FortiOS v3.0 MR7

User Authentication User Guide

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Trademarks

Contents

Introduction

This section introduces you to the authentication process from the user and the administrators perspective, and provides supplementary information about Fortinet publications.

Note: This document does not describe certificate-based VPN authentication. For information about this type of authentication, see the *FortiGate IPSec VPN Guide* and the *FortiGate Certificate Management User Guide*.

The following topics are covered in this section:

About authentication

Computer networks have, for the most part, improved worker efficiency and helped a company's bottom line. Along with these benefits, the need has arisen for workers to be able to remotely access their corporate network, with appropriate security measures in place. In general terms, authentication is the process of attempting to verify the (digital) identity of the sender of a communication such as a log in request. The sender may be someone using a computer, the computer itself, or a computer program. A computer system should only be used by those who are authorized to do so, therefore there must be a measure in place to detect and exclude any unauthorized access.

On a FortiGate unit, you can control access to network resources by defining lists of authorized users, called user groups. To use a particular resource, such as a network or a VPN tunnel, the user must:

- belong to one of the user groups that is allowed access
- correctly enter a user name and password to prove his or her identity, if asked to do so

This process is called authentication.

You can configure authentication for:

- any firewall policy with Action set to ACCEPT
- SSL VPNs
- PPTP and L2TP VPNs
- a dialup IPSec VPN set up as an XAUTH server (Phase 1)
- a dialup IPSec VPN that accepts user group authentication as a peer ID

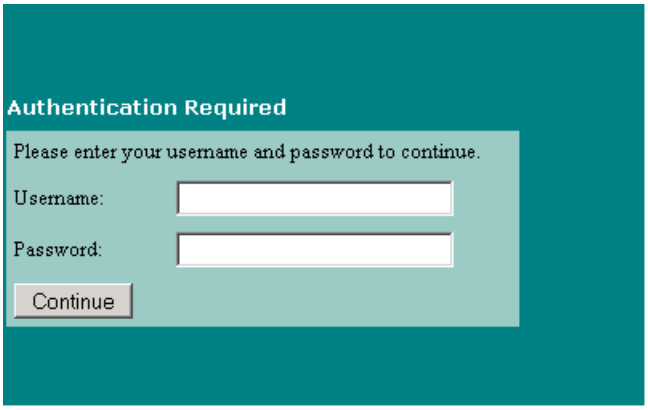
User's view of authentication

The user sees a request for authentication when they try to access a protected resource. The way in which the request is presented to the user depends on the method of access to that resource.

VPN authentication usually controls remote access to a private network.

Web-based user authentication

Firewall policies usually control browsing access to an external network that provides connection to the Internet. In this case, the FortiGate unit requests authentication through the web browser:



The user types a user name and password and then selects Continue/Login. If the credentials are incorrect, the authentication screen is redisplayed with blank fields so that the user can try again. When the user enters valid credentials, they get access to the required resource. In some cases, if a user tries to authenticate several times without success, a message appears, such as: "Too many bad login attempts. Please try again in a few minutes."

Note: After a defined period of user inactivity (the authentication timeout, defined by the FortiGate administrator), the user access will expire. The default is 5 minutes. To access the resource, the user will have to authenticate again.

VPN client-based authentication

VPNs provide remote clients with access to a private network for a variety of services that include web browsing, email, and file sharing. A client program such as FortiClient negotiates the connection to the VPN and manages the user authentication challenge from the FortiGate unit.

FortiClient can store the user name and password for a VPN as part of the configuration for the VPN connection and pass them to the FortiGate unit as needed. Or, FortiClient can request the user name and password from the user when the FortiGate unit requests them.

SSL VPN is a form of VPN that can be used with a standard Web browser. There are two modes of SSL VPN operation (supported in NAT/Route mode only):

- web-only mode, for thin remote clients equipped with a web-browser only
- tunnel mode, for remote computers that run a variety of client and server applications.

Note: After a defined period of user inactivity on the VPN connection (the idle timeout, defined by the FortiGate administrator), the user access will expire. The default is 1500 seconds (25 minutes). To access the resource, the user will have to authenticate again.

FortiGate administrator's view of authentication

Authentication is based on user groups. You configure authentication parameters for firewall policies and VPN tunnels to permit access only to members of particular user groups. A member of a user group can be:

- a user whose user name and password are stored on the FortiGate unit
- a user whose name is stored on the FortiGate unit and whose password is stored on a remote or external authentication server
- a remote or external authentication server with a database that contains the user name and password of each person who is permitted access

1. If remote or external authentication is needed, configure the required servers.
   - See "Configuring the FortiGate unit to use a RADIUS server" on page 16.
   - See "Configuring the FortiGate unit to use an LDAP server" on page 21.
   - See "Configuring the FortiGate unit to use a Directory Service server" on page 28.
2. Configure local and peer (PKI) user identities (see "Public Key Infrastructure (PKI) authentication" on page 9). For each local user, you can choose whether the FortiGate unit or a remote authentication server verifies the password. Peer members can be included in user groups for use in firewall policies.
   - See "Creating local users" on page 34.
   - See "Creating peer users" on page 36.

3 Create user groups.

Add local/peer user members to each user group as appropriate. You can also add an authentication server to a user group. In this case, all users in the server's database can authenticate. You can only configure peer user groups through the CLI.

- See "Configuring user groups" on page 41.

4 Configure firewall policies and VPN tunnels that require authenticated access.

See "Configuring authentication for a firewall policy" on page 49.

See "Configuring authentication of PPTP VPN users/user groups" on page 55.

See "Configuring authentication of remote IPSec VPN users" on page 56.

See "Configuring XAuth authentication" on page 58.

Authentication servers

The FortiGate unit can store user names and passwords and use them to authenticate users. In an enterprise environment, it might be more convenient to use the same system that provides authentication for local area network access, email and other services. Users who access the corporate network from home or while traveling could use the same user name and password that they use at the office.

You can configure the FortiGate unit to work with remote or external authentication servers in two different ways:

- Add the authentication server to a user group.

  Anyone in the server's database is a member of the user group. This is a simple way to provide access to the corporate VPN for all employees, for example. You do not need to configure individual users on the FortiGate unit.

or

- Specify the authentication server instead of a password when you configure the individual user identity on the FortiGate unit.

  The user name must exist on both the FortiGate unit and authentication server. User names that exist only on the authentication server cannot authenticate on the FortiGate unit. This method enables you to provide access only to selected employees, for example.

Note: You cannot combine these two uses of an authentication server in the same user group. If you add the server to the user group, adding individual users with authentication to that server is redundant.

If you want to use remote or external authentication servers, you must configure them before you configure users and user groups. See "RADIUS servers" on page 15, "LDAP servers" on page 19, "TACACS+ servers" on page 25, and "Directory Service servers" on page 27.

Public Key Infrastructure (PKI) authentication

A Public Key Infrastructure (PKI) is a comprehensive system of policies, processes, and technologies working together to enable users of the Internet to exchange information in a secure and confidential manner. PKIs are based on the use of cryptography - the scrambling of information by a mathematical formula and a virtual key so that it can only be decoded by an authorized party using a related key. The public and private cryptographic key pair is obtained and shared through a trusted authority. The public key infrastructure enables the creation of a digital certificate that can identify an individual or organization, and directory services that can store and also revoke the certificates.

Public Key Infrastructure (PKI) authentication utilizes a certificate authentication library that takes a list of 'peers', 'peer' groups, and/or user groups and returns authentication 'successful' or 'denied' notifications. Users only need a valid certificate for successful authentication - no username or password are necessary.

Peers

A peer is a user that is a digital certificate holder used in PKI authentication. To use PKI authentication, you must define peers to include in the authentication user group. See "Users/peers" on page 33.

Users

Although it is simpler to define passwords locally, when there are many users the administrative effort to maintain the database is considerable. Users cannot change their own passwords on the FortiGate unit. When a remote or external remote authentication server is part of an enterprise network authentication system, users can change their own passwords. See "Users/peers" on page 33.

Note: Frequent changing of passwords is a good security practice.

User groups

A user group can contain individual users/peers and authentication servers. A user/peer or authentication server can belong to more than one group.

Authentication is group-based. Firewall policies can allow multiple groups access, but authentication for a VPN allows access to only one group. These considerations affect how you define the groups for your organization. Usually you need a user group for each VPN. For firewall policies, you can create user groups that reflect how you manage network privileges in your organization. For example, you might create a user group for each department or create user groups based on functions such as customer support or account management.

You select a protection profile for each user group. Protection profiles determine the level of web filtering, antivirus protection, and spam filtering applied to traffic controlled by the firewall policy to which members of this user group authenticate. For more information about protection profiles, see the *FortiGate Administration Guide*.

Authentication timeout

An authenticated connection expires when it has been idle for a length of time that you specify. The authentication timeout value set in **User** > **Authentication** > **Authentication** applies to every user of the system. The choice of timeout duration is a balance between security and user convenience. The default is 5 minutes. For information about setting the authentication timeout, see "Authentication timeout" on page 47.

Firewall policies

Access control is defined in the firewall policy that provides access to the network resource. For example, access to the Internet through the external interface from workstations on the internal network is made possible by an Internal to External firewall policy.

Firewall policies apply web filtering, antivirus protection, and spam filtering to the traffic they control according to a protection profile. If the firewall policy requires authentication, the protection profile in the firewall policy is disabled. Instead, the protection profile is configured in the authenticating user group.

For more information about firewall policies and protection profiles, see the Firewall chapters of the *FortiGate Administration Guide*.

VPN tunnels

When you configure a PPTP or L2TP VPN, you choose one user group to be permitted access. For IPSec VPNs, you can use authentication by user group or XAUTH authentication using an external authentication server as an alternative to authentication by peer ID. Access to SSL VPN applications is controlled through user groups. When the remote client connects to the FortiGate unit, the FortiGate unit authenticates the user based on user name, password, and authentication domain. Authentication for a VPN allows access to only one group.

For more information about VPNs, see the *FortiGate PPTP VPN User Guide, FortiGate SSL VPN User Guide,* or the *FortiGate IPSec VPN User Guide.*

About this document

This document explains how to configure authentication for firewall policies, PPTP, L2TP and SSL VPNs, and dialup IPSec VPNs, and contains the following chapters:

- Authentication servers contains procedures for configuring RADIUS, LDAP, and Microsoft Active Directory authentication servers.
- Users/peers and user groups contains procedures for defining users/peers and user groups.
- Configuring authenticated access contains procedures to set authentication timeouts, configure authentication in firewall policies, for PPTP, L2TP and SSL VPNs, and certain configurations of IPSec VPNs.

Document conventions

The following document conventions are used in this guide:

- In the examples, private IP addresses are used for both private and public IP addresses.
- Notes and Cautions are used to provide important information:

Note: Highlights useful additional information.

Caution: Warns you about commands or procedures that could have unexpected or undesirable results including loss of data or damage to equipment.

Typographic conventions

FortiGate documentation uses the following typographical conventions:

Convention	Example
Keyboard input	In the Name field, type `admin`.

Code examples	`config sys global`
	`  set ips-open enable`
	`end`

CLI command syntax	`config firewall policy`
	`  edit id_integer`
	`  set http_retry_count <retry_integer>`
	`  set natip <address_ipv4mask>`
	`end`

Document names	*FortiGate SSL VPN User Guide*
File content	`<HTML><HEAD><TITLE>Firewall Authentication</TITLE></HEAD> <BODY><H4>You must authenticate to use this service.</H4>`
Menu commands	Go to **VPN > SSL > Config**.
Program output	`Welcome!`
Variables	`<group_name>`

FortiGate documentation

The most up-to-date publications and previous releases of Fortinet product documentation are available from the *Fortinet Technical Documentation* web site.

The following *FortiGate product documentation* is available:

- *FortiGate QuickStart Guide*

  Provides basic information about connecting and installing a FortiGate unit.
- *FortiGate Installation Guide*

  Describes how to install a FortiGate unit. Includes a hardware reference, default configuration information, installation procedures, connection procedures, and basic configuration procedures. Choose the guide for your product model number.

- *FortiGate Administration Guide*

  Provides basic information about how to configure a FortiGate unit, including how to define FortiGate protection profiles and firewall policies; how to apply intrusion prevention, antivirus protection, web content filtering, and spam filtering; and how to configure a VPN.
- *FortiGate online help*

  Provides a context-sensitive and searchable version of the *Administration Guide* in HTML format. You can access online help from the web-based manager as you work.
- *FortiGate CLI Reference*

  Describes how to use the FortiGate CLI and contains a reference to all FortiGate CLI commands.
- *FortiGate Log Message Reference*

  Available exclusively from the *Fortinet Knowledge Center*, the FortiGate Log Message Reference describes the structure of FortiGate log messages and provides information about the log messages that are generated by FortiGate units.
- *FortiGate High Availability User Guide*

  Contains in-depth information about the FortiGate high availability feature and the FortiGate clustering protocol.
- *FortiGate IPS User Guide*

  Describes how to configure the FortiGate Intrusion Prevention System settings and how the FortiGate IPS deals with some common attacks.
- *FortiGate IPSec VPN User Guide*

  Provides step-by-step instructions for configuring IPSec VPNs using the web-based manager.
- *FortiGate SSL VPN User Guide*

  Compares FortiGate IPSec VPN and FortiGate SSL VPN technology, and describes how to configure web-only mode and tunnel-mode SSL VPN access for remote users through the web-based manager.
- *FortiGate PPTP VPN User Guide*

  Explains how to configure a PPTP VPN using the web-based manager.
- *FortiGate Certificate Management User Guide*

  Contains procedures for managing digital certificates including generating certificate requests, installing signed certificates, importing CA root certificates and certificate revocation lists, and backing up and restoring installed certificates and private keys.
- *FortiGate VLANs and VDOMs User Guide*

  Describes how to configure VLANs and VDOMS in both NAT/Route and Transparent mode. Includes detailed examples.

Related documentation

Additional information about Fortinet products is available from the following related documentation.

FortiManager documentation

- *FortiManager QuickStart Guide*

  Explains how to install the FortiManager Console, set up the FortiManager Server, and configure basic settings.
- *FortiManager System Administration Guide*

  Describes how to use the FortiManager System to manage FortiGate devices.
- *FortiManager System online help*

  Provides a searchable version of the *Administration Guide* in HTML format. You can access online help from the FortiManager Console as you work.

FortiClient documentation

- *FortiClient Host Security User Guide*

  Describes how to use FortiClient Host Security software to set up a VPN connection from your computer to remote networks, scan your computer for viruses, and restrict access to your computer and applications by setting up firewall policies.
- *FortiClient Host Security online help*

  Provides information and procedures for using and configuring the FortiClient software.

FortiMail documentation

- *FortiMail Administration Guide*

  Describes how to install, configure, and manage a FortiMail unit in gateway mode and server mode, including how to configure the unit; create profiles and policies; configure antispam and antivirus filters; create user accounts; and set up logging and reporting.
- *FortiMail online help*

  Provides a searchable version of the *Administration Guide* in HTML format. You can access online help from the web-based manager as you work.
- *FortiMail Web Mail Online Help*

  Describes how to use the FortiMail web-based email client, including how to send and receive email; how to add, import, and export addresses; and how to configure message display preferences.

FortiAnalyzer documentation

- *FortiAnalyzer Administration Guide*

  Describes how to install and configure a FortiAnalyzer unit to collect FortiGate and FortiMail log files. It also describes how to view FortiGate and FortiMail log files, generate and view log reports, and use the FortiAnalyzer unit as a NAS server.
- *FortiAnalyzer online help*

  Provides a searchable version of the *Administration Guide* in HTML format. You can access online help from the web-based manager as you work.

Fortinet Tools and Documentation CD

All Fortinet documentation is available from the Fortinet Tools and Documentation CD shipped with your Fortinet product. The documents on this CD are current at shipping time. For up-to-date versions of Fortinet documentation see the *Fortinet Technical Documentation* web site.

Fortinet Knowledge Center

Additional Fortinet technical documentation is available from the *Fortinet Knowledge Center*. The knowledge center contains troubleshooting and how-to articles, FAQs, technical notes, and more.

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Authentication servers

FortiGate units support the use of authentication servers. If you are going to use FortiGate authentication servers, you must configure the servers before you configure FortiGate users or user groups that require them. An authentication server can provide password checking for selected FortiGate users or it can be added as a member of a FortiGate user group.

This section describes:

RADIUS servers

Remote Authentication and Dial-in User Service (RADIUS) servers provide authentication, authorization, and accounting functions. FortiGate units use the authentication and accounting functions of the RADIUS server.

Your RADIUS server listens on either port 1812 or port 1645 for authentication requests. You must configure it to accept the FortiGate unit as a client.

The RADIUS server user database can be any combination of:

- user names and passwords defined in a configuration file
- an SQL database
- user account names and passwords configured on the computer where the RADIUS server is installed.

The RADIUS server uses a “shared secret” key to encrypt information passed between it and clients such as the FortiGate unit.

The FortiGate units send the following RADIUS attributes in the accounting start/stop messages:

1. `Acct-Session-ID`
2. `User Name`
3. `NAS-Identifier (FGT hostname)`
4. `Framed-IP-Address (IP address assigned to the client)`
5. `Fortinet-VSA (IP address client is connecting from)`
6. `Acct-Input-Octets`
7. `Acct-Output-Octets`

Table 1 describes the supported authentication events and the RADIUS attributes that are sent in the RADIUS accounting message.

Table 1: RADIUS attributes sent in RADIUS accounting message

	ATTRIBUTE						
AUTHENTICATION METHOD	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Web	X	X	X		X		
XAuth of IPSec (without DHCP)	X	X	X		X		
XAuth of IPSec (with DHCP)	X	X	X	X	X		
PPTP/L2TP (in PPP)	X	X	X	X	X	X	X
SSL-VPN	X	X	X		X		

In order to support vendor-specific attributes (VSA), the RADIUS server requires a dictionary to define what the VSAs are.

Fortinet's dictionary is configured this way:

```
##
Fortinet's VSA's
#
VENDOR fortinet 12356
BEGIN-VENDOR fortinet
ATTRIBUTE Fortinet-Group-Name 1 string
ATTRIBUTE Fortinet-Client-IP-Address 2 ipaddr
ATTRIBUTE Fortinet-Vdom-Name 3 string
#
# Integer Translations
#
END-VENDOR Fortinet
```

See the documentation provided with your RADIUS server for configuration details.

Configuring the FortiGate unit to use a RADIUS server

To configure the FortiGate unit to use a RADIUS server, you need to know the server's domain name or IP address and its shared secret key. You will select the authentication protocol. The maximum number of remote RADIUS servers that can be configured for authentication is 10.

On the FortiGate unit, the default port for RADIUS traffic is 1812. If your RADIUS server is using port 1645, you can either:

- Reconfigure the RADIUS server to use port 1812. See your RADIUS server documentation for more information.

or

- Change the FortiGate unit default RADIUS port to 1645 using the CLI:

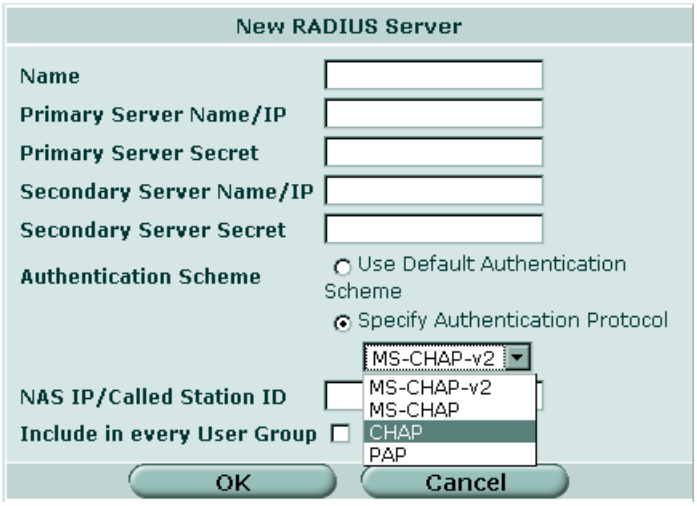
```
config system global
   set radius_port 1645
end
```

To configure the FortiGate unit for RADIUS authentication - web-based manager

1 Go to **User > Remote > RADIUS** and select Create New.

2 Enter the following information, and select OK.

Figure 1: Configure FortiGate unit for RADIUS authentication



Name	Enter the name that is used to identify the RADIUS server on the FortiGate unit.
Primary Server Name/IP	Enter the domain name or IP address of the primary RADIUS server.
Primary Server Secret	Enter the RADIUS server secret key for the primary RADIUS server.
Secondary Server Name/IP	Enter the domain name or IP address of the secondary RADIUS server, if you have one.
Secondary Server Secret	Enter the RADIUS server secret key for the secondary RADIUS server.
Authentication Scheme	Select Use Default Authentication Scheme to authenticate with the default method. The default authentication scheme uses PAP, MS-CHAP-V2, and CHAP, in that order. Select Specify Authentication Protocol to override the default authentication method, and choose the protocol from the list: MS-CHAP-V2, MS-CHAP, CHAP, or PAP, depending on what your RADIUS server needs.
NAS IP/Called Station ID	Enter the NAS IP address and Called Station ID (for more information about RADIUS Attribute 31, see RFC 2548 Microsoft Vendor-specific RADIUS Attributes). If you do not enter an IP address, the IP address that the FortiGate interface uses to communicate with the RADIUS server will be applied.
Include in every User Group	Select to have the RADIUS server automatically included in all user groups.

To configure the FortiGate unit for RADIUS authentication - CLI

```
config user radius
  edit <server_name>
     set all-usergroup {enable | disable }
     set auth-type <authentication_protocol>
     set nas-ip <nas_ip_called_id>
     set radius-port <radius_port_id>
     set secondary-server <secondary_ip_address>
     set secondary-secret <secondary_password>
     set server <primary_ip_address>
     set secret <primary_password>
     set use-group-for-profile <group_profile_select>
     set use-management-vdom <vdom_requests>
end
```

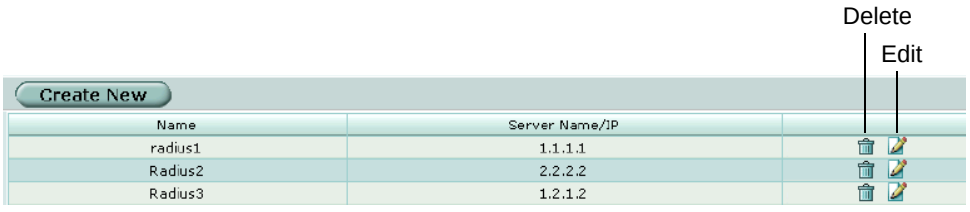
The `use-group-for-profile` and `use-management-vdom` can only be added to RADIUS authentication requests via the CLI. You enable `use-group-for-profile` to use the RADIUS group attribute to select the firewall protection profile to apply. Enable `use-management-vdom` to use the management VDOM to send all RADIUS requests. For more information, refer to the *FortiGate CLI Reference*.

To remove a RADIUS server from the FortiGate unit configuration - web-based manager

Note: You cannot remove a RADIUS server that belongs to a user group. Remove it from the user group first.

1. Go to **User > Remote > RADIUS**.
2. Select the Delete icon beside the name of the RADIUS server that you want to remove.
3. Select OK.

Figure 2: Delete (remove) a RADIUS server



Create New	Add a new RADIUS server. The maximum number is 10.
Name	The name that identifies the RADIUS server on the FortiGate unit.
Server Name/IP	The domain name or IP address of the RADIUS server.
Delete icon	Delete (remove) a RADIUS server from the FortiGate configuration. You cannot remove a RADIUS server that has been added to a user group.
Edit icon	Edit a RADIUS server configuration.

To remove a RADIUS server from the FortiGate unit configuration - CLI

```
config user radius
  delete <server_name>
end
```

LDAP servers

Lightweight Directory Access Protocol (LDAP) is an Internet protocol used to maintain authentication data that may include departments, people, groups of people, passwords, email addresses, and printers. An LDAP consists of a data-representation scheme, a set of defined operations, and a request/response network.

The scale of LDAP servers ranges from big public servers such as BigFoot and Infospace, to large organizational servers at universities and corporations, to small LDAP servers for workgroups. This document focuses on the institutional and workgroup applications of LDAP.

A directory is a set of objects with similar attributes organized in a logical and hierarchical way. Generally, an LDAP directory tree reflects geographic and/or organizational boundaries, with the Domain name system (DNS) names to structure the top level of the hierarchy. The common name identifier for most LDAP servers is cn, however some servers use other common name identifiers such as uid.

If you have configured LDAP support and a user is required to authenticate using an LDAP server, the FortiGate unit contacts the LDAP server for authentication. To authenticate with the FortiGate unit, the user enters a user name and password. The FortiGate unit sends this user name and password to the LDAP server. If the LDAP server can authenticate the user, the user is successfully authenticated with the FortiGate unit. If the LDAP server cannot authenticate the user, the connection is refused by the FortiGate unit.

Binding is the step where the LDAP server authenticates the user, and if the user is successfully authenticated, allows the user access to the LDAP server based on that user's permissions.

The FortiGate unit can be configured to use one of three types of binding:

- anonymous - bind using anonymous user search
- regular - bind using username/password and then search
- simple - bind using a simple password authentication without a search

You can use simple authentication if the user records all fall under one dn. If the users are under more than one dn, use the anonymous or regular type, which can search the entire LDAP database for the required user name.

If your LDAP server requires authentication to perform searches, use the regular type and provide values for username and password.

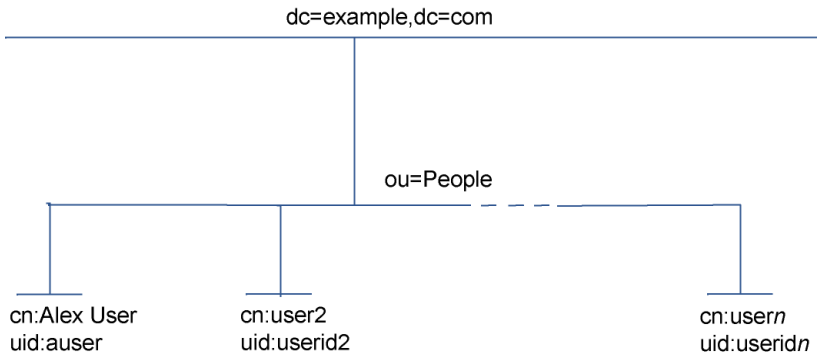
The FortiGate unit supports LDAP protocol functionality defined in RFC 2251: Lightweight Directory Access Protocol v3, for looking up and validating user names and passwords. FortiGate LDAP supports all LDAP servers compliant with LDAP v3. In addition, FortiGate LDAP supports LDAP over SSL/TLS. To configure SSL/TLS authentication, refer to the *FortiGate CLI Reference.*

FortiGate LDAP does not support proprietary functionality, such as notification of password expiration, which is available from some LDAP servers. FortiGate LDAP does not supply information to the user about why authentication failed.

To configure your FortiGate unit to work with an LDAP server, you need to understand the organization of the information on the server.

The top of the hierarchy is the organization itself. Usually this is defined as Domain Component (DC), a DNS domain. If the name contains a dot, such as “example.com”, it is written as two parts: “dc=example,dc=com”.

In this example, Common Name (CN) identifiers reside at the Organization Unit (OU) level, just below DC. The Distinguished Name (DN) is ou=People,dc=example,dc=com.



In addition to the DN, the FortiGate unit needs an identifier for the individual person. Although the FortiGate unit GUI calls this the Common Name (CN), the identifier you use is not necessarily CN. On some servers, CN is the full name of a person. It might be more convenient to use the same identifier used on the local computer network. In this example, User ID (UID) is used.

You need to determine the levels of the hierarchy from the top to the level that contains the identifier you want to use. This defines the DN that the FortiGate unit uses to search the LDAP database. Frequently used distinguished name elements include:

- pw (password)
- cn (common name)
- ou (organizational unit)
- o (organization)
- c (country)

One way to test this is with a text-based LDAP client program. For example, OpenLDAP includes a client, `ldapsearch`, that you can use for this purpose.

Enter the following command:

```
ldapsearch -x '(objectclass=*)'
```

The output is lengthy, but the information you need is in the first few lines:

```
version: 2

#
# filter: (objectclass=*)
# requesting: ALL
#

dn: dc=example,dc=com
dc: example
objectClass: top
objectClass: domain

dn: ou=People,dc=example,dc=com
ou: People
objectClass: top
objectClass: organizationalUnit

...

dn: uid=auser,ou=People,dc=example,dc=com
uid: auser
cn: Alex User
```

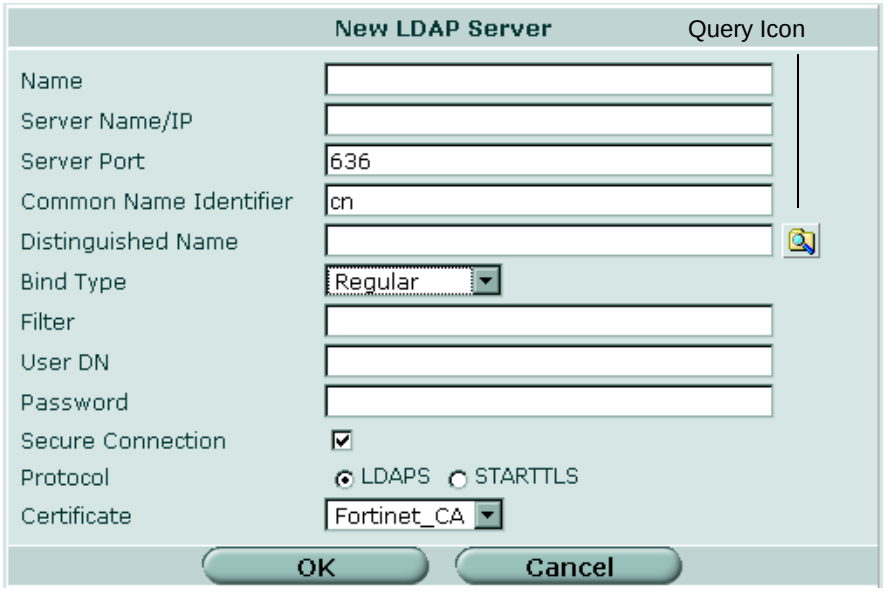
Configuring the FortiGate unit to use an LDAP server

After you determine the common name and distinguished name identifiers and the domain name or IP address of the LDAP server, you can configure the server on the FortiGate unit. The maximum number of remote LDAP servers that can be configured for authentication is 10.

To configure the FortiGate unit for LDAP authentication - web-based manager

1. Go to **User > Remote > LDAP** and select Create New.
2. Enter the following information, and select OK.

Figure 3: Configure FortiGate unit for LDAP authentication



Name	Enter the name that identifies the LDAP server on the FortiGate unit.
Server Name/IP	Enter the domain name or IP address of the LDAP server.
Server Port	Enter the TCP port used to communicate with the LDAP server. By default, LDAP uses port 389. If you use a secure LDAP server, the default port changes when you select Secure Connection.
Common Name Identifier	Enter the common name identifier for the LDAP server. The maximum number of characters is 20.
Distinguished Name	Enter the base distinguished name for the server using the correct X.500 or LDAP format. The FortiGate unit passes this distinguished name unchanged to the server. The maximum number of characters is 512.
Query icon	View the LDAP server Distinguished Name Query tree for the LDAP server that you are configuring so that you can cross-reference to the Distinguished Name. For more information, see the "Using the Query icon" on page 24.
Bind Type	Select the type of binding for LDAP authentication.
Regular	Connect to the LDAP server directly with user name/password, then receive accept or reject based on search of given values.
Anonymous	Connect as an anonymous user on the LDAP server, then retrieve the user name/password and compare them to given values.
Simple	Connect directly to the LDAP server with user name/password authentication.
Filter	Enter the filter to use for group searching. Available if Bind Type is Regular or Anonymous.
User DN	Enter the Distinguished name of the user to be authenticated. Available if Bind Type is Regular.
Password	Enter the password of the user to be authenticated. Available if Bind Type is Regular.
Secure Connection	Select to use a secure LDAP server connection for authentication.

Protocol	Select a secure LDAP protocol to use for authentication. Depending on your selection, the value in Server Port will change to the default port for the selected protocol. Available only if Secure Connection is selected. **LDAPS**: port 636 **STARTTLS**: port 389
Certificate	Select a certificate to use for authentication from the list. The certificate list comes from CA certificates at **System > Certificates > CA Certificates**.

To configure the FortiGate unit for LDAP authentication - CLI

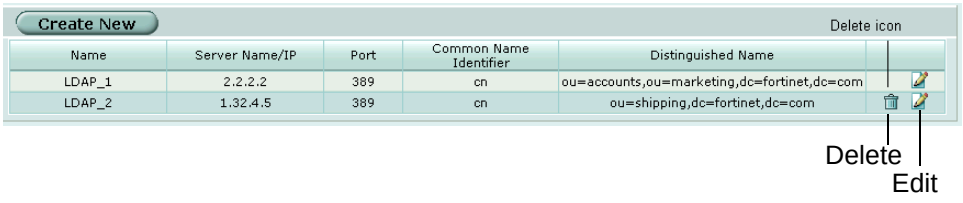
```
config user ldap
  edit <server_name>
     set cnid <common_name_identifier>
     set dn <distinguished_name>
     set port <port_number>
     set server <domain>
     set type <auth_type>
     set username <ldap_username>
     set password <ldap_passwd>
     set group <group>
     set filter <group_filter>
     set secure <auth_port>
     set ca-cert <cert_name>
  end
```

To remove an LDAP server from the FortiGate unit configuration - web-based manager

Note: You cannot remove a LDAP server that belongs to a user group. Remove it from the user group first.

1. Go to **User** > **LDAP**.
2. Select the Delete icon beside the name of the LDAP server that you want to remove.
3. Select OK.

Figure 4: Delete LDAP server



Create New	Add a new LDAP server. The maximum number is 10.
Name	The name that identifies the LDAP server on the FortiGate unit.
Server Name/IP	The domain name or IP address of the LDAP server.
Port	The TCP port used to communicate with the LDAP server.

Common Name Identifier	The common name identifier for the LDAP server. Most LDAP servers use cn. However, some servers use other common name identifiers such as uid.
Distinguished Name	The distinguished name used to look up entries on the LDAP servers use. The distinguished name reflects the hierarchy of LDAP database object classes above the common name identifier.
Delete icon	Delete the LDAP server configuration.
Edit icon	Edit the LDAP server configuration.

To remove an LDAP server from the FortiGate unit configuration - CLI

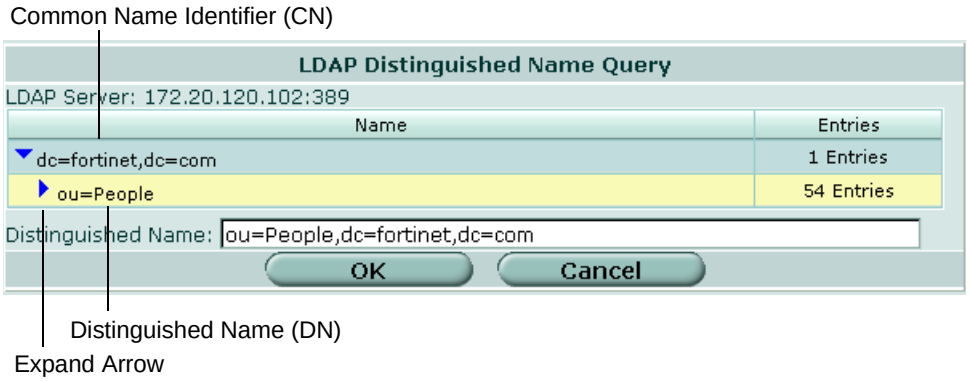
```
config user ldap
  delete <server_name>
end
```

Using the Query icon

The LDAP Distinguished Name Query list displays the LDAP Server IP address, and all the distinguished names associated with the Common Name Identifier for the LDAP server. The tree helps you to determine the appropriate entry for the DN field. To see the distinguished name associated with the Common Name identifier, select the Expand icon next to the CN identifier. Select the DN from the list. The DN you select is displayed in the Distinguished Name field. Select OK and the Distinguished Name you selected will be saved in the Distinguished Name field of the LDAP Server configuration.

To see the users within the LDAP Server user group for the selected Distinguished Name, expand the Distinguished Name in the LDAP Distinguished Name Query tree.

Figure 5: LDAP server Distinguished Name Query tree



TACACS+ servers

In recent years, remote network access has shifted from terminal access to LAN access. Users are now connecting to their corporate network (using notebooks or home PCs) with computers that utilize complete network connections. Remote node technology allows users the same level of access to the corporate network resources as they would have if they were physically in the office. When users connect to their corporate network remotely, they do so through a remote access server. As remote access technology has evolved, the need for network access security has become increasingly important.

Terminal Access Controller Access-Control System (TACACS+) is a remote authentication protocol that provides access control for routers, network access servers, and other networked computing devices via one or more centralized servers. TACACS+ allows a client to accept a username and password and send a query to a TACACS+ authentication server. The server host determines whether to accept or deny the request and sends a response back that allows or denies network access to the user. The default TCP port for a TACACS+ server is 49. You can only change the default port of the TACACS+ server using the CLI.

There are several different authentication protocols that TACACS+ can use during the authentication process:

- ASCII

  Machine-independent technique that uses representations of English characters. Requires user to type a user name and password that are sent in clear text (unencrypted) and matched with an entry in the user database stored in ASCII format.
- PAP (password authentication protocol)

  Used to authenticate PPP connections. Transmits passwords and other user information in clear text.
- CHAP (challenge-handshake authentication protocol)

  Provides the same functionality as PAP, but is more secure as it does not send the password and other user information over the network to the security server.
- MS-CHAP (Microsoft challenge-handshake authentication protocol v1)

  Microsoft-specific version of CHAP.

The default protocol configuration, Auto, uses PAP, MS-CHAP, and CHAP, in that order.

Configuring the FortiGate unit to use a TACACS+ authentication server

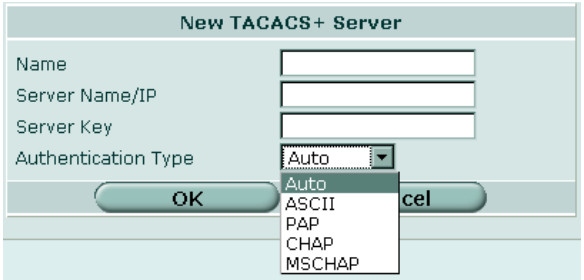
The maximum number of remote TACACS+ servers that can be configured for authentication is 10.

To configure the FortiGate unit for TACACS+ authentication - web-based manager

1 Go to **User > Remote > TACACS+** and select Create New.

2 Enter the following information, and select OK.

Figure 6: TACACS+ server configuration



Name	Enter the name of the TACACS+ server.
Server Name/IP	Enter the server domain name or IP address of the TACACS+ server.
Server Key	Enter the key to access the TACACS+ server.
Authentication Type	Select the authentication type to use for the TACACS+ server. Selection includes: Auto, ASCII, PAP, CHAP, and MSCHAP. Auto authenticates using PAP, MSCHAP, and CHAP (in that order).

To configure the FortiGate unit for TACACS+ authentication - CLI

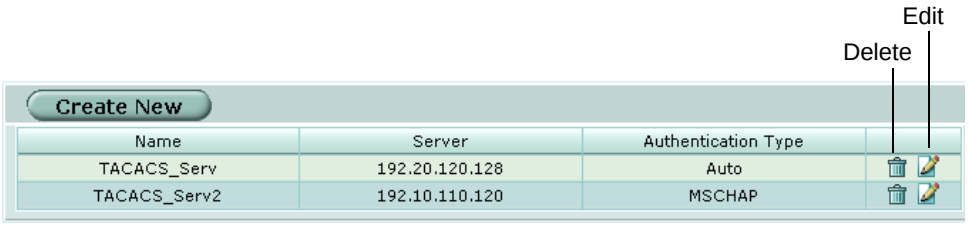
```
config user tacacs+
  edit <server_name>
     set auth-type {ascii | auto | chap | ms_chap | pap}
     set key <server_key>
     set tacacs+-port <tacacs+_port_num>
     set server <domain>
  end
```

To remove a TACACS+ server from the FortiGate unit configuration - web-based manager

Note: You cannot remove a TACACS+ server that belongs to a user group. Remove it from the user group first.

1. Go to **User** > **TACACS+**.
2. Select the Delete icon beside the name of the TACACS+ server that you want to remove.
3. Select OK.

Figure 7: Delete TACACS+ server



Create New	Add a new TACACS+ server. The maximum number is 10.
Server	The server domain name or IP address of the TACACS+ server.

Authentication Type	The supported authentication method. TACACS+ authentication methods include: Auto, ASCII, PAP, CHAP, and MSCHAP.
Delete icon	Delete this TACACS+ server.
Edit icon	Edit this TACACS+ server.

To remove a TACACS+ server from the FortiGate unit configuration - CLI

```
config user tacacs+
  delete <server_name>
end
```

Directory Service servers

Windows Active Directory (AD) and Novell edirectory provide central authentication services by storing information about network resources across a domain (a logical group of computers running versions of an operating system) in a central directory database. On networks that use Directory Service servers for authentication, FortiGate units can transparently authenticate users without asking them for their user name and password. Each person who uses computers within a domain receives his or her own unique account/user name. This account can be assigned access to resources within the domain. In a domain, the directory resides on computers that are configured as domain controllers. A domain controller is a server that manages all security-related features that affect the user/domain interactions, security centralization, and administrative functions.

FortiGate units use firewall policies to control access to resources based on user groups configured in the policies. Each FortiGate user group is associated with one or more Directory Service user groups. When a user logs in to the Windows or Novell domain, a Fortinet Server Authentication Extension (FSAE) sends the FortiGate unit the user's IP address and the names of the Directory Service user groups to which the user belongs.

The FSAE has two components that you must install on your network:

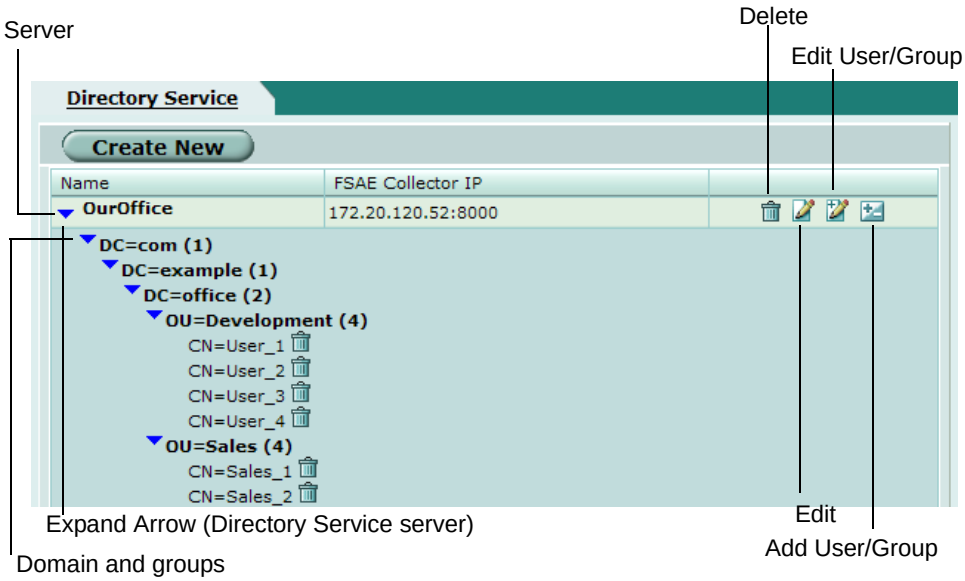
- The domain controller (DC) agent must be installed on every domain controller to monitor user logons and send information about them to the collector agent.
- The collector agent must be installed on at least one domain controller to send the information received from the DC agents to the FortiGate unit.

The FortiGate unit uses this information to maintain a copy of the domain controller user group database. Because the domain controller authenticates users, the FortiGate unit does not perform authentication. It recognizes group members by their IP address.

You must install the Fortinet Server Authentication Extensions (FSAE) on the network domain controllers, and configure the FortiGate unit to retrieve information from the Directory Service server.

To view the list of Directory Service servers, go to **User > Directory Service**.

Figure 8: Example Directory Service server list



Create New	Add a new Directory Service server.
Name	You can select the Expand arrow beside the server/domain/group name to display Directory Service domain and group information.
Server	The name defined for the Directory Service server.
Domain	Domain name imported from the Directory Service server.
Groups	The group names imported from the Directory Service server.
FSAE Collector IP	The IP addresses and TCP ports of up to five FSAE collector agents that send Directory Service server login information to the FortiGate unit.
Delete icon	Delete this Directory Service server.
Edit icon	Edit this Directory Service server.
Add User/Group	Add a user or group to the list. You must know the distinguished name for the user or group.
Edit Users/Group	Select users and groups to add to the list.

Configuring the FortiGate unit to use a Directory Service server

You need to configure the FortiGate unit to access at least one FSAE collector agent. You can specify up to five Directory Service servers on which you have installed a collector agent. If it is necessary for your FSAE collector agent to require authenticated access, you enter a password for the server. The server name appears in the list of Directory Service servers when you create user groups. You can also retrieve information directly through an LDAP server instead of through the FSAE agent.

Note: You can create a redundant configuration on your FortiGate unit if you install a collector agent on two or more domain controllers. If the current collector agent fails, the FortiGate unit switches to the next one in its list of up to five collector agents.

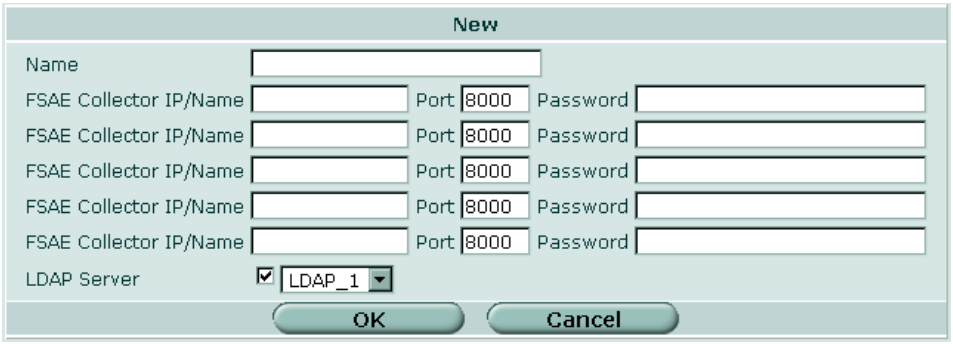
For more information about FSAE, see the *FSAE Technical Note*.

To configure the FortiGate unit for Directory Service authentication - web-based manager

1 Go to **User > Directory Service** and select Create New.

2 Enter the following information, and select OK.

Figure 9: Directory Service server configuration



Name	Enter the name of the Directory Service server. This name appears in the list of Directory Service servers when you create user groups.
FSAE Collector IP/Name	Enter the IP address or name of the Directory Service server where this collector agent is installed. The maximum number of characters is 63.
Port	Enter the TCP port used for Directory Service. This must be the same as the FortiGate listening port specified in the FSAE collector agent configuration.
Password	Enter the password for the collector agent. This is required only if you configured your FSAE collector agent to require authenticated access.
LDAP Server	Select the check box and select an LDAP server to access the Directory Service.

For information about Directory Service user groups, see "Configuring Directory Service user groups".

To configure the FortiGate unit for Directory Service authentication - CLI

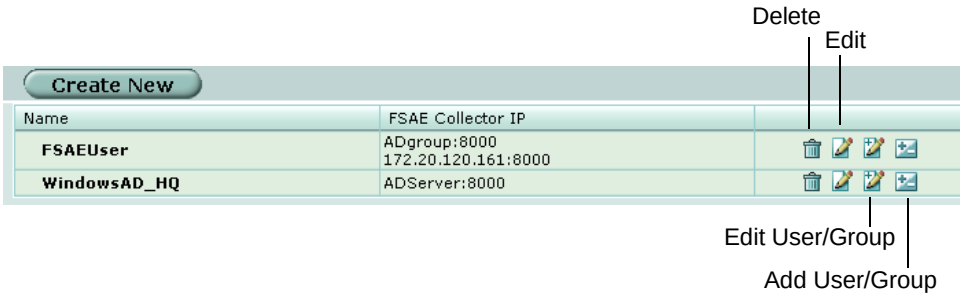
```
config user fsae
  edit <server_name>
     set ldap-server <ldap_server_name>
     set password <password> password2 <password2>
  password3 <password3> password4 <password4> password5
  <password5>
     set port <port_number> port2 <port_number2> port3
  <port_number3> port4 <port_number4> port5
  <port_number5>
     set server <domain> server2 <domain2> server3
  <domain3> server4 <domain4> server5 <domain5>
  end
```

To remove a Directory Service server from the FortiGate unit configuration - web-based manager

Note: You cannot remove a Directory Service server that belongs to a user group. Remove it from the user group first.

1. Go to **User** > **Directory Service**.
2. Select the Delete icon beside the name of the Directory Service server that you want to remove.
3. Select OK.

Figure 10: Delete Directory Service server



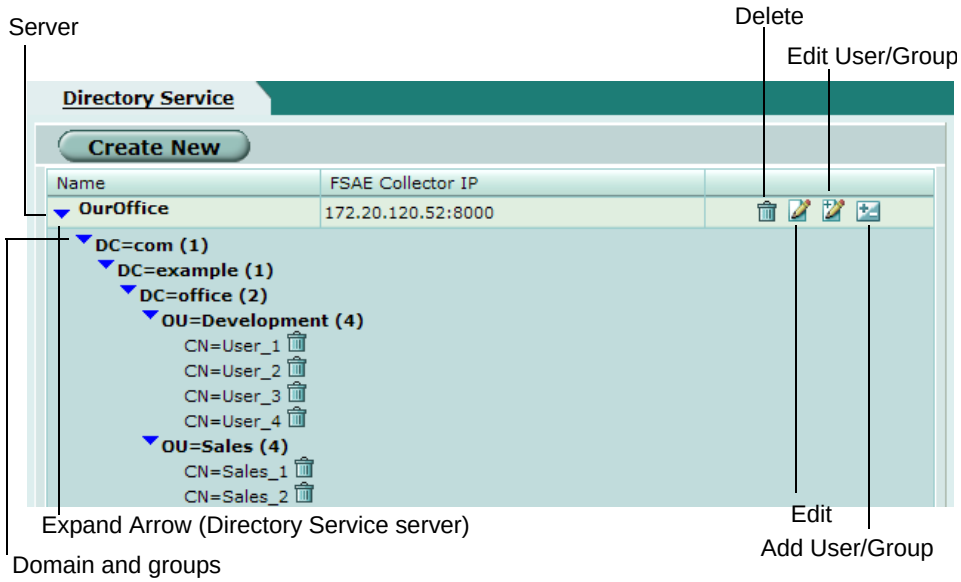
Create New	Add a new Directory Service server.
Name	The name defined for the Directory Service server.
FSAE Collector IP	The IP addresses and TCP ports of up to five FSAE collector agents that send Directory Service server login information to the FortiGate unit.
Delete icon	Delete this Directory Service server.
Edit icon	Edit this Directory Service server.
Add User/Group	Add a user or group to the list. You must know the distinguished name for the user or group.
Edit Users/Group	Select users and groups to add to the list.

To remove a Directory Service server from the FortiGate unit configuration - CLI

```
config user fsae
  delete <name>
end
```

To view the domain and group information that the FortiGate unit receives from the Directory Service servers, go to **User > Directory Service** and select the Expand arrow beside the server/domain/group name.

Figure 11: Example Directory Service server list



Create New	Add a new Directory Service server.
Name	You can select the Expand arrow beside the server/domain/group name to display Directory Service domain and group information.
Server	The name defined for the Directory Service server.
Domain	Domain name imported from the Directory Service server.
Groups	The group names imported from the Directory Service server.
FSAE Collector IP	The IP addresses and TCP ports of up to five FSAE collector agents that send Directory Service server login information to the FortiGate unit.
Delete icon	Delete this Directory Service server.
Edit icon	Edit this Directory Service server.
Add User/Group	Add a user or group to the list. You must know the distinguished name for the user or group.
Edit Users/Group	Select users and groups to add to the list.

Users/peers and user groups

FortiGate authentication controls system access by user group. First you configure users/peers, then you create user groups and add users/peers to them.

- Configure local user accounts. For each user, you can choose whether the password is verified by the FortiGate unit, by a RADIUS server, by an LDAP server, or by a TACACS+ server. See “Creating local users” on page 34.
- Configure your FortiGate unit to authenticate users by using your RADIUS, LDAP, or TACACS+ servers. See “Configuring the FortiGate unit to use a RADIUS server” on page 16, “Configuring the FortiGate unit to use an LDAP server” on page 21, and “Configuring the FortiGate unit to use a TACACS+ authentication server” on page 25.
- Configure access to the FortiGate unit if you use a Directory Service server for authentication. See “Configuring the FortiGate unit to use a Directory Service server” on page 28.
- Configure for certificate-based authentication for administrative access (HTTPS web-based manager), IPSec, SSL-VPN, and web-based firewall authentication.

For each network resource that requires authentication, you specify which user groups are permitted access to the network. There are three types of user groups: Firewall, Directory Service, and SSL VPN. See “Configuring user groups” on page 41 and “Configuring Directory Service user groups” on page 42.

This section describes:

- Users/peers
- User groups

Users/peers

A user is a user/peer account configured on the FortiGate unit and/or on a remote or external authentication server. Users can access resources that require authentication only if they are members of an allowed user group.

Table 2: How the FortiGate unit authenticates different types of users

User type	Authentication
Local user with password stored on the FortiGate unit	The user name and password must match a user account stored on the FortiGate unit.
Local user with password stored on an authentication server	The user name must match a user account stored on the FortiGate unit and the user name and password must match a user account stored on the authentication server associated with that user.

User type	Authentication
Authentication server user	Any user with an identity on the authentication server can authenticate on the FortiGate unit by providing a user name and password that match a user identity stored on the authentication server.
Peer user with certificate authentication	A peer user is a digital certificate holder that authenticates using a client certificate.

This section describes how to configure local users and peer users. For information about configuration of authentication servers see "Authentication servers" on page 15.

Creating local users

To define a local user you need:

- a user name
- a password or the name of an authentication server that has been configured on the FortiGate unit

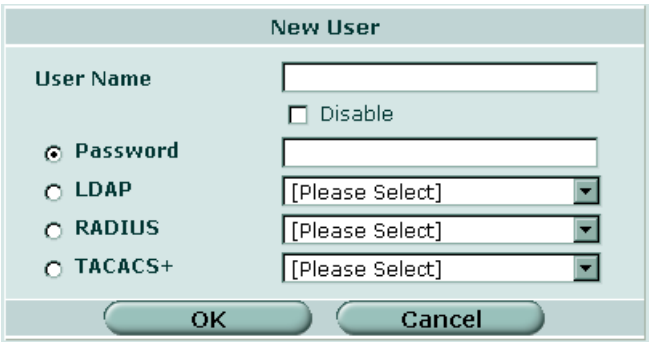
If the user is authenticated remotely or externally, the user name on the FortiGate unit must be identical to the user name on the authentication server.

To create a local user - web-based manager

1. Go to **User > Local**.
2. Select Create New.
3. Enter the user name.
4. Do one of the following:
   - To authenticate this user locally, select Password and type a password.
   - To authenticate this user using an LDAP server, select LDAP and select the server name.
   - To authenticate this user using a RADIUS server, select RADIUS and select the server name.

   If you want to use an authentication server, you must configure access to it first. See "Authentication servers" on page 15.
5. Select OK.

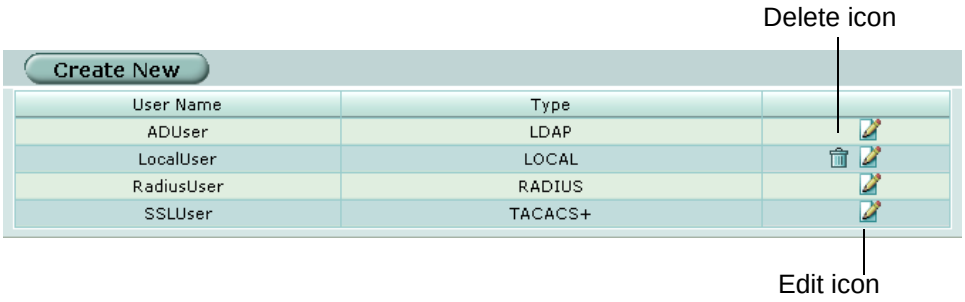
Figure 12: Create new local user



User Name	Type or edit the user name.
Disable	Select Disable to prevent this user from authenticating.
Password	Select Password to authenticate this user using a password stored on the FortiGate unit. Type or edit the password. The password should be at least six characters long.
LDAP	Select LDAP to authenticate this user using a password stored on an LDAP server. Select the LDAP server from the list. **Note**: You can only select an LDAP server that has been added to the FortiGate LDAP configuration.
RADIUS	Select RADIUS to authenticate this user using a password stored on a RADIUS server. Select the RADIUS server from the list. **Note**: You can only select a RADIUS server that has been added to the FortiGate RADIUS configuration.
TACACS+	Select TACACS+ to authenticate this user using a password stored on a TACACS+ server. Select the TACACS+ server from the list. **Note**: You can only select a TACACS+ server that has been added to the FortiGate TACACS+ configuration.

To view a list of all local users, go to **User > Local**.

Figure 13: Local user list



Create New	Add a new local user account.
User Name	The local user name.
Type	The authentication type to use for this user.
Delete icon	Delete the user. **Note**: The delete icon is not available if the user belongs to a user group.
Edit icon	Edit the user account.

To create a local user - CLI

```
config user local
  edit <user_name>
     set type password
     set passwd <user_password>
  end
```

or

```
config user local
  edit <user_name>
    set type ldap
    set ldap_server <server_name>
  end
```

or

```
config user local
  edit <user_name>
    set type radius
    set radius_server <server_name>
  end
```

or

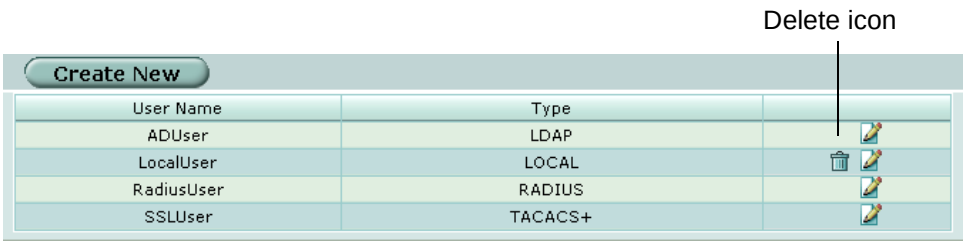
```
config user local
  edit <user_name>
    set type tacacs+
    set tacacs+_server <server_name>
  end
```

To remove a user from the FortiGate unit configuration - web-based manager

Note: You cannot remove a user that belongs to a user group that is part of a firewall policy. Remove it from the user group first.

1. Go to **User > Local**.
2. Select the Delete icon beside the name of the user that you want to remove.
3. Select OK.

Figure 14: Remove a Local user



To remove a user from the FortiGate unit configuration - CLI

```
config user local
  delete <user_name>
end
```

Creating peer users

A peer user is a digital certificate holder that can use PKI authentication. To use PKI authentication, you must define peers to include in the authentication user group that is incorporated in the authentication policy. Peer users can be included in a firewall or SSL VPN user group.

To define a peer user you need:

- a peer user name
- the text from the subject field of the certificate of the authenticating peer user, or the CA certificate used to authenticate the peer user. You can configure a peer user with no values for the subject and certificate fields. This user behaves like a user account or policy that is disabled.

Note: If you create a PKI user in the CLI with no values in `subject` or `ca`, you will not be able to open the user record in the GUI, or you will be prompted to add a value in Subject (`subject`) or CA (`ca`).

To create a peer user for PKI authentication - web-based manager

1 Go to **User > PKI**.

2 Select Create New, enter the following information, and select OK.

Figure 15: PKI peer user configuration

Note: Even though **Subject** and **CA** are optional fields, one of them must be set.

Name	Enter the name of the PKI peer user. This field is mandatory.
Subject	Enter the text string that appears in the subject field of the certificate of the authenticating peer user. This field is optional.
CA	Enter the CA certificate that must be used to authenticate this peer user. This field is optional.

To view a list of PKI peer users, go to **User > PKI**.

Figure 16: PKI peer user list

Name	Subject	CA	
peer1		Fortinet_CA	
pki_user1	C = US, ST = California, L = Sunnyvale, O = Fortinet, OU = Fortigate, CN = Fortigate, emailAddress = support@fortinet.com	Fortinet_CA	
pki_user2	C = US, ST = California, L = Sunnyvale, O = Fortinet, OU = Fortigate, CN = Fortigate, emailAddress = support@fortinet.com		
pkipeer1		Fortinet_CA	

Create New	Add a new PKI peer user.
User Name	The name of the PKI peer user.
Subject	The text string that appears in the subject field of the certificate of the authenticating peer user.

Delete icon	Delete this PKI peer user. **Note**: The delete icon is not available if the peer user belongs to a user group.
Edit icon	Edit this PKI peer user.

To create a peer user for PKI authentication - CLI

```
config user peer
  edit <peer name>
     set subject <subject_string>
     set ca <ca_cert_string>
end
```

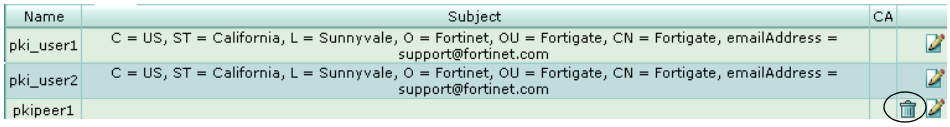
To remove a PKI peer user from the FortiGate unit configuration - web-based manager

1 Go to **User** > **PKI**.

2 Select the Delete icon beside the name of the PKI peer user that you want to remove.

3 Select OK.

Figure 17: Remove PKI peer user



To remove a PKI peer user from the FortiGate unit configuration - CLI

```
config user peer
  delete <peer_name>
end
```

Note: You cannot remove a peer user that belongs to a user group that is part of a firewall policy. Remove it from the user group first.

There are other configuration settings that can be added/modified for PKI authentication, for example, you can configure the use of an LDAP server to check access rights for client certificates. For information about the detailed PKI configuration settings only available through the CLI, see the *FortiGate CLI Reference.*

User groups

A user group is a list of user/peer identities. An identity can be:

- a local user account (user name/password) stored on the FortiGate unit
- a local user account with the password stored on a RADIUS, LDAP, or TACACS+ server
- a peer user account with digital client authentication certificate stored on the FortiGate unit
- a RADIUS, LDAP, or TACACS+ server (all identities on the server can authenticate)
- a user group defined on a Directory Service server.

Firewall policies and some types of VPN configurations allow access to user groups, not to individual users.

Each user group belongs to one of three types: Firewall, Directory Service or SSL VPN. For information about each type, see “Firewall user groups” on page 39, “Directory Service user groups” on page 39, and “SSL VPN user groups” on page 40. For information on configuring each type of user group, see “Configuring user groups” on page 41.

In most cases, the FortiGate unit authenticates users by requesting their user name and password. The FortiGate unit checks local user accounts first. If a match is not found, the FortiGate unit checks the RADIUS, LDAP, or TACACS+ servers that belong to the user group. Authentication succeeds when a matching user name and password are found.

Firewall user groups

A firewall user group provides access to a firewall policy that requires authentication and lists the user group as one of the allowed groups. The FortiGate unit requests the group member’s user name and password when the user attempts to access the resource that the policy protects.

You can also authenticate a user by certificate if you have selected this method. For more information, see “Adding authentication to firewall policies” on page 286.

A firewall user group can also provide access to an IPSec VPN for dialup users. In this case, the IPSec VPN phase 1 configuration uses the Accept peer ID in dialup group peer option. The user’s VPN client is configured with the user name as peer ID and the password as pre-shared key. The user can connect successfully to the IPSec VPN only if the user name is a member of the allowed user group and the password matches the one stored on the FortiGate unit.

Note: A user group cannot be a dialup group if any member is authenticated using a RADIUS or LDAP server.

Directory Service user groups

On a network, you can configure the FortiGate unit to allow access to members of Directory Service server user groups who have been authenticated on the network. The Fortinet Server Authentication Extensions (FSAE) must be installed on the network domain controllers.

Note: You cannot use Directory Service user groups directly in FortiGate firewall policies. You must add Directory Service groups to FortiGate user groups. A Directory Service group should belong to only one FortiGate user group. If you assign it to multiple FortiGate user groups, the FortiGate unit recognizes only the last user group assignment.

For a Directory Service user group, the Directory Service server authenticates users when they log on to the network. The FortiGate unit receives the user's name and IP address from the FSAE collector agent. For more information about FSAE, see the *FSAE Technical Note*.

A Directory Service user group provides access to a firewall policy that requires Directory Service type authentication and lists the user group as one of the allowed groups. The members of the user group are Directory Service users or groups that you select from a list that the FortiGate unit receives from the Directory Service servers that you have configured. See "Directory Service servers" on page 27.

Note: A Directory Service user group cannot have SSL VPN access.

For more information about users and user groups, see the *FortiGate Administration Guide.*

SSL VPN user groups

An SSL VPN user group provides access to a firewall policy that requires SSL VPN type authentication and lists the user group as one of the allowed groups. Local user accounts, LDAP, and RADIUS servers can be members of an SSL VPN user group. The FortiGate unit requests the user's user name and password when the user accesses the SSL VPN web portal. The user group settings include options for SSL VPN features.

An SSL VPN user group can also provide access to an IPSec VPN for dialup users. In this case, the IPSec VPN phase 1 configuration uses the Accept peer ID in dialup group peer option. You configure the user's VPN client with the user name as peer ID and the password as pre-shared key. The user can connect successfully to the IPSec VPN only if the user name is a member of the allowed user group and the password matches the one stored on the FortiGate unit.

Protection profiles

Note: A user group cannot be an IPSec dialup group if any member is authenticated using a RADIUS or LDAP server.

Each user group is associated with a protection profile to determine the antivirus, web filtering, spam filtering, logging, and intrusion protection settings that apply to the authenticated connection. The FortiGate unit contains several pre-configured protection profiles and you can create your own as needed.

When you create or modify any firewall policy, you can select a protection profile. If the firewall policy requires authentication, its own protection profile is disabled and the authentication user group protection profile applies.

Note: Protection profiles do not apply to VPN connections.

For more information about protection profiles, see the *FortiGate Administration Guide*.

Configuring user groups

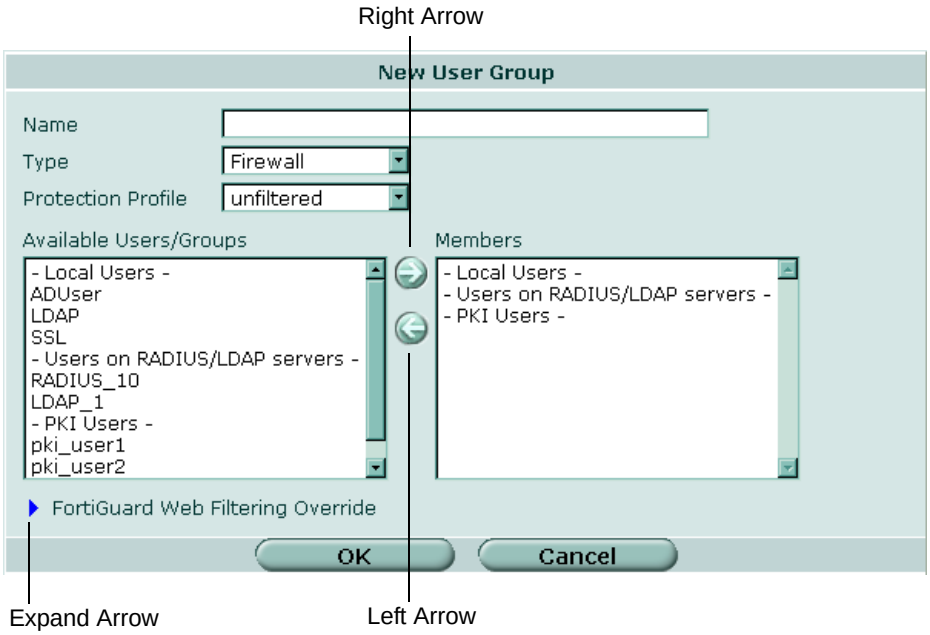
You create a user group by typing a name, selecting users and/or authentication servers, and selecting a protection profile.

To create a Firewall user group - web-based manager

1 Go to **User > User Group**.

2 Select Create New and enter the following information:

Figure 18: User group configuration - Firewall



Name	Type or enter the name of the user group.
Type	Select the user group type: **Firewall** — Select this group in any firewall policy that requires Firewall authentication. **Directory Service** — Select this group in any firewall policy that requires Directory Service authentication. **SSL VPN** — Select this group in any firewall policy with Action set to SSL VPN. Not available in Transparent mode.
Protection Profile	Available only if Type is Firewall or Directory Service. Select a protection profile for this user group from the list. To create a new protection profile, select Create New from this list. Enter the appropriate information and select OK.
Available Users/Groups or **Available Members***	The list of Local users, RADIUS servers, LDAP servers, TACACS+ servers, Directory Service users/user groups, or PKI users that can be added to the user group. To add a member to this list, select the name and then select the Right Arrow. * Available Members if user group type is Directory Service.

Members	The list of Local users, RADIUS servers, LDAP servers, TACACS+ servers, Directory Service users/user groups, or PKI users that belong to the user group. To remove a member, select the name and then select the Left Arrow.
FortiGuard Web Filtering Override	Available only if Type is Firewall or Directory Service. Select the Expand Arrow to configure Web Filtering override capabilities for this group.

3 Select OK.

To create a firewall user group - CLI

```
config user group
   edit <group_name>
      set group-type <grp_type>
      set member <user1> <user2> ... <usern>
      set profile <profile_name>
end
```

For more specific user group CLI commands, see the *Fortinet CLI Guide*.

Configuring Directory Service user groups

On a network, you can configure the FortiGate unit to allow access to members of Directory Service server user groups who have been authenticated on the network. The Fortinet Server Authentication Extensions (FSAE) must be installed on the network domain controllers.

Note: You cannot use Directory Service user groups directly in FortiGate firewall policies. You must add Directory Service groups to FortiGate user groups. A Directory Service group should belong to only one FortiGate user group. If you assign it to multiple FortiGate user groups, the FortiGate unit recognizes only the last user group assignment.

A Directory Service user group provides access to a firewall policy that requires Directory Service type authentication and lists the user group as one of the allowed groups. The members of the user group are Directory Service users or groups that you select from a list that the FortiGate unit receives from the Directory Service servers that you have configured.

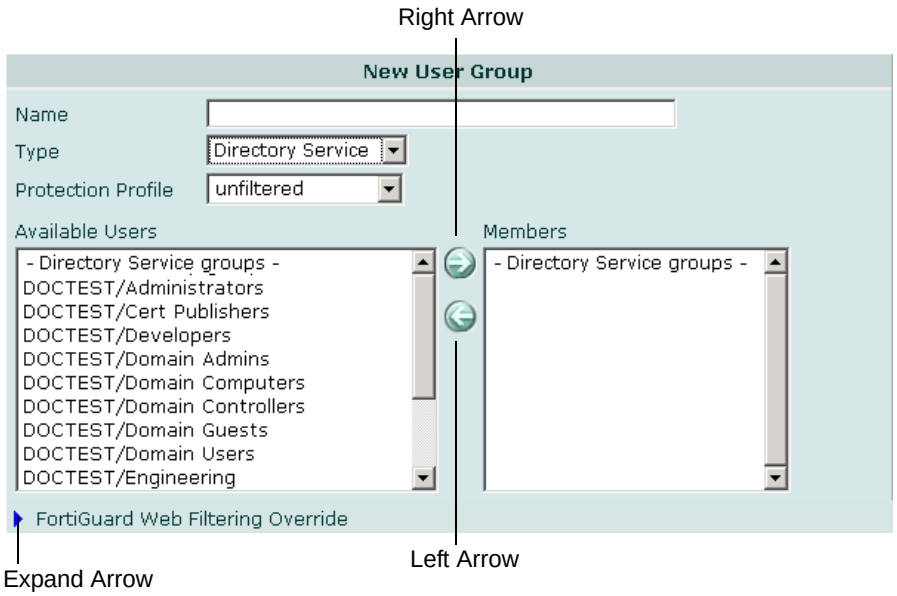
Note: A Directory Service user group cannot have SSL VPN access.

To create an Directory Service user group

1 Go to **User** > **User Group**.

2 Select Create New, enter the following information, and select OK.

Figure 19: User group configuration - Directory Service



Name	Type or enter the name of the user group.
Type	Select the user group type:
Firewall	Select this group in any firewall policy that requires Firewall authentication.
Directory Service	Select this group in any firewall policy that requires Directory Service authentication.
SSL VPN	Select this group in any firewall policy with Action set to SSL VPN. Not available in Transparent mode.
Protection Profile	Available only if Type is Firewall or Directory Service. Select a protection profile for this user group from the list. To create a new protection profile, select Create New from this list. Enter the appropriate information and select OK.
Available Users/Groups or **Available Members***	The list of Local users, RADIUS servers, LDAP servers, TACACS+ servers, Directory Service users/user groups, or PKI users that can be added to the user group. To add a member to this list, select the name and then select the Right Arrow. * Available Members if user group type is Directory Service.
Members	The list of Local users, RADIUS servers, LDAP servers, TACACS+ servers, Directory Service users/user groups, or PKI users that belong to the user group. To remove a member, select the name and then select the Left Arrow.
FortiGuard Web Filtering Override	Available only if Type is Firewall or Directory Service. Configure Web Filtering override capabilities for this group.
SSL-VPN User Group Options	Available only if Type is SSL VPN.

Configuring SSL VPN user groups

For detailed instructions about how to configure SSL VPN web-only mode or tunnel mode operation, see the *FortiGate SSL VPN User Guide*.

Configuring Peer user groups

Peer user groups can only be configured using the CLI. Peers are digital certificate holders defined using the `config user peer` command. You use the peer groups you define here in the `config vpn ipsec phase1` command if you specify `peertype` as `peergrp`.

For PKI user authentication, you can add or edit peer group member information. User groups that use PKI authentication can also be configured using `config user group`.

To create a peer group - CLI

```
config user peergrp
   edit groupname
   set member peer_name
end
```

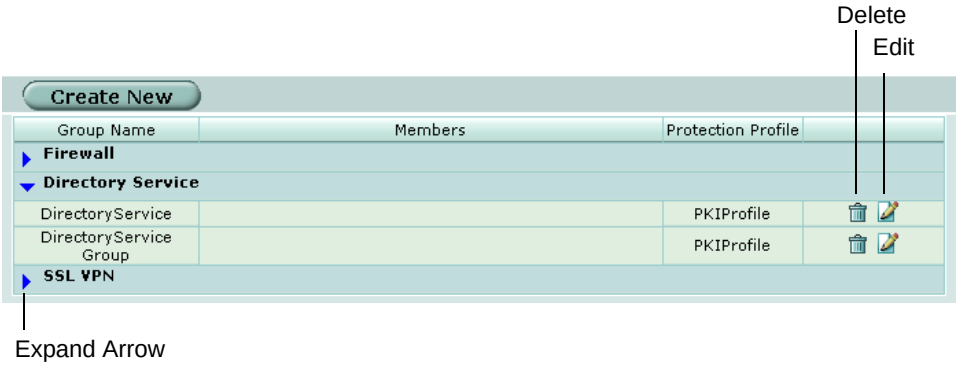
This example shows how to add peers to the peergrp `EU_branches`.

```
config user peergrp
   edit EU_branches
   set member Sophia_branch Valencia_branch Cardiff_branch
end
```

Viewing a list of user groups

To view the list of FortiGate user groups, go to **User > User Group**.

Figure 20: Example User group list



Create New	Add a new user group.
Group Name	The name of the user group. User group names are listed by type of user group: Firewall, Directory Service and SSL VPN. For more information, see “Firewall user groups” on page 39, “Directory Service user groups” on page 39, and “SSL VPN user groups” on page 40.
Members	The Local users, RADIUS servers, LDAP servers, TACACS+ servers, Directory Service users/user groups or PKI users found in the user group.
Protection Profile	The protection profile associated with this user group.
Delete icon	Delete the user group. You cannot delete a user group that is included in a firewall policy, a dialup user phase 1 configuration, or a PPTP or L2TP configuration.
Edit icon	Edit the membership and options of the group.

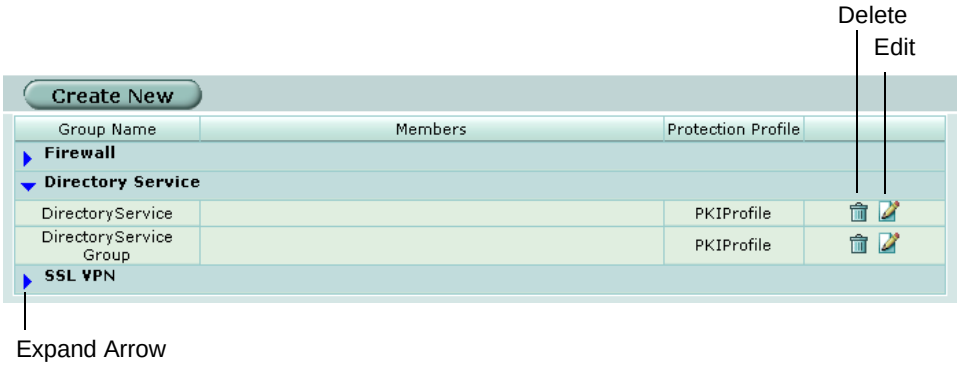
To remove a user group from the FortiGate unit configuration - web-based manager

1 Go to **User** > **User Group**.

2 Select the Delete icon beside the name of the user group that you want to remove.

3 Select OK.

Figure 21: Remove user group



To remove a user group from the FortiGate unit configuration - CLI

```
config user group
  delete <group_name>
end
```

Note: You cannot remove a user group that is part of a firewall policy. Remove it from the firewall policy first.

Configuring authenticated access

When you have configured authentication servers, users, and user groups, you are ready to configure firewall policies and certain types of VPNs to require user authentication.

This section describes:

Authentication timeout

You set the firewall user authentication timeout (Authentication Timeout) to control how long an authenticated connection can be idle before the user must authenticate again. The maximum timeout is 480 minutes (8 hours). The default timeout is 5 minutes.

To set the firewall authentication timeout

1. Go to **User > Authentication**.
2. Enter the Authentication Timeout value in minutes.

   The default authentication timeout is 5 minutes.
3. Select Apply.

You set the SSL VPN user authentication timeout (Idle Timeout) to control how long an authenticated connection can be idle before the user must authenticate again. The maximum timeout is 28800 seconds. The default timeout is 300 seconds.

To set the SSL VPN authentication timeout

1. Go to **VPN** > **SSL** > **Config**.
2. Enter the Idle Timeout value (seconds).
3. Select Apply.

Authentication protocols

User authentication can be performed for the following protocols:

- HTTP
- HTTPS
- FTP
- Telnet

When user authentication is enabled on a firewall policy, the authentication challenge is normally issued for any of the four protocols (dependent on the connection protocol). By making selections in the Protocol Support list, the user controls which protocols support the authentication challenge. The user must connect with a supported protocol first so they can subsequently connect with other protocols. If you have selected HTTP, FTP, or Telnet, user name and password-based authentication occurs: the FortiGate unit prompts network users to input their firewall user name and password. If you have selected HTTPS, certificate-based authentication (HTTPS, or HTTP redirected to HTTPS only) occurs: you must install customized certificates on the FortiGate unit and on the browsers of network users.

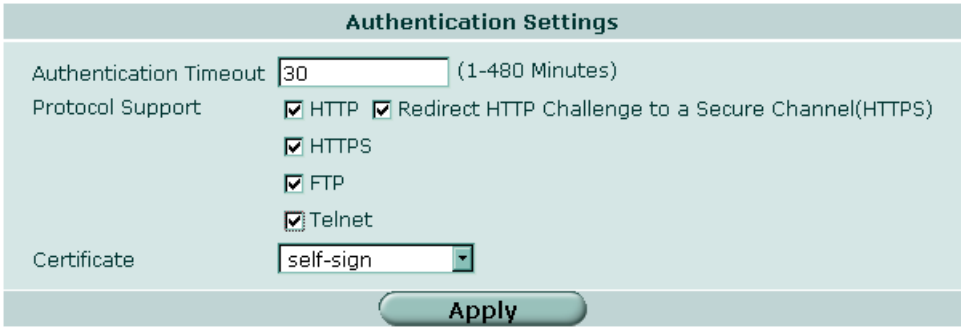
Note: If you do not install certificates on the network user's web browser, the network users may see an SSL certificate warning message and have to manually accept the default FortiGate certificate. The network user's web browser may deem the default certificate as invalid.

Note: When you use certificate authentication, if you do not specify any certificate when you create the firewall policy, the global settings are used. If you specify a certificate, the per-policy setting will overwrite the global setting. For information about the use of certificate authentication, see the *FortiGate Certificate Management User Guide*.

To set the authentication protocols

1. Go to **User > Authentication.**
2. In Protocol Support, select the required authentication protocols.
3. If using HTTPS protocol support, in Certificate, select a Local certificate from the drop-down list.
4. Click Apply.

Figure 22: Authentication Settings



Firewall policy authentication

Firewall policies control traffic between FortiGate interfaces, both physical interfaces and VLAN subinterfaces. Without authentication, a firewall policy enables access from one network to another for all users on the source network. Authentication enables you to allow access only for users who are members of selected user groups.

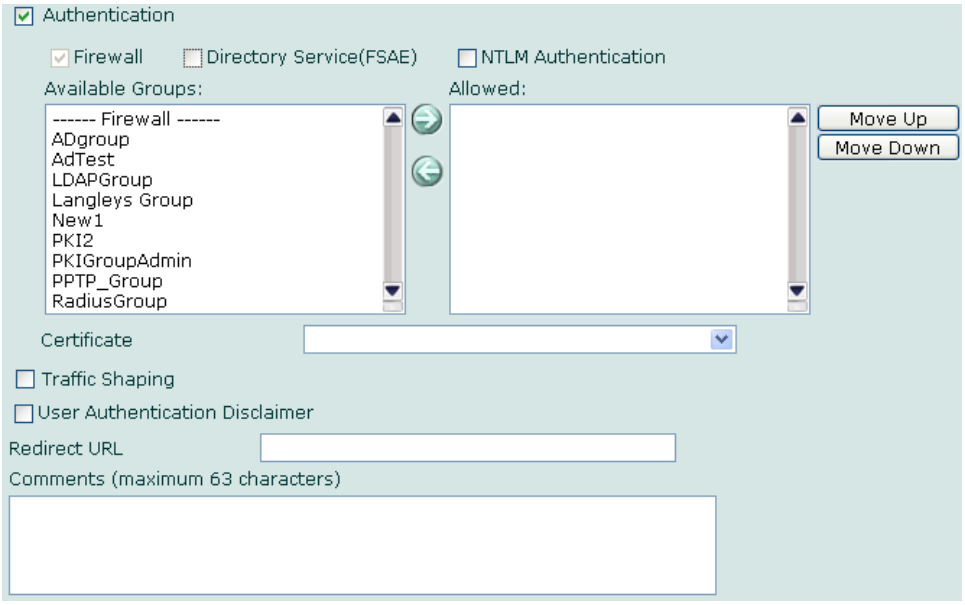
The style of the authentication method varies by the authentication protocol. If you have selected HTTP, FTP or Telnet, user name and password-based authentication occurs: the FortiGate unit prompts network users to input their firewall user name and password. If you have selected HTTPS, certificate-based authentication (HTTPS or HTTP redirected to HTTPS only) occurs: you must install customized certificates on the FortiGate unit and on the browsers of network users, which the FortiGate unit matches.

Note: You can only configure user authentication for firewall policies where Action is set to Accept.

Configuring authentication for a firewall policy

Authentication is an Advanced firewall option.

Figure 23: Advanced Firewall policy options



To configure authentication for a firewall policy

1. Create users and one or more Firewall user groups.

   You must select Type: Firewall for the user group. For more information, see "Users/peers and user groups" on page 33.
2. Go to **Firewall > Policy**.
3. Select Create New (to create a new policy) or select the Edit icon (to edit an existing policy).
4. From the Action list, select ACCEPT.
5. Configure the other firewall policy parameters as appropriate.

   For information about firewall policies, see the Firewall chapter of the *FortiGate Administration Guide*.
6. Select Authentication.

7 One at a time, select user group names from the Available Groups list and select the right-pointing arrow button to move them to the Allowed list. All members of the groups in the Allowed list will be authenticated with this firewall policy.

8 To use a CA certificate for authentication, in Certificate, select the certificate to use from the drop-down list.

9 To require the user to accept a disclaimer to connect to the destination, select User Authentication Disclaimer.

The User Authentication Disclaimer replacement message is displayed. You can edit the User Authentication Disclaimer replacement message text by going to **System > Config > Replacement Messages**.

10 Type a URL in Redirect URL if the user is to be redirected after they are authenticated or accept the disclaimer.

11 Select OK.

Firewall policy order

The firewall policies that you create must be correctly placed in the policy list to be effective. The firewall evaluates a connection request by checking the policy list from the top down, looking for the first policy that matches the source and destination addresses of the packet. Keep these rules in mind:

- More specific policies must be placed above more general ones.
- Any policy that requires authentication must be placed above any similar policy that does not.
- If a user fails authentication, the firewall drops the request and does not check for a match with any of the remaining policies.
- If you create a policy that requires authentication for HTTP access to the Internet, you must precede this policy with a policy for unauthenticated access to the appropriate DNS server.

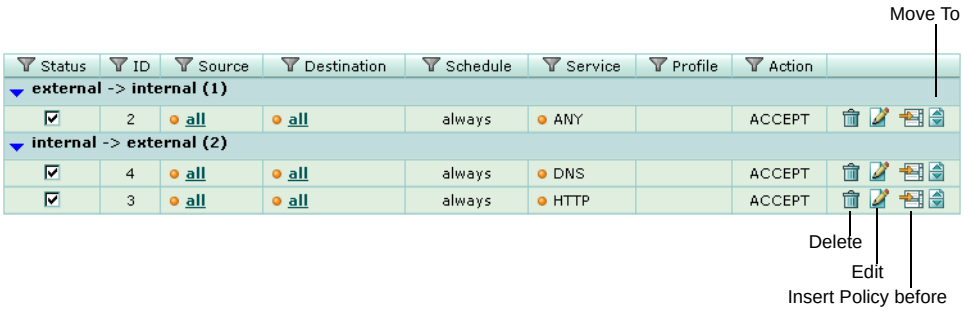
To change the position of the DNS server in the policy list - web-based manager

1 Go to **Firewall > Policy**.

2 If necessary, expand the list to view your policies.

3 Select the Move To icon beside the DNS policy you created.

Figure 24: Firewall > Policy - Move To



The FortiGate unit performs authentication only on requests to access HTTP, HTTPS, FTP, and Telnet. Once the user is authenticated, the user can access other services if the firewall policy permits.

4 Select the position of the DNS policy so that it precedes the policy that provides access to the Internet.

Figure 25: Move firewall policy position selection

5 Select OK.

Configuring authenticated access to the Internet

A policy for accessing the Internet is similar to a policy for accessing a specific network, but the destination address is set to all. The destination interface is the one that connects to the Internet service provider. For general purpose Internet access, the Service is set to ANY.

Access to HTTP, HTTPS, FTP and Telnet sites may require access to a domain name service. DNS requests do not trigger authentication. You must configure a policy to permit unauthenticated access to the appropriate DNS server, and this policy must **precede** the policy for Internet access.

To configure a firewall policy for access to a DNS server - web-based manager

1 Go to **Firewall > Policy**.

2 Select Create New to create a new firewall policy, enter the following information, and select OK.

Source Interface/ Zone	List of source interfaces available. Select the interface to which computers on your network are connected.
Source Address	List of source address names. Select all.
Destination Interface/ Zone	List of destination interfaces available. Select the interface that connects to the Internet.
Destination Address	List of destination address names. Select all.
Schedule	List of available schedules. Select always.
Service	List of available services. Select DNS.
Action	List of available authentication result actions. Select ACCEPT.

Note: Position the DNS server in the firewall policy list according to the guidelines outlined in “Firewall policy order”.

VPN authentication

All VPN configurations require users to authenticate. Authentication based on user groups applies to:

- SSL VPNs
- PPTP and L2TP VPNs
- an IPSec VPN that authenticates users using dialup groups
- a dialup IPSec VPN that uses XAUTH authentication (Phase 1)

This document does not describe the use of certificates for VPN authentication. See the *FortiGate IPSec VPN User Guide* and the *FortiGate Certificate Management User Guide* for information on this type of authentication.

You must create user accounts and user groups before performing the procedures in this section. If you create a user group for dialup IPSec clients or peers that have unique peer IDs, their user accounts must be stored locally on the FortiGate unit. You cannot authenticate these types of users using a RADIUS or LDAP server.

Configuring authentication of SSL VPN users

To configure authentication for an SSL VPN - web-based manager

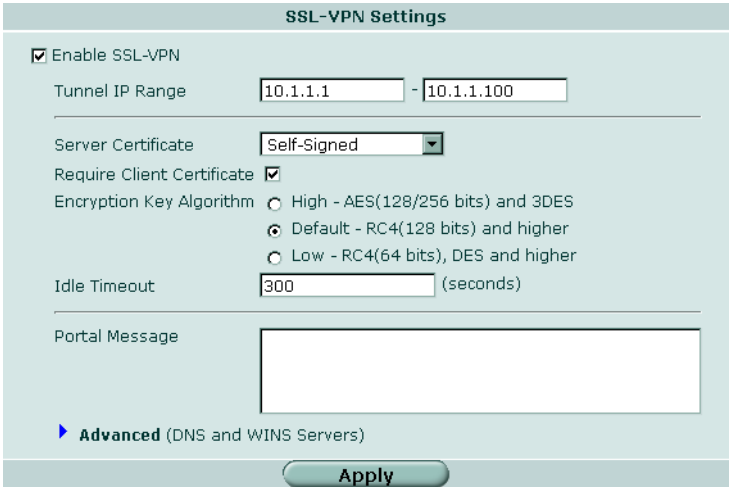
1 Configure the users who are permitted to use this VPN. Create a user group and add them to it.

For more information, see "Users/peers and user groups" on page 33.

2 Go to **VPN > SSL**.

3 Select Enable SSL-VPN and enter information as follows:

Figure 26: SSL VPN Settings



Enable SSL VPN Select to enable SSL VPN connections.

Tunnel IP Range Specify the range of IP addresses reserved for tunnel-mode SSL VPN clients. Type the starting and ending address that defines the range of reserved IP addresses.

Server Certificate	Select the signed server certificate to use for authentication purposes. If you leave the default setting (Self-Signed), the FortiGate unit offers its factory installed (self-signed) certificate from Fortinet to remote clients when they connect.
Require Client Certificate	If you want to enable the use of group certificates for authenticating remote clients, select the check box. Afterward, when the remote client initiates a connection, the FortiGate unit prompts the client for its client-side certificate as part of the authentication process.
Encryption Key Algorithm	Select the algorithm for creating a secure SSL connection between the remote client web browser and the FortiGate unit.
Default - RC4(128 bits) and higher	If the web browser on the remote client can match a cipher suite greater than or equal to 128 bits, select this option.
High - AES(128/256 bits) and 3DES	If the web browser on the remote client can match a high level of SSL encryption, select this option to enable cipher suites that use more than 128 bits to encrypt data.
Low - RC4(64 bits), DES and higher	If you are not sure which level of SSL encryption the remote client web browser supports, select this option to enable a cipher suite greater than or equal to 64 bits.
Idle Timeout	Type the period of time (in seconds) to control how long the connection can remain idle before the system forces the user to log in again. The range is from 10 to 28800 seconds. You can also set the value to 0 to have no idle connection timeout. This setting applies to the SSL VPN session. The interface does not time out when web application sessions or tunnels are up.
Portal Message	If you want to display a custom caption at the top of the web portal home page, type the message.
Advanced (DNS and WINS Servers)	
DNS Server #1 **DNS Server #2**	Enter up to two DNS Servers to be provided for the use of clients.
WINS Server #1 **WINS Server #2**	Enter up to two WINS Servers to be provided for the use of clients.
Apply	Select to save and apply settings.

To configure authentication for an SSL VPN - CLI

```
config vpn ssl settings
   set algorithm
   set auth-timeout
   set dns-server1
   set dns-server2
   set idle-timeout
   set portal-heading
   set reqclientcert
   set route-source-interface
   set servercert
   set sslv2
   set sslv3
   set sslvpn-enable
   set tunnel-endip
   set tunnel-startip
   set url-obscuration
   set wins-server1
   set wins-server2
   end
```

The `tunnel-endip` and `tunnel-startip` keywords are required for tunnel-mode access only. All other keywords are optional.

When you configure the timeout settings, if you set the authentication timeout (`auth-timeout`) to 0, then the remote client does not have to re-authenticate again unless they log out of the system. In order to fully take advantage of this setting, the value for `idle-timeout` has to be set to 0 also, so the client does not timeout if the maximum idle time is reached. If the `idle-timeout` is not set to the infinite value, the system will log out if it reaches the limit set, regardless of the `auth-timeout` setting.

Strong authentication is a form of computer security in which the identities of networked users, clients, and servers are verified without transmitting passwords over the internet. To verify a user's identity, strong authentication combines something the user knows (a user name and password) with something the user has (a client-side certificate). Strong authentication can be configured for SSL VPN user groups using X.509 (version 1 or 3) digital certificates.

Configuring strong authentication of SSL VPN users/user groups

You can use strong authentication to verify the identities of SSL VPN user group members. The accounts for individual users and user groups containing those users have to be created prior to configuring strong authentication, and a firewall encryption policy has to be created to permit access by that user group.To enable strong authentication for an SSL VPN user group:

- Obtain a signed group certificate from a CA and load the signed group certificate into the web browser used by each user. Follow the browser documentation to load the certificates.
- Install the root certificate and the CRL from the issuing CA on the FortiGate unit.
- Configure strong authentication for the group of users having a copy of the group certificate.

Note: The SSL protocol requires that the FortiGate unit identify itself whenever a web browser accesses the web portal login page through an HTTPS link. If you would like to configure the FortiGate unit to identify itself using a CA-issued server certificate instead of the factory-installed self-signed certificate, select the name of the signed server certificate from the Server Certificate list on the SSL-VPN Settings page when you enable strong authentication for SSL VPN users. The server certificate must be installed before you can select it from the list. For more information about server certificates, see the *FortiGate Certificate Management User Guide*.

To enable strong authentication for an SSL VPN

1 Go to **VPN > SSL > Config**.

2 Select Require Client Certificate, and then select Apply.

3 Go to **Firewall > Policy**.

4 Select the Edit icon in the row that corresponds to the firewall policy for traffic generated by holders of the group certificate.

5 Select SSL Client Certificate Restrictive.

6 Select OK.

For information about how to create user accounts and user groups, see the *FortiGate Administration Guide*. For detailed information about configuring SSL VPNs, see the *FortiGate SSL VPN User Guide.*

Configuring authentication of VPN peers and clients

After the required server or group certificates and CA root certificates have been installed on the VPN peers and clients, the peers and clients identify themselves using those certificates when prompted by the FortiGate unit. The FortiGate unit provides its public key to the remote peer or client so that the remote peer or client can send encrypted messages to the FortiGate unit. Conversely, the remote peer or client provides its public key to the FortiGate unit, which uses the key to encrypt messages destined for the remote peer or client.

Configuring authentication of PPTP VPN users/user groups

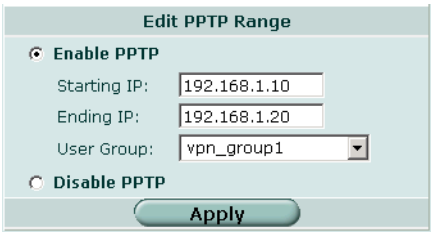
To configure authentication for a PPTP VPN - web-based manager

1 Configure the users who are permitted to use this VPN. Create a user group and add them to it.

For more information, see “Users/peers and user groups” on page 33.

2 Go to **VPN > PPTP**.

Figure 27: PPTP VPN Range settings



3 Select Enable PPTP.

4 Enter Starting IP and Ending IP addresses. This defines the range of addresses assigned to VPN clients.

5 Select the user group that is to have access to this VPN. The FortiGate unit authenticates members of this user group.

6 Select Apply.

To configure authentication for a PPTP VPN - CLI

```
config vpn pptp
  set eip <starting_ip>
  set sip <ending_ip>
  set status enable
  set usrgrp <user_group_name>
  end
```

You also need to define a firewall policy that permits packets to pass from VPN clients with addresses in the specified range to IP addresses that the VPN clients need to access on the private network behind the FortiGate unit. The Action for this firewall policy is ACCEPT, not ENCRYPT, because the allowed user group is defined in the PPTP VPN configuration, not in the firewall policy.

For detailed information about configuring PPTP, see the *FortiGate PPTP VPN User Guide*.

Configuring authentication of L2TP VPN users/user groups

Authentication of a FortiGate L2TP configuration must be done using the `config vpn l2tp` CLI command.

To configure authentication for an L2TP VPN - CLI

```
config vpn l2tp
  set eip <starting_ip>
  set sip <ending_ip>
  set status enable
  set usrgrp <user_group_name>
  end
```

For more information, see the *FortiGate CLI Reference*.

Configuring authentication of remote IPSec VPN users

An IPSec VPN on a FortiGate unit can authenticate remote users through a dialup group. The user account name is the peer ID and the password is the pre-shared key. For information about authentication using peer IDs and peer groups, see the *FortiGate IPSec VPN User Guide*.

Authentication through user groups is supported for groups containing only local users. To authenticate users using a RADIUS or LDAP server, you must configure XAUTH settings. See “Configuring XAuth authentication” on page 58.

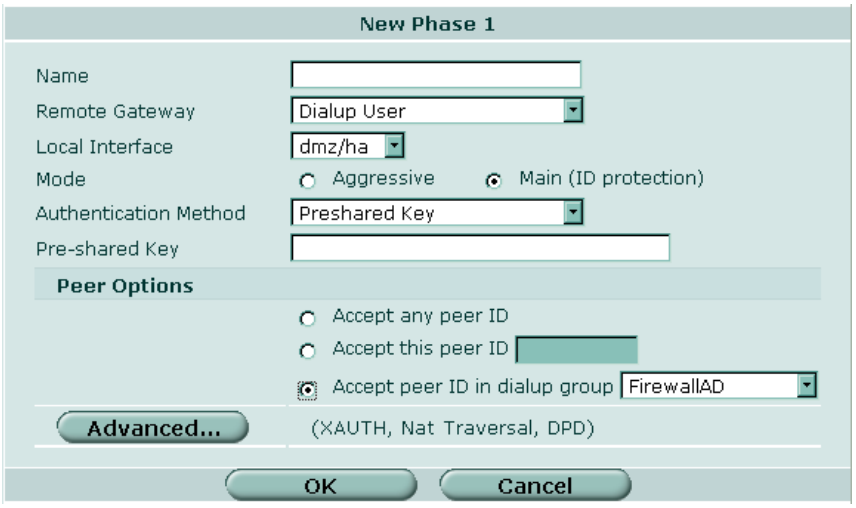
To configure user group authentication for dialup IPSec - web-based manager

1 Configure the dialup users who are permitted to use this VPN. Create a user group with Type:Firewall and add them to it.

For more information, see “Users/peers and user groups” on page 33.

2 Go to **VPN > IPSec > Auto Key (IKE),** select Create Phase 1 and enter the following information.

Figure 28: Configure VPN IPSec dialup authentication



Name	Name for group of dialup users using the VPN for authentication.
Remote Gateway	List of the types of remote gateways for VPN. Select Dialup User.
Authentication Method	List of authentication methods available for users. Select Preshared Key.
Peer Options	Selection of peer ID options available. Select the user group that is to be allowed access to the VPN. The listed user groups contain only users with passwords on the FortiGate unit.

Note: The Accept peer ID in dialup group option does not support authentication of users through an authentication server.

3 Select Advanced to reveal additional parameters and configure other VPN gateway parameters as needed.

4 Select OK.

To configure user group authentication for dialup IPSec - CLI

```
config vpn ipsec phase1
  edit <gateway_name>
    set peertype dialup
    set usrgrp <user_group_name>
  end
```

Note: Parameters specific to setting up the VPN itself are not shown here. For detailed information, see the *FortiGate IPSec VPN User Guide*.

Configuring XAuth authentication

Extended Authentication (XAuth) increases security by requiring additional user authentication in a separate exchange at the end of the VPN Phase 1 negotiation. The FortiGate unit challenges the user for a user name and password. It then forwards the user credentials to an external RADIUS or LDAP server for verification.

XAuth can be used in addition to or in place of IPSec phase 1 peer options to provide access security through an LDAP or RADIUS authentication server. You must configure dialup users as members of a user group who are externally authenticated. None can have passwords stored on the FortiGate unit.

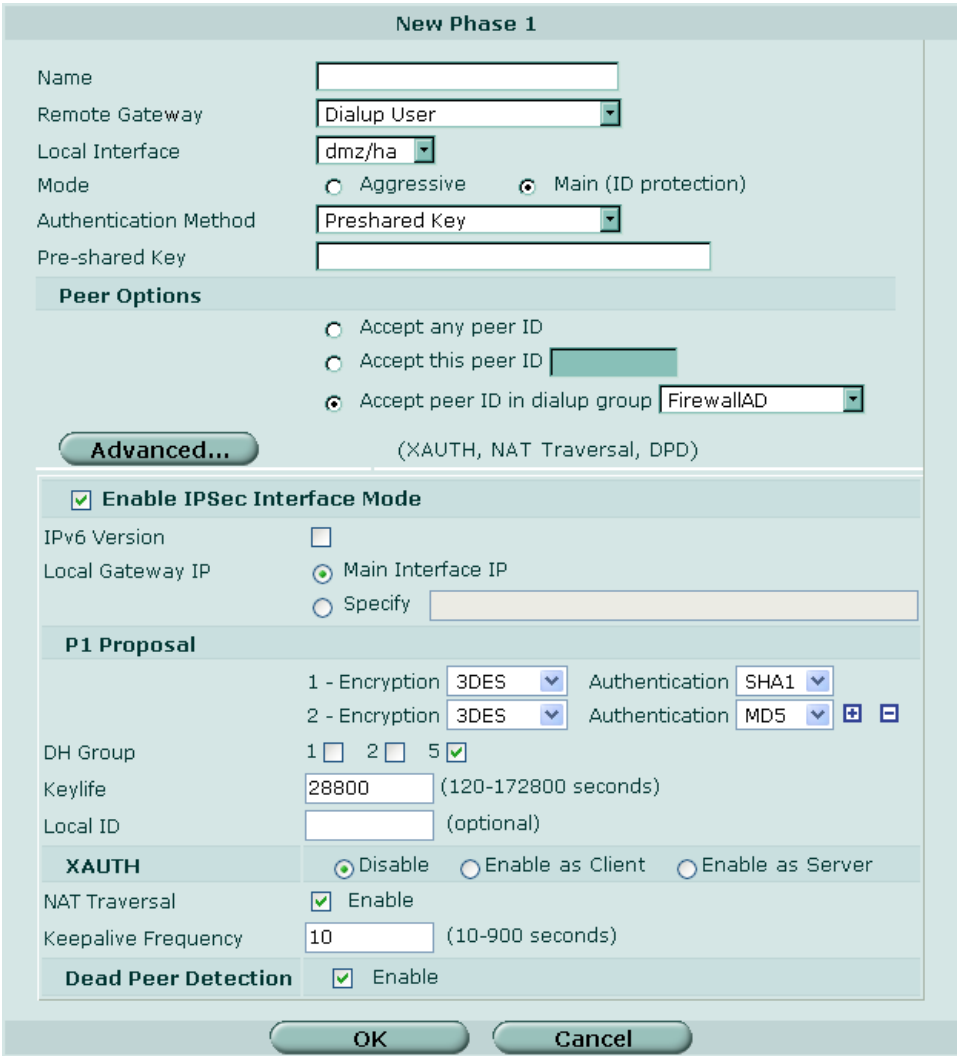
To configure authentication for a dialup IPSec VPN - web-based manager

1 Configure the users who are permitted to use this VPN. Create a user group and add them to it.

For more information, see "Users/peers and user groups" on page 33.

2 Go to **VPN > IPSec > Auto Key (IKE)**, and enter the following information:

Figure 29: IPSec configuration for dialup users



Name	Name for group of dialup users using the VPN for authentication through RADIUS or LDAP servers.
Remote Gateway	List of the types of remote gateways for VPN. Select Dialup User.
Authentication Method	List of authentication methods available for users. Select Preshared Key.

3 Select Advanced to reveal additional parameters and enter the following information.

XAuth	Select Enable as Server.
Server Type	Select PAP, CHAP, or AUTO. Use CHAP whenever possible. Use PAP with all implementations of LDAP and with other authentication servers that do not support CHAP, including some implementations of Microsoft RADIUS. Use AUTO with the Fortinet Remote VPN Client and where the authentication server supports CHAP but the XAuth client does not.
User Group	List of available user groups. Select the user group that is to have access to the VPN. The list of user groups does not include any group that has members whose password is stored on the FortiGate unit.

4 Configure other VPN gateway parameters as needed.

5 Select OK.

For more information about XAUTH configuration, see the *FortiGate IPSec VPN User Guide*.

To configure authentication for a dialup IPSec VPN - CLI

```
config vpn ipsec phase1
  edit <gateway_name>
    set peertype dialup
    set xauthtype pap
    set authusrgrp <user_group_name>
  end
```

Parameters specific to setting up the VPN itself are not shown here. For detailed information about configuring an IPSec VPN, see the *FortiGate IPSec VPN User Guide*.

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