RADIUS How To Guide

Contents

RADIUS How To Guide

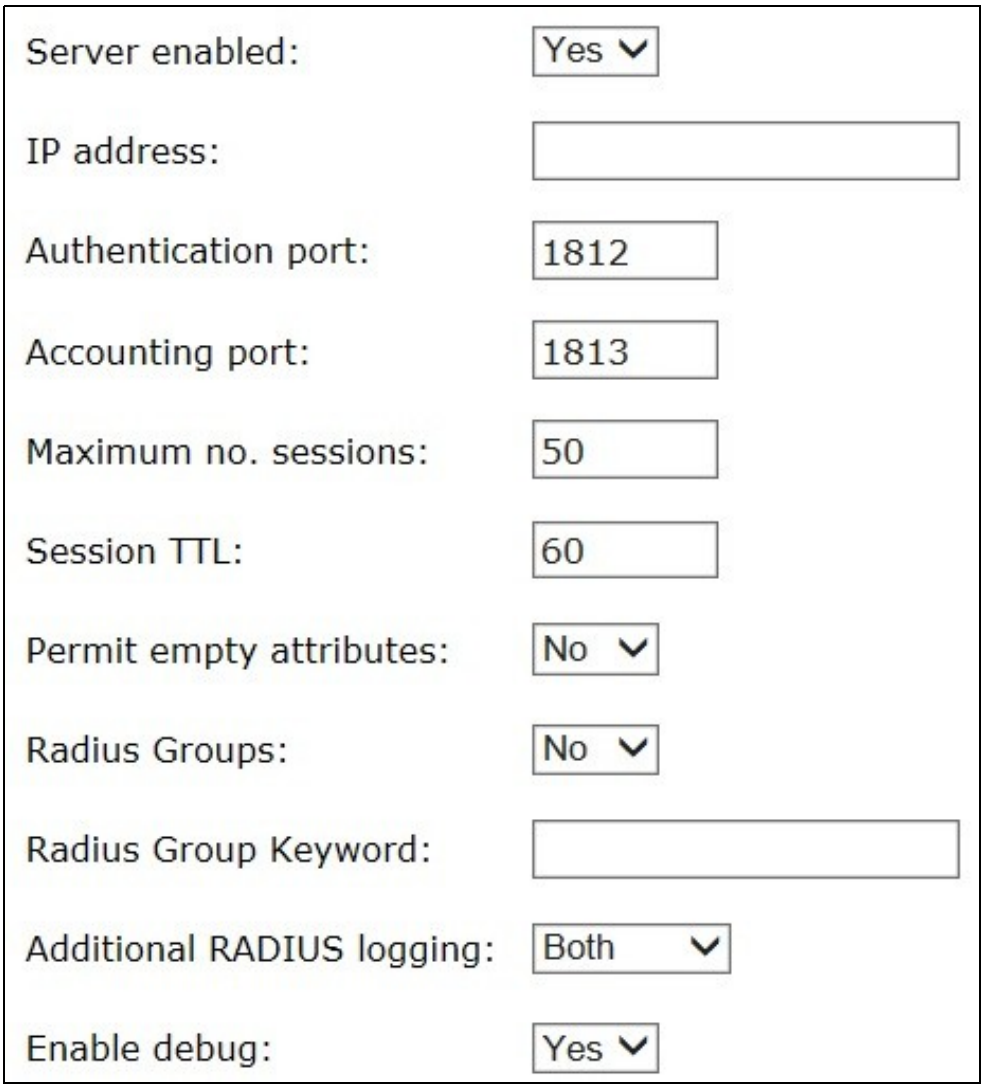
Overview

Swivel is a RADIUS server and can accept requests from Network Access Servers (NAS/RADIUS Clients) that ask authentication information from the Swivel RADIUS sever. For non RADIUS devices, Swivel supports an XML authentication.

Configuring the Swivel server

From the Swivel Administration Console select RADIUS\Server

Options are:



Swivel RADIUS server options

Server enabled: Yes/No, default No, select Yes to start the Swivel server

IP address: The IP address of the Swivel server interface which will accept authentication requests. To accept requests on multiple interfaces, leave the entry blank. Note: Do not use the VIP for this address as the RADIUS server will only start if the VIP is assigned and RADIUS responses will come from the server real IP address.

Authentication port: default 1812, commonly also 1645 is used. This is UDP

Accounting port: default 1813, commonly also 1646 is used. This is UDP

Maximum no. sessions: default 50, Maximum number of concurrent requests

Permit empty attributes: Yes/No, Enable/disable the servicing of RADIUS requests containing empty attributes. The RADIUS standard states that empty attributes should not be used, and by default these non-conforming requests will be dropped. Enabling this option will allow the RADIUS server to operate with clients who do not adhere to the standard and send empty attributes.

Additional RADIUS logging: None/Failure/Success/Both, Enable/disable additional information, this will add the RADIUS entries for successful and failed RADIUS authentication attempts

Enable debug: Yes/No, Enable/disable, debugging of RADIUS authentication

Radius Groups: Yes/No, Allows group membership information to be passed back with the RADIUS response, using the parameters defined in the Vendor Group on the NAS. Enabling this option will return the Swivel Group as a RADIUS Group.

Radius Group Keyword: default POLICY, This restricts the group membership information to only pass back the group names that include this keyword

Session TTL: 1-600 seconds

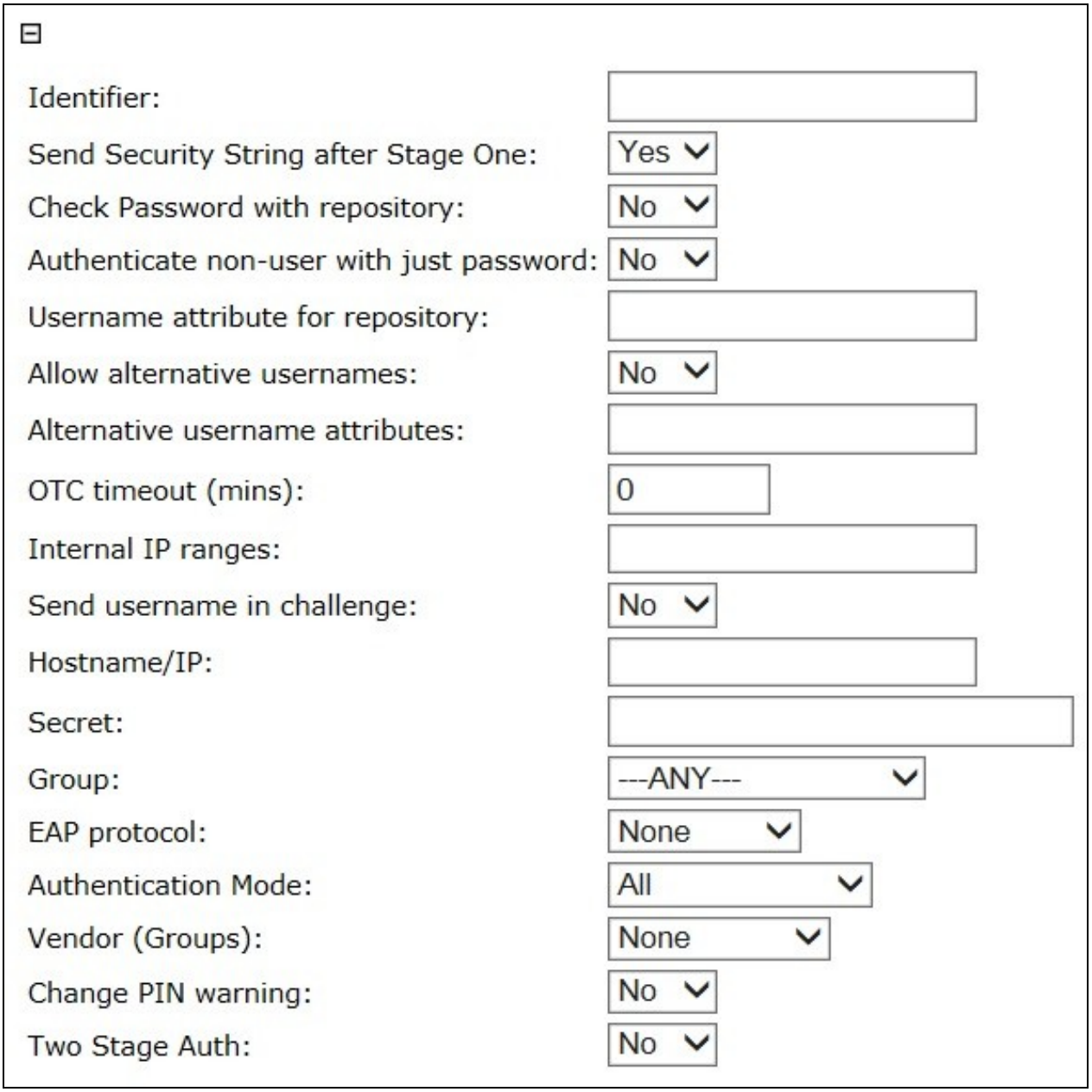
Use Challenge/Response: Yes/No

Configuring the NAS Client Information

The RADIUS NAS allows devices to communicate with the Swivel core for authentication information. Only devices specified by IP address and shared secret are permited to authenticate. It's not possible to create multiple NAS entries from the same IP address.

From the Swivel Administration Console select RADIUS\NAS

Options are:



NAS: Identifier: Descriptive name of access device, this will be reported in logs

Send Security String after Stage One: Yes/No, Swivel 3.9.6 onwards, send a security string when stage one of Two stage Auth is used. Allows Multiple Security strings and Mobile Client.

Check Password with repository Yes/No, This allows the repository password to be checked against the repository, by Swivel for the specified NAS. Note that this option is restricted to PAP authentication. This feature is generally used where the access device can only authenticate against one authentication device. This option was moved from a global setting to a RADIUS NAS and Agent setting in Swivel 3.8. See Password How to Guide and LDAP How to Guide.

Authenticate non-user with just password: Yes/No, swivel 3.9.6 onwards. This allows a non Swivel user to be authenticated with just their repository password. See Password How to Guide. See also RADIUS Static Password.

Username attribute for repository: Default blank, if Check Password with repository is enabled, this defines which attribute is passed to the repository as the username. If blank, the account username and fully-qualified domain name (for LDAP) are both tried.

Allow alternative usernames: Yes/No, Swivel 3.9.1 onwards. Allow the user to authenticate with differing usernames.

Alternative username attributes Swivel 3.9.1 onwards. Comma separated list of attributes allowed for authentication. See User Attributes How To.

OTC timeout (mins): default 0, If > 0, the time (in minutes) before a user on the internal network needs to reauthenticate to Swivel. See the next option for what constitutes an internal user. External users must always reauthenticate to Swivel.

Internal IP ranges: The IP ranges which constitute the internal network, when the OTC timeout option is active. These can be specified in CIDR notation, and multiple networks can be specified, separated by commas. For this feature to work, the RADIUS NAS must be capable of sending the calling station ID to the Swivel server as part of the RADIUS request. Otherwise, the NAS IP will be used.

Send username in challenge: Yes/No, default No, if enabled, the challenge sent by Swivel after a successful password in a two-stage authentication will consist of the username followed by a colon, then the usual challenge. This allows for customisation of NAS challenge pages where the username is not included in the page.

Hostname/IP: IP address of the access device

Secret: a shared secret, this can be an alphanumeric string that must be also entered on the access device

Group: ---ANY---/Swivel groups, allows only specific groups to authenticate to access device

EAP protocol: None/EAP-MD5/LEAP, Allows RADIUS EAP protocol to be specified, choices being EAP-MD5 and LEAP. If this is left as None, RADIUS will support PAP, CHAP and MS-CHAP

Authentication Mode: All/Dual Channel/Single Channel, allows only specific authentication method to authenticate to access device

Vendor (Groups): default: None, Vendor Specific parameters, possible options are:

- None
- Cisco
- Fortinet
- Watchguard
- PaloAlto

Change PIN warning: Yes/No, If this option is set when a user authenticates via RADIUS and their PIN is due to expire, rather than send a RADIUS-Accept packet Swivel will send a RADIUS-Challenge packet. If supported by the access device it can be used to redirect the user to a change-PIN page.

Change PIN warning: Yes/No, default: No, When a user is authenticates, Swivel can return a change PIN response if the user is required to change their PIN, allowing access devices that support this function to redirect to a Change PIN page.

Two Stage Auth: Yes/No, default: No, Two Stage Authentication, see Two Stage Authentication How to Guide

Swivel RADIUS Proxy

See Also RADIUS Proxy How to guide

Swivel PINsafe 3.7 onwards can proxy RADIUS requests against other RADIUS servers. This allows Swivel to be inserted into an existing RADIUS infrastructure such as where tokens are being used, so such solutions can be used in parallel.

The RADIUS proxy is set on the Swivel Administration Console under Server/Peers

The RADIUS proxy functions in the following manner.

Peers: Name: Descriptive Name used for logging information

Hostname/IP: Hostname/IP address of RADIUS server to be proxied against

HTTP port: Default: 8080. Not used in RADIUS Proxy

SSL: Options: Yes/No, Default: No. Not used in RADIUS Proxy

Context: Default: pinsafe. Not used in RADIUS Proxy

RADIUS authentication port: Authentication port to be used for RADIUS server to be proxied against. Usually 1812 or 1645

RADIUS accounting port: Accounting port to be used for RADIUS server to be proxied against. Usually 1813 or 1646

Shared secret: A shared secret which must be the same as that entered on the RADIUS server to be proxied against.

RADIUS Proxy: Options Never/On Passcode/Unknown User. Default: Never. How to handle the RADIUS password that the Swivel server receives and if it should be proxied, the options for this are:

- Never: No Proxy request is made.
- Unknown User: If the user is not in the Swivel Database then a proxy request is made.
- On Passcode: If it sees that the user has submitted a one-time code that is at least 6 characters long and that the user: Either (a) does not have an account: Or (b) has an account but has not started a session (eg requested a TURing image or on-demand SMS) then it is treated as a third party code and passed to another RADIUS server.
- No User Session: Available in Swivel PINsafe 3.8 onwards. PINsafe can proxy RADIUS requests purely in the absence of a local session for the user making the RADIUS request.

Configuring the Access Device

Exact options will vary according to access device, but they are typically:

Primary RADIUS Server/Secondary RADIUS Server: allows configuration of more than one RADIUS server for redundancy, the primary RADIUS server is tried and if a reply is not received, then the secondary server is tried.

RADIUS server Name or **Identifier:** Name of Swivel server

Hostname/IP: IP address of the Swivel server

Secret: a shared secret, this can be an alphanumeric string that must be also entered on the Swivel server NAS entry

One Time Code or token: this will prevent the access device reusing an authentication code

PAP

With RADIUS PAP protocol, the NAS sends username and password and the RADIUS server authenticates. With all other RADIUS protocols, the NAS requests the password for the user and authenticates itself. Also see Mobile Phone Client RADIUS Authentication

Check Password With Repository

This requires the use of PAP, see Passwords with PINsafe How to Guide

RADIUS Groups

By default, the RADIUS group is set to None, and does not send back a RADIUS group. On the Swivel Administration console the setting for *Enable Groups* under RADIUS\Server, when enabled, will return the users Swivel group membership as a RADIUS group. If the vendor group is not listed test with other vendor groups. See also RADIUS Groups.

The vendor Watchguard uses Filter ID 11 for group and can be used for Juniper.

Calling Station ID

Calling Station ID is a standard RADIUS attribute which indicates the IP address of the authentication requester. It has to be forwarded by the NAS (i.e. Access device such as the Netscaler)), since the Swivel server does not have a direct connection to the client machine. If the NAS Access device can be configured to forward calling station ID, then recent versions of Swivel will record this information.

Mobile Client (Java Midlet or Swivlet)

One thing to be aware of is that when using RADIUS authentication with the Swivlet, except for the PAP protocol, you must use every string from the phone for authentication. If you generate a string and don't use it, authentication will fail until you Top Up again. This is an unavoidable consequence of the way most RADIUS protocols work. Also see Mobile Phone Client RADIUS Authentication

Testing

Check the Swivel log for authentication requests. If there are no authentication requests check:

- The RADIUS connection is reaching Swivel and not blocked by a firewall
- The Swivel RADIUS server is running. Stop the Swivel RADIUS service, then restart and check the log to see it has started.

Even if there is no NAS entry or a failed authentication, a RADIUS request to the Swivel server should be seen.

RADIUS: <7> Access-Accept(2) LEN=77 172.16.1.99:47186 Access-Request by username succeeded

Successful RADIUS request

RADIUS_MSCHAPV2 MSCHAP V2 RADIUS request

RADIUS_CHAP RADIUS request

RADIUS_PAP RADIUS request

Known Issues

VIP Configuration

Do not use the VIP for the RADIUS server address as the RADIUS server will only start if the VIP is assigned, see RADIUS server failed to start

RADIUS requests sent to the VIP will send responses from the real IP address and are often rejected by the access device, to overcome this specify the real IP address.

The Single Channel images may use the VIP and the authentication may be sent to a different Swivel instance, to overcome this it is possible to use Session Sharing or RADIUS Proxy

MS-CHAP and MS-CHAP V2 Account Locking

RADIUS clients using MS-CHAP and MS-CHAP V2 may not lock acounts due to failed login attempts in Swivel up to version 3.10.4

EAP MSCHAPv2

Swivel currently does not support EAP MSCHAPv2

Special Characters

Up to version and including 3.9.7 a '-' or a ',' were treated as characters used with Mobile Phone Client and SMS for Multiple Security Strings, if a password contained these and was 3 characters from the end, it would be incorrectly interpreted as a Sting Index, This is resolved in Swivel 3.10.4 for users with a PIN. PINless users remain affected by this in versions up and including 3.10.4.

Removing NAS entry corrupts other Shared Secrets

When a NAS entry is removed it may corrupt the other NAS entries. This can be resolved by upgrading to Swivel version 3.10. For previous versions re-enter the RADIUS NAS secret.

RADIUS Troubleshooting

Check the Swivel logs for RADIUS messages.

Has the RADIUS service been started, on the Swivel Administration Console, select RADIUS/Server, and ensure **Server enabled** is set to yes.

To check that RADIUS is starting ok, set Server enabled to No, Apply the settings, then set to Yes, and Apply the settings again. Check the Swivel logs which should show the following

```
INFO RADIUS server manager started.
INFO RADIUS: RADIUS Receiver Started: listening on port 1813
INFO RADIUS: RADIUS Receiver Started: listening on port 1812
```

AGENT_ERROR_BAD_OTC

Badly formed Attribute Block

Does not have a NAS entry

RADIUS Filter ID

RADIUS server failed to start

Mobile Phone Client RADIUS Authentication

RADIUS Testing

Error_Messages

RADIUS: <72> Access-Request(1) LEN=130 192.168.1.1:9328 Access-Request by domain\user Failed: AccessRejectException: AGENT_ERROR_NO_USER_DATA

Where the domain name is required to differentiate users of the same name, set the Swivel repository username attribute to be userPrincipalName, and instead login with username@domain. You are unable to pass DOMAIN\username in a RADIUS request.

Access-Request by qwerty Failed: AccessRejectException: AGENT_ERROR_METHOD_UNSUPPORTED

Login failed for user: qwerty, error: The chosen RADIUS authentication method is not supported RADIUS_EAP_OTHER,0

An EAP RADIUS request has been received but the Swivel RADIUS client has not been configured to use EAP.

RADIUS: <15> Access-Request(1) LEN=161 192.168.1.1:57393 Access-Request by qwerty RESPONSE PACKET NOT SENT - FAILED VALIDATION AccessDropException: EAP Packet reply to EAP-Identity response packet has no State attribute or has timed out.

192.168.1.1 client:RADIUS_ACCESS_DROP_EXCEPTION, AccessDropException: EAP Packet reply to EAP-Identity response packet has no State attribute or has timed out.

RADIUS client is using EAP MSCHAPv2 which is currently not supported

RADIUS: Exception in thread: DATAGRAM LEN = 46 FROM 192.168.1.10:62831 java.lang.NullPointerException at com.swiveltechnologies.pinsafe.server.user.repository.AbstractRepositoryBase.getAttribute(AbstractRepositoryBase.java:149) at com.swiveltechnologies.pinsafe.server.radius.RadiusAccess.authenticate(RadiusAccess.java:480) at com.theorem.radserver3.RADIUSSession.o(Unknown Source) at com.theorem.radserver3.RADIUSSession.e(Unknown Source) at com.theorem.radserver3.RADIUSSession.run(Unknown Source) at java.lang.Thread.run(Unknown Source)

This error can be seen when **Authenticate non-user with just password:** is enabled but the user does not exist in Swivel or the repository against which it is checked.