the T-rail connectors to the bottom cover of the FortiAP unit using the provided P2.6x10 screws.

Two sizes of T-rail connectors are included in the mounting hardware kit: 15/16in (2.38cm) and 9/16in (1.43cm).

If extra space is required to accommodate drop ceiling tiles, use the provided spacers and P2.6x25 screws.



2. Line up the connected T-rail connectors with an appropriately sized rail and press the unit onto the rail until it snaps into place.



Note: To protect your FortiAP unit from unauthorized removal, use the Kensington Security Slot to attach a cable lock (cable lock is not included).

Connecting Your FortiAP Unit

Using the provided mounting hardware, attach the FortiAP unit to a wall or ceiling, as described in the previous section.

Adequate grounding must be provided to the FortiAP unit and the PoE injector, in compliance with your local electrical code or regulations.

Caution: This device complies with IEEE 802.3af PoE specification. Do not use any PoE injectors that are not IEEE 802.3af compliant as they may damage your device.

To connect the FortiAP unit:

1. Insert an Ethernet cable into the Ethernet port of the FortiAP unit.
2. Insert the other end of the Ethernet cable into your FortiGate, FortiWifi, or FortiSwitch unit.

If you are using PoE, ensure that the Ethernet cable is connected to an applicable port on your FortiGate unit, FortiSwitch unit, or PoE injector.

3. If you are not using PoE, connect the DC plug of the optional power adapter into the DC power jack on the FortiAP unit, and then insert the other end into an appropriate power outlet.

Note: For FortiWifi units, the wireless controller feature is only supported on units running FortiOS 4.0 MR3 and higher.

Configuring Your FortiAP Unit

The FortiAP unit is designed to require no configuration in most networks. Zero Configuration mode works if the unit is directly connected to the FortiGate or FortiWifi performing the Wireless LAN Controller (WLC) functions, or on the same layer-2 network and subnet as the FortiGate or FortiWifi unit.

If the FortiAP wireless controller's IP address cannot be determined using Zero Configuration mode, or if the network uses static IP addresses, it can be configured to use a static IP address.

To enable the FortiAP using Zero Configuration:

1. After connecting the FortiAP unit as described in the previous chapter, the unit goes through its boot procedure and requests an IP address from the DHCP server.
2. If the IP address is retrieved successfully, the FortiAP enters discovery mode to locate a FortiGate or FortiWifi wireless controller. The discovery modes are:
 - Broadcast
 - Multicast
 - DHCP option 138
3. Verify that the FortiAP has successfully connected to the controller.
In the FortiGate Web-based Manager, go to *WiFi Controller > Managed Access Points > Managed FortiAP*. A successfully discovered unit displays an orange circle with a question mark.
4. Select the access point and click *Edit*.
5. In the *State* field, select *Authorize*.
6. In the *AP Profile* field, select *Change*, then select a profile from the list and click *OK*.

The configuration is downloaded from the wireless controller to the FortiAP and the WiFi LEDs light up.

To enable the FortiAP with a static IP address:

1. Connect the FortiAP device to a separate private switch or hub, or directly connect it to your management computer via a cross-over cable.
2. Configure the management computer to be on the same subnet as the internal interface of the FortiAP unit:
 - IP address: 192.168.1.3
 - Netmask: 255.255.255.0
3. Telnet to IP address 192.168.1.2.
4. Type `admin` in the *Name* field, leave the *Password* field blank, and press *Enter*.
5. Configure a static IP address for the FortiAP unit and netmask & gateway information for your network, using the following commands:

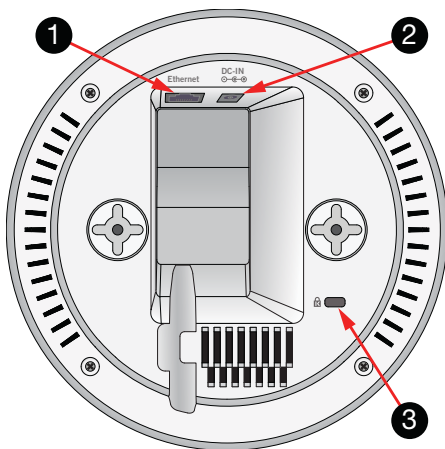
```
cfg -a ADDR_MODE=STATIC
cfg -a AP_IPADDR=xxx.xxx.xxx.xx
cfg -a AP_NETMASK=255.255.255.0
cfg -a IPGW=yyy.yyy.yyy.yyy
cfg -a AC_IPADDR_1=zzz.zzz.zzz.zzz
```

where xxx is the IP address of the FortiAP unit, yyy is the Gateway IP address and zzz is the IP address of the FortiGate Wireless Controller.

6. Save the configuration by typing the following command:
`cfg -c`
7. Unplug the FortiAP unit and plug it back in order for the configuration to take effect.
8. Move the FortiAP to the intended deployment location and connect the Ethernet cable as described in the Connecting Your FortiAP Unit section.
9. Log in to the FortiGate controller Web-based Manager, and go to *WiFi Controller* > *Managed Access Points* > *Managed FortiAP*. A successfully discovered unit displays an orange circle with a question mark in the *Status* column.
10. Select the access point and click *Edit*.
11. In the *State* field, select *Authorize*.
12. In the *Edit FortiAP* dialog box, select *Enable Wireless Radio*. Leave the remaining settings at their default values. The configuration is downloaded from the FortiGate unit to the FortiAP device.

For more information, see the Deploying Wireless Networks Guide, available on Fortinet's technical documentation website, <http://docs.fortinet.com>.

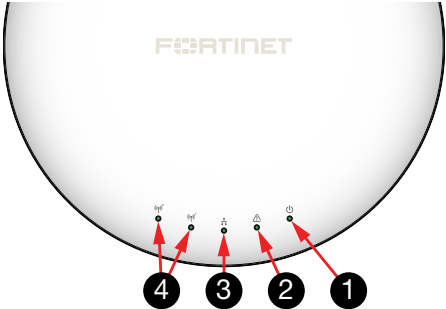
Technical Specifications



#	Interface	Type	Description
1	Ethernet Port	RJ-45	Gigabit Ethernet port with PoE support up to 12.9W, IEEE 802.3af.
2	DC-IN		Power connection for optional power adapter. 12V DC, 2A, center positive
3	Kensington Security Slot		Anti-theft security slot for attaching a lock-and-cable apparatus.

Hardware Specification	Description
Optional PoE Injector	Fortinet PoE Injector: GPI-115 and FortiSwitch products with PoE support.
WiFi Radios	Radio 1: 802.11 b/g/n, 2.4GHz; 802.11 a/n, 5GHz Radio 2: 802.11 a/n/ac, 5GHz
Deployment	Indoor Only

LED Specifications



#	LED	State	Description
1	Power	Off	No power.
		Flashing Green	The device is booting.
		Green	Power on and ready for operation.
2	Status	Off	Wireless controller not found.
		Amber	Controller found, but the device is not being managed.
		Green	Controller is managing the device.
		Flashing Amber	Error when trying to connect to the controller.
3	Ethernet Port	Off	No link established.
		Amber	Connected at 10/100 Mbps (Fast Ethernet).
		Green	Connected at 1000 Mbps (Gigabit Ethernet).
		Flashing	Link activity.
4	WiFi 1 & 2	Off	Radio disabled or off.
		Green	Radio is enabled.
		Flashing Green	Wireless activity.

Cautions and Warnings

Environmental specifications

Operating Temperature – If this device is installed in a closed or multi-unit rack assembly, the rack's ambient temperature may be greater than the room's ambient temperature. Make sure the rack environment is compatible with the manufacturer's maximum rated ambient temperature (T_{ma}) .

Température ambiante élevée — Si cet appareil est installé dans un cabinet fermé, la température ambiante du cabinet peut être supérieure à la température ambiante de la pièce. Assurez-vous que l'environnement dans le cabinet est compatible avec la température ambiante maximale du fabricant (T_{ma}) .

Air flow – For rack installation, make sure that the amount of air flow required for safe operation of the equipment is not compromised. For free-standing installation, make sure that the appliance has at least 2 inches (5 cm) of clearance on each side to allow for adequate air flow and cooling.

Ventilation — Pour une installation dans un cabinet, assurez-vous que la ventilation nécessaire au fonctionnement de l'équipement n'est pas compromise. Pour une installation autonome, assurez-vous que l'appareil dispose d'au moins 2 pouces (5 cm) de dégagement de chaque côté pour permettre l'écoulement de l'air et un refroidissement adéquat.

Circuit overloading – To avoid overloading, use the ratings on the label. Consider the equipment's connection to the supply circuit and the effect that circuit overloading might have on current protection and supply wiring.

For redundant power sources, connect each to an IEC/UL Listed power source whose output rating is greater than or equal to the equipment.

Surtension – Pour éviter de surcharger le circuit d'alimentation, référez-vous aux notes sur l'étiquette de l'équipement . Envisagez l'effet que la surtension du circuit pourrait avoir sur la protection de surtension et le câblage d'alimentation .

Pour les sources d'alimentation redondantes, connectez chacun à une source d'alimentation Mis CEI / UL dont la cote de rendement est supérieur ou égal à l'équipement.

Reliable earthing – Make sure all rack-mounted equipment is grounded. This includes supply connections (e.g. power strips), not only direct connections to the branch circuit.

Mise à la terre – Assurez-vous que tout l'équipement est mis à la terre. Ceci comprend les connexions d'alimentation (par exemple, les barres d'alimentation) en plus des connexions directes au circuit de dérivation.

Interference – If possible, use Shielded Twisted Pair (STP) Ethernet cables instead of Unshielded Twisted Pair (UTP).

Interférence – Si possible, utilisez des câbles Ethernet de paire torsadée blindée (STP) plutôt que de paire torsadée non blindée (UTP).

Refer to specific Product Model Data Sheet for Environmental Specifications (Operating Temperature, Storage Temperature, Humidity, and Altitude).

Safety

Mechanical loading – To avoid personal injury or damage to the appliance, Fortinet recommends that 2 or more people together install the appliance into the rack. Balance the equipment to avoid uneven mechanical loading and tipping. Do not place heavy objects on the appliance.

Installation – Pour éviter des blessures ou des dommages à l'appareil, Fortinet recommande que deux personnes ou plus installent ensemble cet équipement dans un cabinet. L'installation du matériel à l'intérieur de la baie doit être effectuée de façon à éviter toute situation dangereuse liée à une installation non conforme. Ne placez pas d'objets lourds sur l'appareil, celui-ci n'étant pas conçu pour soutenir un poids additionnel.

Electric shock / fire — To avoid risk of damage to your equipment, personal injury, or death, disconnect cables while servicing. Do not connect or disconnect cables during lightning. Do not use this product near water for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool. Do not install this equipment in a home or public area accessible to the general population. When installed in schools, this equipment must be installed in a location where access is restricted to trained personnel.

Choc électrique / feu — Débranchez les cordons de la source d'alimentation avant tout entretien. Ne pas brancher ou débrancher les câbles lors d'un orage afin de ne subir aucun dommage corporel et éviter d'endommager votre appareil. Ne pas utiliser ce produit près de l'eau par exemple, près d'une baignoire, d'un lavabo, d'un évier de cuisine ou cuve à lessive, dans un sous-sol humide ou près d'une piscine. Le produit n'a pas vocation à être installé dans un foyer ou un lieu public pour l'ensemble de la population. Dans les écoles, ce matériel doit être installé en lieu sûr, de façon à le rendre accessible seulement aux personnels qualifiés.

Grounding — To prevent damage to your equipment, connections that enter from outside the building should pass through a lightning / surge protector, and be properly grounded. Use an electrostatic discharge workstation (ESD) and/or wear an anti-static wrist strap while you work. In addition to the grounding terminal of the plug, on the back panel, there is another, separate terminal for earthing.

Mise à la terre — Pour éviter d'endommager votre matériel, assurez-vous que les branchements qui entrent à partir de l'extérieur du bâtiment passent par un parafoudre / parasurtenseur et sont correctement mis à la terre. Utilisez un poste de travail de décharge électrostatique (ESD) et / ou portez un bracelet anti-statique lorsque vous travaillez. Ce produit possède une borne de mise à la terre qui est prévu à l'arrière du produit, à ceci s'ajoute la mise à la terre de la prise.

Power over Ethernet (PoE) — Do not connect this device to PoE networks with routing to the outside plant. Use this equipment in a Network Environment 0 per IECTR 62101. Do not use PoE injectors that are not IEEE 802.3af compliant. They may damage your device.

Alimentation par Ethernet — Ce matériel doit être utilisé dans un Environnement Réseau 0 par IECTR 62101. Ce matériel est uniquement connecté aux réseaux PoE sans installation externe de routage. Cet appareil est conforme aux normes IEEE 802.3af. Ne pas utiliser d'autres injecteurs d'alimentation non conformes sous peine d'endommager votre matériel.

Regulatory Notices

Federal Communication Commission (FCC) – USA

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received; including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

WARNING: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 22cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Caution: Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

Industry Canada Equipment Standard for Digital Equipment (ICES) – Canada

CAN ICES-3 (B) / NMB-3 (B)

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 22cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 22 cm de distance entre la source de rayonnement et votre corps.

Caution: The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems. High-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Avertissement: Les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux. De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

European Conformity (CE) - EU

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



Documentation and Links

The following Fortinet web pages provide information and resources for your Fortinet product:

1. Customer Service & Support: <https://support.fortinet.com>

On this page you can create a support account with Fortinet, register and manage your products, download updates, firmware images and release notes, and create technical support tickets.

2. Fortinet Document Library: <http://docs.fortinet.com>

This page provides the most up-to-date versions of Fortinet publications for the entire family of Fortinet products.

3. Technical Discussion Forums: <https://support.fortinet.com/forum>

This page allows you to communicate with other customers and Fortinet partners about Fortinet products, services, and configuration issues in a forum environment.

4. Training Services: <http://training.fortinet.com>

This page provides course descriptions, availability, schedules, and locations of training programs in your area.

5. FortiGuard Threat Research and Response: <http://www.fortiguard.com>

This page provides up-to-date information on vulnerabilities and threats, and includes a virus scanner, Internet Protocol (IP) signature look-up, web filtering tools, and related information.

Comments on Technical Documentation

Please send comments or information about any errors or omissions in this or any Fortinet technical documents to techdoc@fortinet.com.

Register Your Product

If you did not yet register your Fortinet product, please register your product now.

Register

Register your Fortinet product in order to receive:

- Technical Support
- New product features
- Protection from new threats

Enregistrer

Vous devez enregistrer le produit pour recevoir:

- Support technique
- Nouvelles fonctionnalités du produit
- Protection contre de nouvelles menaces

Registra

La registrazione ti permette di usufruire di:

- Supporto Tecnico
- Nuove funzionalita
- Protezione dalle ultime minacce

Registrar

Debe registrar el producto para recibir:

- Apoyo técnico
- Nuevas funcionalidades del producto
- Protección contra ataques

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However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the Library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables. When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.) Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for your own use and reverse engineering for debugging such modifications. You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses

- the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.
- For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable. It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.
7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:
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