Universal XTACACS Server Ver 1.2 User Guide

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Appendix

Introduction to XTACACS

XTACACS is an authentication protocol specified in RFC 1492. It defines a way to centrally <u>authenticate</u> and <u>user logins over a network.   XTACACS is often used in communication servers, terminal servers, dial-in servers and routers.</u>

An XTACACS system consists of an <u>XTACACS server</u> and one or more <u>XTACACS clients</u>.   When a user logs in an XTACACS client, the XTACACS client will send the username and password to the XTACACS server.   The XTACACS server will <u>authenticate</u> the login attempt and response with either an accept response or a reject response, depending on the correctness of the username/password pair and possibly other user-defined criteria.

In addition to the basic authentication services, <u>Universal XTACACS Server</u> provides an <u>audit log</u> to trace all logins and logouts.   There is also a Login User Monitor, which reports in real time how many users are currently logged into the system.   An accounting package is included in Universal XTACACS Server, which extracts data from the audit log to produce usage reports.   This is most useful for billing or chargeback purposes, as well as for capacity analysis purposes.

XTACACS client capabilities are implemented in almost all <u>Cisco</u> products, including Cisco routers and communication servers. <u>Universal XTACACS Server</u> provides the server platform for the XTACACS system.

RFC1492 specifies two versions of TACACS.   The basic version is simply call TACACS and the enhanced version is known as extended TACACS, or XTACACS.   The RFC1492 standard has been extended later to support both CHAP and ARAP logins.   Universal XTACACS Server support both TACACS and XTACACS, as well as the CHAP and ARAP extensions.

<u>Benefits of the XTACACS System</u>

Benefits of XTACACS

Audit Log

Universal XTACACS Server provides an audit log for all logins and logouts.   This allows you to trace down any unauthorized access.   The existence of the audit log by itself makes authorized users more cautious in correctly using the system, and discourage unauthorized users from attempting to break into the system.

Usage Accounting

Universal XTACACS Server comes with an accounting package which extracts data from the audit log and produce usage reports.   This is most useful for billing and chargeback purposes, as well as for capacity analysis purposes.

Login User Monitor

Universal XTACACS Server has an Login User Monitor, which reports who is currently logged into the system in real time.   This is useful for monitoring system usage.

Secure Central Storage of Username/Password

With the XTACACS System, username/password pairs are stored centrally in an encrypted disk file.   This is much more secure than storing the them distributedly inside unprotected routers and communication servers.

Another benefit of storing username/password pairs in a disk file is that they can be backed up.   In case the routers or communication servers lose their configurations, you do not need to re-enter all the username/password information.

Ease of Administration

When you change a username/password, you do not have to login every routers and communication servers to do the change, you just need to change it once in Universal XTACACS Server.   The Graphical User Interface makes changing user profiles very easy compare to the not-so-friendly user interface of routers and communication servers.   Without the XTACACS System, it is quite difficult to keep username/password up-to-date and to maintain username/password consistency in routers and communication servers.

Supporting Large Number of Users

Without Universal XTACACS Server, it is virtually impossible to manage a large number of username/password pairs.   It is simply impossible to keep track of the large number of username/password pairs distributed on a large number of routers and communication servers and keep them consistent and up-to-date.   As a result, only use a small number of username/password can be used, and they are rarely changed.   This presents serious security loop hole as some many people are using the same account and knows the password.

In constrast, with Universal XTACACS Server, every person can have his/her own username/password. When that person leave, his account can be deleted without affecting other users.

Expire Date

Universal XTACACS Server provides a sophisticated way of authenticating users.   For instance, Universal XTACACS Server supports expire date, so that passwords will lose its function after a certain date.

Authorized Address List Control

In Universal XTACACS Server, each username will be associated with an <u>authorized address list</u>, which defines what devices the user is allowed to <u>login</u> or connect to.   A single <u>user account</u> can thus be used for a number of routers and communication servers, so users do not have to remember multiple username/passwords.   This approach also guarantees username/password consistency among all the routers and communication servers.

<u>Unique Features of Univeral XTACACS Server</u>

Unique Features of Universal XTACACS Server

1. Universal XTACACS Server, being a Windows program, and is much easier to use than other implementations.   For instance, user records are modified using forms instead of complicated command line procedures and vi editors.   Full on-line context senstive help is available to guide in every operation.

2. Being a Windows program, Universal XTACACS Server requires only a PC instead of an expensive UNIX machine.

3. Universal XTACACS Server provides real time logging to screen as well as to a log file.   The audit logger and the Login User Monitor shows to Network Managers in real time what is happening in the network in real time.   Other XTACACS server implementations usually log only to file, and therefore cannot be viewed in real time.

4. Universal XTACACS Server includes an accounting utility to create usage reports.   Source code in Visual Basic 3.0 is available to registered users, allowing them to customized the format of the usage reports.

5. Universal XTACACS Server supports authorized address list, so a username/password account is only valid for certain devices.   In contrast, other XTACACS Server implementations usually do not distinguish IP addresses.   If a user can login one XTACACS client, s/he can use the same username/password for all XTACACS clients.   Universal XTACACS Servers authorized address list concept is much more useful and flexible that the all or none approach of other implementations.

6. Universal XTACACS Server supports the concept of privilege levels.   Users that have Super User privilege can perform super user login (in Cisco's terminology, super user login is called enable mode login).   In contrast, other XTACACS implemenations usually use a single enable account for enable mode login.   It is very difficult to keep track of who is actually logged in as enable mode user, and it is very difficult to keep the enable mode password secret, since so many users are using the same enable account.   Universal XTACACS Servers previlege level concept is certainly a much better approach than the single "enable account method.

Setting Up Universal XTACACS Server

The configuration of <u>Universal XTACACS Server</u> is very simple.   Simply install it in any machine meeting the basic <u>system requirements</u> and start it.   Universal XTACACS Server comes with 4 <u>default user accounts</u> for initial <u>login</u>, so you can use it immediately.   You may later <u>add</u> more <u>user accounts</u> to the system.

Setting Up XTACACS Clients

For the configuration of XTACACS Clients, you have to refer to the clients documentation.   Sample configurations for Cisco products are included here for reference.

Cisco Configuration Example

The following example illustrate hows to configure a Cisco router or communication server to use XTACACS.

The following commands may be used to configure a Cisco router or communication server to use XTACACS for authentication and logging.   First, login as"enable mode" user.   Then type "conf" and choose "configure from terminal".   Type the following commands, then type "Ctrl-Z" to escape and type "write mem" to activate the configuration.   You should now be able to use Universal XTACACS Server for authentication.   The Universal XTACACS Server comes with several default accounts.   You may try to login using the "SuperManager" account to test the system.

1.   tacacs-server host {Universal XTACACS Server IP address}
2.   tacacs-server last-resort password
3.   tacacs-server extended
4.   tacacs-server authenticate enable
5.   enable use-tacacs
6.   enable-password {last-resort password}
7.   tacacs-server notify connect
8.   tacacs-server notify logout
9.   line vty 0 4
10.   login use-tacacs

The detail meanings of the commands are as follows.   You may want to modify the commands to suit your own needs.   For further details, please refer to Cisco's documentation.

1.   tacacs-server host {Universal XTACACS Server IP address}

This command tells the Cisco router or communication server the IP address of Universal XTACACS Server.

2.   tacacs-server last-resort password

This command instructs the Cisco router or communication server that in case it cannot find Universal XTACACS Server, use the enable password as a last resort.

3.   tacacs-server extended

This command configure the Cisco router or communication server to use Extended TACACS.

4.   tacacs-server authenticate enable

This command instructs the Cisco router to use XTACACS to authenticate "enable" login.

Commands 4 and 5 must be used together.   If you type in one without another, you may not be able to login "enable" mode again.

5.   enable use-tacacs

This command instructs the Cisco router that "enable" mode login has to be authenticated using XTACACS.

Commands 4 and 5 must be used together.   If you type in one without another, you may not be able to login "enable" mode again.

6.   enable-password {last-resort password}

This command sets the "enable" password.   This password is normally not used unless the Cisco router or communication server loses connection with Universal XTACACS Server.

7.   tacacs-server notify connect

This command instructs the Cisco router or communication server to send an XTACACS notification message to Universal XTACACS Server if the user connects to other devices (eg. Telnet to other devices).   Universal XTACACS Server will log the message to screen and the log file.

8.   tacacs-server notify logout

This command instructs the Cisco router or communication server to send an XTACACS notification message to Universal XTACACS Server if the user logs out.   Universal XTACACS Server will log the message to screen and the log file.

9.   line vty 0 4

The command tells the Cisco router or communication server that the next command will apply to terminal lines vty 0 to 4.

10.   login use-tacacs

This command instructs the Cisco router or communication server to use XTACACS for login authentication for the lines as specified in the previous command.

Universal XTACACS Server Login

To login Universal XTACACS Server, you need an account with either the XTACACS Operator Privilege or the XTACACS Manager Privilege.

If you try to login but receive the Login Denied message, it is because of one of the following reasons :

- The username does not exist.

- The password is wrong.   Note that passwords are case sensitive.   You must use the correct case when entering password.

- The account does not have the appropriate privilege level.

- The account has already been expired.

For security reasons, Universal XTACACS Server will not tell you exactly why you failed to login.

If you are using Universal XTACACS Server for the first time, you may login using the username SuperManager with no password.   You should then immediately edit user profile to add password to the SuperManager account and other default accounts.

After you have successfully logged in and started up Universal XTACACS Manager, you can logout without exiting Universal XTACACS Server by choosing Manager/Logout under the menu bar.   You can also re-login using another username by choosing Manager/Login under the menu bar.

For security reasons, you should always login using an XTACACS Operator account unless you need to modify user records, in which case you have to login using an XTACACS Manager account.   In the latter case, after you have modified the user records, you should immediately do a Manager/Logout to return to operator mode.

Enable/Disable Start Up Login

Enable/Disable Start Up Login

By default, you have to login everytime you start up Universal XTACACS Server.

You can disable start up login by choosing Option/Disable Start Up Login under the menu bar.   In this case, Universal XTACACS Server will skip the start up login screen and go directly into XTACACS Operator mode.   This is useful if you want Universal XTACACS Server to start up automatically when you power up your PC.   Note that automatically start up is only possible if for registered version of Universal XTACACS Server, because you still have to press the "I Agree" button in the unregistered version.

If you want to re-enable start up login, you can choose Option/Enable Start Up Login under the menu bar.

Note that you need to first login with the XTACACS Manager privilege in order to disable or enable start up login.

Default Accounts

Universal XTACACS Server ships with 4 default accounts with no password to allow you to do initial login and configuration.   After you login, for security purposes you should immediately add passwords to these 4 default accounts to protect them from unauthorized access.

The usernames for the four default accounts are SuperManager, Operator, SuperUser and Normal. They are configured with the XTACACS Manager, XTACACS Operator, Super User and Normal User privilege levels respectively.

SuperManager

SuperManager is a special XTACACS Manager account.   Apart from having the XTACACS Manager privilege, the SuperManager account does not have an expire date and cannot be deleted or even renamed.   In addition, the SuperManager account can access nodes with any IP addresses, and is not limited by the authorized address list.   It is like the root account in UNIX.   In fact, the only possible action on the SuperManager account is changing password, and only the SuperManager him/herself can change his/her own password.

Authentication

When a user logs in an XTACACS client, the client will send the username/password pair to Universal XTACACS Server for authentication. Universal XTACACS Server will send an accept response if all of the following conditions are satisfied, otherwise it will send a reject response.

1.   The username must exist in the user database.

2.   The password must be correct.

3.   The user account must not expire, that is, the current date must not be later than the expire date of the user account.

4.   The user must have sufficient privilege.   For plain login and SLIP address login, the user must have the Normal privilege or the Super User privilege or the XTACACS Manager privilege.   For super user login, the user must have either the Super User privilege or the XTACACS Manager privilege.   For Cisco devices, super user login is equivalent to the enable mode.

5.   The address of the XTACACS client into which the user logs in must be within the range specified in the authorized address list.

Apart from normal and super user login requests, Universal XTACACS Server also authenticate any connect requests such as Telnet and rlogin.   Universal XTACACS Server will permit only those addresses which are in the authorized address list.

Note that to enable connection authentication, you must also configure the XTACACS client to use XTACACS to authenticate connect requests.   For instance, the sample Cisco configuration only uses XTACACS for notification.   Even Universal XTACACS Server deny the connection, the Cisco router or communication server will still go ahead with the connection.   You have to modify line 7 of the Cisco configuration from "tacacs notify connect" to "tacacs authenticate connect" to actually use connection authentication.

Apart from authentication, the XTACACS protocol also defines other type of notification messages such as logout, reload, slip on and slip off, which Universal XTACACS Server will audit log but not authenticate them.

For CHAP and ARAP requests, Universal XTACACS Server will audit log the request, process the request, and return the required encrypted results using the password as the secret key.   However, the user still needs to pass the authentication test points 1, 3, 4 and 5 above.   If the user does not satisfy those tests, Universal XTACACS Server will return a reject message instead.

User Record

Each user will have a user record containing five items - <u>Username</u>, <u>Password</u>, <u>Privilege Level</u>, <u>Expire Date</u>, and <u>Authorized Address List</u>.

To add, edit or delete a user record, you may choose <u>Add User</u>, <u>Edit User</u> and <u>Delete User</u> respectively under the <u>menu bar</u>.

Username

A username can contain alphanumeric characters, spaces and punctuation marks.   Usernames are case insensitive.   For example, the usernames john, JOHN and John will be considered the same.   Each user must have a unique username.

User Record

Password

A password can contain alphanumeric characters, spaces and punctuation marks.   Passwords are case sensitive.   For example, abc, ABC and Abc are considered different passwords.   When you login, make sure your Caps Lock key is set correctly and your password is typed in with the correct case.

User Record

Privilege Level

Universal XTACACS Server support 4 privilege levels - XTACACS Manager, XTACACS Operator, Super User and Normal User.

XTACACS Manager

XTACACS Manager is the highest privilege level in Universal XTACACS Server.   An XTACACS Manager can login Universal XTACACS Server and perform all functions, except modifying the SuperManager account.   The XTACACS Manager can also login any XTACACS client in Super User mode.

XTACACS Operator

XTACACS Operators can login Universal XTACACS Server to start it up, but cannot add, edit, delete or even look at any user record.   Also, XTACACS Operators cannot login any XTACACS client. When an XTACACS Manager logout, Universal XTACACS Server will automatically go into XTACACS Operator mode.   The XTACACS Operator mode allows Universal XTACACS Server to run unattended, while preventing unauthorized staff from changing the user records.

Super User

An account with the Super User privilege can login XTACACS clients in Super User mode.   For Cisco routers and communication servers, Super User mode is equivalent to the enable mode.

On the other hand, the Super User cannot login Universal XTACACS Server.   To do so requires the XTACACS Manager privilege or the XTACACS Operator privilege.

Normal User

An account with the Normal User privilege can login XTACACS clients using plain login or SLIP login, but cannot go into Super User mode.   The Normal User cannot login Universal XTACACS Server. To do so requires the XTACACS Manager privilege or the XTACACS Operator privilege.

User Record

Expire Date

Every user record, with the exception of the SuperManager record, contains an expire date.   A user account cannot be used after the expire date.   All login attempts after the expire date will be denied.   The user record, however, will be kept intact.   You can always re-activate an expired account by editing the expire date to a later date.

The format of the expire date will be according to the Short Form Date settings in the International Session of the Windows Control Panel.   For example, if the format is set to the American Style in the Windows Control Panel, the expire date will be shown in mm-dd-yy format.

Authorized Address List

Every user record, with the exception of the SuperManager record, contains an authorized address list. The list contains 8 lines of the format {addr1} to {addr2}.   A user can only login XTACACS clients with IP addresses that lie within the range specifies in at least one of the lines.   A user will fail to login an XTACACS client if the IP address of the client does not lie within the ranges specified in any of the line.

The authorized address list will also be used by Universal XTACACS Server to authenticate connect (Telnet or rlogin) requests.   The XTACACS client, however, can be configured not to use XTACACS for authentication.   In that case, the response of Universal XTACACS Server will be ignored by the XTACACS client.

The order of the lines is not important, so is the order of the addresses within a line.   For instance, the line 100.100.100.100 to 200.200.200.200 and the line 200.200.200.200 to 100.100.100.100 represents the same range.

If both addr1 and addr2 are blank, the line will be ignored.   If only one of the addresses is blank, the line will be treated as a range with only one address.

The line 0.0.0.0 to 255.255.255.255 represents all possible addresses.   It is the default for new users.

Note that if all of the lines are blank, the user will be unable to login any XTACACS client.

Manager Login

The Manager Login operation is activated by choosing Manager/Login under the [menu bar](). This operation allows an [XTACACS Manager]() to [login]() an already running [Universal XTACACS Server](), which might have to previously logout with [Manager/Logout]().

Manager Logout

The Manager Logout operation is activated by choosing Manager/Logout under the menu bar.   This operation allows an XTACACS Manager to logout without exiting Universal XTACACS Server.   After logout, Universal XTACACS Server will automatically go into XTACACS Operator mode.   This allows Universal XTACACS Server to run unattended, while preventing unauthorized staff from changing the user records.

Manager Login

Adding Users

You can add users by selecting User/Add User under the [menu bar](#).   An Add User form will appear prompting you for [user record](#) information.   After entering all the necessary information, you must press the OK button to create that user.   Pressing the Cancel button will cancel the operation.

Note that to add a user, you must have the [XTACACS Manager](#) [privilege](#).

[Edit User](#)

[Delete User](#)

Editing Users

You can edit users by selecting User/Edit User under the <u>menu bar</u>.   An Edit User form will appear.   You may enter the <u>username</u> of the user to be edited, or you may select the username from a list of existing users.

After you enter or select an existing username, the <u>user record</u> of that user will appear.   You can then freely modify any fields in the user record.

When you finish editing, you press the OK button to confirm the modifications.   Pressing the Cancel button or simply entering another username to edit will cancel the previous modifications.

The Edit User form, as its name implies, only allows you to edit user.   You may not add or delete any user.   To add or delete users, you must user the <u>Add User</u> form or <u>Delete User</u> form respectively.

Note that to edit a user, you must have the <u>XTACACS Manager</u> <u>privilege</u>.

Deleting Users

You can delete users by selecting User/Delete User under the menu bar.   A Delete User form will appear. You may enter the username of the user to be deleted, or you may select the username from a list of existing users.

After you enter or select an existing username, the user record of that user will appear.   You must press the OK button to confirm deleting that user.   Pressing the Cancel button or simply entering another username to delete will not delete the user.

Note that to delete a user, you must have the XTACACS Manager privilege.

Add User

Edit User

Reload User Database

The Reload User Database operation is activated by choosing File/Reload User Database under the menu bar.   This operation will reload all user records from disk.   Unless you have previously do a Save User Database, all modifications to the user database will be overwritten by the Reload User Database operation and be lost.

Save User Database

The Save User Database operation is activated by choosing File/Save User Database under the [menu bar](#).   This operation will save any [user record](#) modification permanently to disk.

[Reload User Database](#)

[Exit](#)

Exit

The exit operation is activated by choosing File/Exit under the menu bar.   Exit will terminate Universal XTACACS Server from running.   If you have modified any user record, Exit will ask you if you want to save the user records to disk or not.

Show Login Users

Choosing Manager/Show Login Users under the menu bar will bring up the Login User Monitor.   The Login User Monitor shows in real time who are logged into the network and which routers, communication servers and lines are they using to access the network.

[Audit Log](#)

[Universal XTACACS Accountant](#)

Audit Log

Universal XTACACS Server logs all XTACACS client requests, including the various types of login requests and notification messages, as well as any important system event (such as system start up time and error messages) to the main screen as well as to a log file. All log messages will be time stamped with date and time. The format of the date will be according to the Short Form Date settings in the International Session of the Windows Control Panel. For example, if the format is set to the American Style in the Windows Control Panel, the expire date will be shown in mm-dd-yy format.

Log Message

Error Message

Screen Logger

The Screen Logger on the main screen allows you to view to last 100 messages. If there are more than 100 messages, the earlier messages will be lost.

Logging to File

For permanent logging, Universal XTACACS Server logs to a disk file in addition to the screen. The default log file is XTACACS.LOG. You may change the log file name at any time by choosing Option/Set Log File under the menu bar. If you change the log file name, the original log file will be closed immediately and the new log file will be used for subsequent logging.

If you specify an existing file as the log file, all subsequent logs will be appended to the log file. The original contents of the log file will be kept intact.

To disable logging to file, simply enter a blank line as the log file name. The original log file will be closed immediately. All subsequent logs will only go to the screen. You can at any time re-enable logging by specifying a valid log file name.

Whereas it is possible to read the log file while logging to that file is active, you should not attempt to manipulate the log file. Before you manipulate a log file, make sure it is closed and not active. You can close a log file by specifying an alternate log file name.

Note : Make sure you have sufficient disk space for logging. If there is insufficient disk space for further logging, or if there is any error with the disk system so that logging cannot proceed, Universal XTACACS Server will retry three times before it will attempt to close the log file. All subsequent logs will go only to the screen.

Universal XTACACS Accountant

Universal XTACACS Accountant

Universal XTACACS Accountant is a utility for usage accounting.   Universal XTACACS Accountant extracts data from an audit log file, analyze the data, and generate a detail usage report which lists out, for each user, when they have logged in and logged out the system, and the total system time consumed.

Universal XTACACS Accountant is most useful for billing and chargeback purposes, as well as for capacity analysis purposes.

To allow customization of the usage report, the source code (in Visual Basic 3.0) of Universal XTACACS Accountant will be available to registered users.   In this way, users can generate reports that best fit their needs.

Audit Log

Login User Monitor

Security Features in Universal XTACACS Server

Universal XTACACS Server stores user records and any registration information in the file XTACUSER.DAT.   The files integrity is protected by a sophisticated hashing algorithm, so it is impossible to modify the file without being detected.   The passwords and registration checksum is protected by encryption, so they cannot be seen in clear text.

To avoid accidentally losing all username/password information, you should regularly make a backup copy of the XTACUSER.DAT and store it in a safe place.

Difference Between Universal XTACACS Server Ver 1.2 and Ver 1.1

1.   Ver 1.2 adds support for CHAP and ARAP.   PAP is supported in both Ver 1.2 and Ver 1.1.

2.   Ver 1.2 does not have a limited as to how many users can be supported.   Ver 1.1 has a limited of 500 users.   Ver 1.2 has been extensively testing with a 5000 users database on a 486/66 machine with 8 Mbytes of RAM, and the response time is generally less than 0.75 seconds.

3.   Ver 1.2 adds the Login User Monitor, which shows in real time who are currently logged into the system.

4.   Ver 1.2 includes an accounting utility that can generate usage reports.

5.   Ver 1.2 allows you to disable start up login, thus making it possible to automatically start Universal XTACACS Server upon power up.

6.   Ver 1.2 authenticate connect requests as according to the authorized address list.   Ver 1.1 always accept any connect requests.

How To Register ?

To register Universal XTACACS Server, the first step is to fill in the registration form in the file register.txt and mail the form with the payment check to Universal Networks.   Alternatively, you can register by phone using your credit card.   Please refer to the file register.txt for details.

What Happens When You Register

When payment is received Universal Networks will send you a license sheet with a registration name, a registration number and a registration checksum. You should then enter them into the Universal XTACACS Server software to register it.   The software, upon verifying the correctness of the registration information using the registration checksum, will automatically upgrade itself to the registered version.   You are only allowed to register one copy of the software for each registration number.   Each registered copy of Universal XTACACS Server software must have a unique registration number.   For details of the license agreement please refer to License Agreement.

No diskette or hard copy documentation will be sent except the license sheet.   You should keep the license sheet in a safe place as it will be your proof of purchase.   You must not disclose the registration checksum to third party to avoid other people from illegally using your registration number.   If an illegal registered copy of Universal XTACACS Server software is found, the registration number will be used to trace where the illegal copy comes from.

To enter the registration information into Universal XTACACS Server, please select Help/Register under the menu bar.   A registration form will appear for you to fill in the registration name, registration number and registration checksum.   After you fill in the registration information, you can press the OK button to register.   If everything goes fine, Universal XTACACS Server will prompt you to save the registration information to disk.

Registration Encouragement Features

Registration form

Registration Encouragement Features

In terms of functionality, the non-registered version has all the functions of the registered version.   This allows you to fully evaluate Universal XTACACS Server.

To encourage you to register, the non-registered version has a reminder window which will pop up every 24 hours within the 30-day evaluation period to remind you to register.

After the 30-day period, if you continue to use the software without registration, the reminder window will pop up every 2 hours.   In addition, after the 30-day period, the reminder window will temporarily disabled Universal XTACACS Server every time it pops up until you press the "I Agree" button, so that you cannot run the server unattended.

The reminder screen will go away forever once you register the software.

How to Register

Registration form

Universal XTACACS Server Registration Form

Ordering by check

To order by check send the following registration form and a check of US$75 to Universal Networks Company Limited at the following address. Payments must be in US dollars drawn on a US bank, or you can send international postal money orders in US dollars.

Universal Networks Company Limited
Suite 1705, Wellborne Commercial Centre
8 Java Road, North Point
Hong Kong.

Fax : (852)-2806-3300
Email : unet@mailhub.hkstar.com
WWW: http://www.hkstar.com/~unet

Ordering by Credit Card

You can order with MC, Visa, Amex, or Discover from Public (software) Library by calling 800-2424-PsL or 713-524-6394 or by FAX to 713-524-6398 or by CIS Email to 71355,470. You can also mail credit card orders to PsL at P.O.Box 35705, Houston, TX 77235-5705.   The product number for Universal XTACACS Server for Windows is #14319.

THE ABOVE NUMBERS ARE FOR CREDIT CARD ORDERS ONLY. UNIVERSAL NETWORKS CANNOT BE REACHED AT THESE NUMBERS.

Any questions about the status of the shipment of the order, refunds, registration options, product details, technical support, volume discounts, dealer pricing, site licenses, non-credit card orders, etc, must be directed to Universal Networks.

Purchase Orders

Universal Networks usually does not accept net 30 days purchase orders, except those from government, accredited educational institutions and major corporations.   Purchase Orders must be submitted on purchase order forms with a purchase order number.

Please be sure to include this registration form with the purchase order.   Due to the extra work involved in processing purchase orders you are encouraged to order by sending a check or using a credit card.

Price List and Volume Discount

Each registration of Universal XTACACS Server cost US$75.   For volume purchase within a single transaction, the following volume discount rates apply.

The 1st copy	US$75
The 2nd to 5th copies	US$60 each
The 6th to 20th copies	US$45 each
The 21st to 99th copies	US$35 each
The 100th copies and above	US$25 each

Universal XTACACS Server Registration Form

Name: _____ Date:_____

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Company:_____
Address:_____

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Please enclosed check payable to Universal Networks Company Limited and mail the registration form to the following address.   Payments must be in US dollars drawn on a US bank, or you can send international postal money orders in US dollars.

Universal Networks Company Limited
Suite 1705, Wellborne Commercial Centre
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Hong Kong.

Fax : (852)-2806-3300
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WWW: http://www.hkstar.com/~unet

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One registered copy of Universal XTACACS Server software may be installed and used only on a single workstation. You may not installed the same registered version on more than one workstation, even if they will not be used simultaneously.   Each workstation requires a separate registration.

You may access the registered version of Universal XTACACS Server on a network, provided that you have obtained individual licenses for the software covering all workstations that will access the software through the network.   For instance, if 8 different workstations will access Universal XTACACS Server software on the network, each workstation must have its own registration, regardless of whether they use Universal XTACACS Server at different times or concurrently.

Distribution

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System Requirements

CPU
386 or above

RAM
4 MB or above

Operating System
Windows 3.1 or above or
Windows for Workgroup or
Windows 95 or
Windows NT

Network requirements
Requires Winsock compliant TCP/IP stack such as Trumpet, Microsoft TCP32, NetManage, FTP, etc..

Universal XTACACS Server User Guide

Log Messages

The followings list all normal log messages.   For error messages, please refer to the Error Messages section.

Log to file {file name} enabled

The specified log file is open for logging.   This should be the first message in the logger when you start up Universal XTACACS Server unless you have previously turn off log to file.

Universal XTACACS Server V1.2

Sign on message of Universal XTACACS Server V1.2.   For informational purposes only.

Server initiated - now listening to request

Universal XTACACS Server has successfully initiated, and is ready to authenticate XTACACS client requests.

Server closed down

Universal XTACACS Server has been closed down by choosing File/Exit or by choosing Close from the top-left corner Windows control box.

{Number} XTACACS user records loaded

Universal XTACACS Server has successfully read the specified number of user records from disk. Occurs during initial start up and also upon Reload User Database.

{Number} XTACACS user records saved

Universal XTACACS Server has successfully saved the specified number of user records to disk.   It is a normal response to the Save User Database operation.

Manager   {username} Login Successful

The specified user has successfully logged in Universal XTACACS Server.   Occurs during initial login, as well as upon a successfully Manager/Login operation.

Manager {username} Login Denied

The specified user has attempted to login Universal XTACACS Server but failed.   Occurs during a failed initial login, as well as upon a failed Manager/Login operation.

Return to operator mode

Manager/Logout has been selected, so Universal XTACACS Server automatically goes into operator mode.

30-day evaluation period expired - please register now

The 30-day shareware evaluation period has expired.   Please register if you intend to continue using Universal XTACACS Server.

Universal XTACACS Server temporarily disabled by reminder window

If you continue to use Universal XTACACS Server after the 30-day evaluation period, then every time the registration reminder window pops up, Universal XTACACS Server will temporarily be disabled until you close the reminder window by pressing the I Agree button.

Reminder windows closed - Universal XTACACS Server re-enabled

Universal XTACACS Server is re-enabled because you have closed the reminder window.

Request received from {IP Address} ignored

A request from the specified XTACACS client has been ignored because Universal XTACACS Server was temporarily disabled by the reminder window.   This occurred because you continue to use Universal XTACACS Server after the 30-day evaluation period without registration.

{username} login request from {IP Address} line {line number} accepted

Universal XTACACS Server has accepted the specified users login request from the specified line of the specified XTACACS client.

{username} login request from {IP Address} line {line number} rejected

Universal XTACACS Server has rejected the specified users login request from the specified line of the specified XTACACS client.

{username} slip address request from {IP Address} line {line number} accepted

Universal XTACACS Server has accepted the specified users slip address request from the specified line of the specified XTACACS client.

{username} slip address request from {IP Address} line {line number} rejected

Universal XTACACS Server has rejected the specified users slip address request from the specified line of the specified XTACACS client.

{username} superuser login request from {IP Address} line {line number} accepted

Universal XTACACS Server has accepted the specified users superuser login request from the specified line of the specified XTACACS client.

{username} superuser login request from {IP Address} line {line number} rejected

Universal XTACACS Server has rejected the specified users superuser login request from the specified line of the specified XTACACS client.

{username} connect request from {IP Address} line {line number} to {IP Address} : {port number} accepted

Universal XTACACS Server has accepted the specified users connect request from the specified line of the specified XTACACS client to the specified port of the specified destination.

{username} connect request from {IP Address} line {line number} to {IP Address} : {port number} rejected

Universal XTACACS Server has rejected the specified users connect request from the specified line of the specified XTACACS client to the specified port of the specified destination because the destination address is not in the authorized address list.

{username} slip on request from {IP Address} line {line number} to {IP Address} accepted

Universal XTACACS Server has accepted the specified users slip on request from the specified line of the

specified [XTACACS client](#) to the specified destination.   The current version of Universal XTACACS Server accepts all slip on request regardless.   This is consistent with Ciscos xtacacd deamon implementation.

{username} slip off request from {IP Address} line {line number} to {IP Address} accepted

[Universal XTACACS Server](#) has accepted the specified users slip off request from the specified line of the specified [XTACACS client](#) to the specified destination.   The current version of Universal XTACACS Server accepts all slip off request regardless.   This is consistent with Ciscos xtacacd deamon implementation.

{username} slip off request from {IP Address} line {line number} to {IP Address} accepted

[Universal XTACACS Server](#) has accepted the specified users slip off request from the specified line of the specified [XTACACS client](#) to the specified destination.   The current version of Universal XTACACS Server accepts all slip off request regardless.   This is consistent with Ciscos xtacacd deamon implementation.

{username} CHAP request from {IP Address} line {line number} processed

[Universal XTACACS Server](#) has processed the CHAP request received for the specified user from the specified line of the specified XTACACS client, and has returned the results to the [XTACACS client](#) as according to the CHAP protocol.

{username} CHAP request from {IP Address} line {line number} rejected

[Universal XTACACS Server](#) has rejected the CHAP request received for the specified user from the specified line of the specified XTACACS client.

{username} ARAPrequest from {IP Address} line {line number} processed

[Universal XTACACS Server](#) has processed the ARAP request received for the specified user from the specified line of the specified XTACACS client, and has returned the results to the [XTACACS client](#) as according to the ARAP protocol.

{username} ARAP request from {IP Address} line {line number} rejected

[Universal XTACACS Server](#) has rejected the ARAP request received for the specified user from the specified line of the specified XTACACS client.

Reload notification from {IP Address}

[Universal XTACACS Server](#) has been notified that the specified [XTACACS client](#) had reloaded.

User {username} added by Manager {username}

The specified [XTACACS Manager](#) has added a new user to the [user database](#) through the [User/Add User](#) operation.

User {username} modified by Manager {username}

The specified [XTACACS Manager](#) has edited an existing [user record](#) through the [User/Edit User](#) operation.

User {username} deleted by Manager {username}

The specified [XTACACS Manager](#) has deleted an existing [user record](#) through the [User/Delete User](#) operation.

SUPERMANAGER password modified by Manager {username}

The specified [XTACACS Manager](#) has modified the [SuperManager](#)s [password](#) through the [User/Edit User](#) operation.

Request received from {IP Address} with invalid type field - request rejected

A message is received from the specified client but it is not a [TACACS or XTACACS](#) message.

TACACS request from {IP address} size incorrect - request rejected

A TACACS message is received from the specified client but its size is either too long or to short.   A reject message is sent in response.

TACACS request from {IP address} type unrecognized - request rejected

A TACACS message is received from the specified client but the request type is unrecognized.   As according to the TACACS standard, valid request types are login, superuser login, logout, connect, slip address, slip on and slip off.

XTACACS request from {IP Address} size incorrect - request rejected

An XTACACS message is received from the specified client but its size is either too long or to short.   A reject message is sent in response.

XTACACS request from {IP Address} type unrecognized - request rejected

An XTACACS message is received from the specified client but the request type is unrecognized.   As according to the XTACACS standard, valid request types are login, superuser login, logout, connect, slip address, slip on, slip off, CHAP and ARAP.

Error Messages

The followings list all error messages.   For normal log messages, please refer to the Log Messages section.

Winsock start up failure

FATAL ERROR

Universal XTACACS Server failed to start up the winsock interface.   Make sure you have installed winsock 1.1 compliant TCP/IP software in your system and set the path correctly.   All modern TCP/IP packages should be winsock 1.1 compliant.

Winsock error - {Reason}

FATAL ERROR

Universal XTACACS Server has failed to complete the specified winsock operation during initialization. This could be due to other applications improperly using your winsock compliant TCP/IP start.   Re-start Windows and try again.

Winsock error when reading request

SERIOUS ERROR

Universal XTACACS Server has encountered a winsock error when attempting to read in a data packet from winsock.   Re-start Windows and try again.   If the problem continue try to use another TCP/IP software.

Winsock error when sending reply

SERIOUS ERROR

Universal XTACACS Server has encountered a winsock error when attempting to read in a data packet from winsock.   Re-start Windows and try again.   If the problem continue try to use another TCP/IP software.

False winsock interrupt - no data received

WARNING

Universal XTACACS Server has encountered a false winsock read interrupt in which there is actually no data packet to read.   This should never happen on a bug free TCP/IP stack.   If the problem continues and occurs very frequently, try to use another TCP/IP software.

Universal XTACACS Server start up failure - error when loading user records : {Reason}

FATAL ERROR

Universal XTACACS Server has attempted to open the user database file XTACUSER.DAT during initialization but failed.   As the Universal XTACACS Server has no way to authenticate login without the user records, it will not start.   If this problem continues after you retry several times, the file may have been corrupted.   To recover, you may have to copy your backup XTACUSER.DAT file to the directory where Universal XTACACS Server is installed.   If you do not have any backup file, then you may have to re-install Universal XTACACS Server.   You should backup the user database file XTACUSER.DAT regularly to avoid disk crash damaging your user records.

Error when loading user records : {Reason}

SERIOUS ERROR

Universal XTACACS Server has attempted to open the user database file XTACUSER.DAT during Reload User Database operation but failed.   If this problem continues after you retry several times, the file may have been corrupted.   To recover, you may have to copy your backup XTACUSER.DAT file to the directory where Universal XTACACS Server is installed.   If you do not have any backup file, then you may have to re-install Universal XTACACS Server.   You should backup the user database file XTACUSER.DAT regularly to avoid disk crash damaging your user records.

Error when saving user records

SERIOUS ERROR

Universal XTACACS Server has attempted to save the user records to the disk file XTACUSER.DAT during Save User Database but failed.   Check to see if the disk is full.

Cannot Open Log File

SERIOUS ERROR

Universal XTACACS Server has attempted to open the log file but failed.   Check to see if the disk is full, or if any other program is currently using the log file.   Also check to see if the specified log file name is correct.

Error when writing to log file

SERIOUS ERROR

Universal XTACACS Server has attempted to write to the log file but failed. Check to see if the disk is full, or if any other program is currently using the log file.

Closing log file - too much errors

WARNING

Universal XTACACS Server has attempted to close the log file because of three consecutive errors, but failed. Check to see if the disk is full, or if any other program is currently using the log file.

Error when closing log file

WARNING

Universal XTACACS Server has attempted to close the log file but failed. Check to see if the disk is full, or if any other program is currently using the log file.

Universal XTACACS Server Menu Bar

File

[File/Reload User Database](#)

[File/Save User Database](#)

[File/Exit](#)

Manager

[Manager/Login](#)

[Manager/Logout](#)

Show [Login Users](#)

User

[User/Add User](#)

[User/Edit User](#)

[User/Delete User](#)

Option

[Option/Set Log File](#)

[Option/Enable Start Up Login](#)

[Option/Disable Start Up Login](#)

Help

Help/Help

Help/About

[Help/Registration](#)

[Universal XTACACS Server User Guide](#)

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