Pulse Secure®

Steel-Belted RADIUS

Release Notes
SBR 6.26-R1

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Revision History

The following table lists the revision history for this document.

Revision	Date	Description
6.26	May 2019	6.26-R1 Updates

Contents

Introduction

These release notes document for Steel-Belted RADIUS software for Release 6.26-R1. Before you install or use your new software, you should read these release notes, especially the "Known Issues in 6.26-R1 Release" section and "Limitations" section.

If the information in these release notes differs from the information found in the product documentation, follow these release notes.

You can find these release notes in Adobe Acrobat (PDF) format on the Pulse Secure Technical Publications Web page, which is located at: https://www.pulsesecure.net/techpubs.

Product information for Steel-Belted Radius can be found at https://www.pulsesecure.net/products/steel-belted-radius/.

System Requirements

Following are the system requirements required to support the Steel-Belted RADIUS software.

Linux

The Steel-Belted Radius for Linux server software package includes the server daemon, various dictionary and database files to support authentication, the SBR Administrator application, which provides an administration user interface and the Java Web Server (Jetty) that will run as a separate process/service to host the Admin WebGUI application.

Supported Operating Systems

- RedHat Enterprise Linux
- SUSE Linux

Note: Release 6.2 drops support for RedHat Linux ES/AS version 5.x and SuSE Linux 11.x.

Qualified Operating Systems

- RHEL 6.2, 64-bit
- RHEL 7.2, 64-bit
- RHEL 7.3, 64-bit
- SUSE 12, 64-bit
- SUSE 15, 64-bit

Windows

The Steel-Belted Radius for Linux server software package includes the server daemon, various dictionary and database files to support authentication, the SBR Administrator application, which provides an

administration user interface and the Java Web Server (Jetty) that will run as a separate process/service to host the Admin WebGUI application.

Note: To enable Audit log, enable it in radius.ini file. Please refer the SBR Reference Guide for clear instructions.

Supported Operating Systems

- Windows Server 2016
- Windows Server 2012
- Windows Server 2008
- Windows 10

Qualified Operating Systems

- Windows 2016 Server, R2 64 bit
- Windows 2012 server R2, 64-bit
- Windows 2008 server R2, 64-bit
- Windows 10 Enterprise, 64-bit

Note: From SBR-E 6.24 release onwards, Windows 2003 server is not supported.

SBR Administrator – Legacy GUI

Note: SBR 6.26 introduces Web Browser based GUI for SBR Administration and hence the Legacy GUI application will soon be deprecated in the upcoming SBR Releases.

Note: Webdeploy cache in the client machine where SBR-E Administrator GUI is launched, needs to be cleared in the following scenarios:

1. Users upgrading from SBR-E lower releases to SBR-E 6.23 - Reason being Administrator GUI has been modified due to the feature "Dual Stack IPv4/v6"
2. Users upgrading from SBR-E lower releases to SBR-E 6.24-R3 - Reason being Administrator GUI (client module) has been enhanced to provide TLS1.2 support

To clear webdeploy cache, if SBR-E Administrator GUI is launched as "admin" user, then go to "C:\Users\admin\AppData\Roaming\Pulse Secure\WebDeployer" folder and clear all the files.

Qualified Browsers and the corresponding JAVA Runtime Environment

Internet Explorer

- SBR Administrator GUI launches only on 32-bit Internet Explorer

- Internet Explorer version until 11.0.42 has been qualified

Mozilla Firefox

- SBR Administrator GUI launches only on 32-bit Mozilla Firefox
- Mozilla Firefox version until 51.0.1 has been qualified

JAVA Runtime Environment

- SBR Administrator GUI until SBR-E 6.23 has been qualified from JAVA 1.7 to JAVA 1_8_0_101
- From JAVA 1_8_0_131, Oracle has been discontinued MD5 RSA support and therefore all SBR-E release until 6.23 will not be launching Administrator GUI successfully due to security checks
- In SBR-E 6.24, Administrator GUI binaries have been signed with SHA-2 and therefore SBR-E Administrator GUI will be launched successfully with JAVA1_8_0_131 version

SBR Administrator - Web Browser based GUI

Supported Browsers

- Google Chrome
- Mozilla Firefox
- Microsoft Edge
- Opera

Qualified Browsers

The following table lists the qualified browsers

Browser	Version
Google Chrome	73.0 and above
Mozilla Firefox	66 and above
Microsoft Edge	42 and above
Opera	60 and above

SQL Database Servers

The following databases are recommended for use with the Steel-Belted Radius server running on Linux using JDBC or running on Windows using ODBC:

Database	Connection	Filename
Oracle 11G	ODBC Connection	instantclient-basic-win-x86-64-11.2.0.1.0.zip
Oracle 11G	JDBC Connection	oracle-instantclient11.2-basic-11.2.0.1.0-1.x86_64.rpm
MS-SQL 2014	ODBC Connection	ODBC Driver 11 for the SQL Server
MS-SQL 2014	JDBC Connection	sqljdbc_3.0.1301.101_enu.tar.gz

Qualified Operating Systems Platforms for SBR while connecting to above Database Servers

- RHEL 6.2, 64-bit
- RHEL 7.2, 64-bit
- Windows 2012 server R2, 64-bit
- Windows 2008 server R2, 64-bit

SQL Database Clients

- If you use Oracle stored procedures on a Steel-Belted Radius server running Windows, choose the Oracle 9i client.

    Note: Oracle 10 typically requires a patch for Oracle bug 4516865 to correct the installed Oracle file access modes.

LDAP Servers

Steel-Belted Radius Server acts as an LDAP client in order to query various LDAP servers for authentication and authorization information. It uses "OpenLDAP" client APIs in Linux platform and "Winldap" client APIs in Windows platform.

Qualified LDAP Servers

- Active Directory Server in Windows Server 2008 R2
- Open LDAP Server 2.4.44 in RHEL 6.7

New Features in 6.26-R1 Release

The following table describes the major features that are introduced in this release.

Feature	Description
SBR Administrator using WebGUI	Existing SBR Administrator GUI is the predominantly used interface by administrators for configuring and provisioning SBR server. • The focus of this feature is to provide a Web and HTTPS based (thin client) admin GUI for SBR, replacing the existing standalone XUI client (thick) running on the user workstation. • Since the legacy GUI had dependencies with the JAVA version installed on the user workstation, it caused a lot of inconvenience to administrators. The new Web GUI removes this by providing the application in web browser. Java Web Server (Jetty) will run as a separate process/service to host the Admin Web Application.
SUSE 15	Steel Belted Radius is qualified in SUSE 15 from SBR-E 6.26 release onwards. For more information on how to install SBR Package in SUSE15

Feature	Description
	platform, refer to the section "Linux Installation" in the "SBR Installation and Upgrade Guide".

Fixed Issues in 6.26-R1 Release

There are not any fixed issues for this release.

Known Issues in 6.26-R1 Release

The following table lists known issues in this release.

Problem Report Number	Description
PRS-376252	**Symptom:** In the new WebGUI SBR Administrator, Checklist and Returnlist attributes related to IPv6 and Date may accept certain invalid patterns. **Workaround:** Avoid entering invalid patterns for Checklist and Returnlist attributes related to IPv6 and Date in the new WebGUI SBR Administrator.
PRS-376254	**Symptom:** In the new WebGUI SBR Administrator, "Configurations does not exist" alert message is missing in few areas after deleting the association config. **Workaround:** In the new WebGUI SBR Administrator, when any configurations are deleted, ensure to check manually that the deleted configurations are not a dependent configuration in any other instance. For example: After deleting a certain Filter and if that Filter is associated to any of the EAP Methods, while editing that EAP method, there is no warning that Filter configuration does not exist.
PRS-376261	**Symptom:** In the new WebGUI SBR Administrator, when there are huge configurations (approximately above 3000 in numbers), then the following command execution may not work as expected. 1) "Import All" in Import Section 2) Selecting all the entries in a particular section and deleting all **Workaround:** In the new WebGUI SBR Administrator, ensure to check manually if the above-mentioned tasks are completed successfully and if not, repeat the command execution for a few more instances until successfully completed.
PRS-376263	**Symptom:** In the new WebGUI SBR Administrator, files downloaded using the Download option in "Failed Authentication Requests" under Authlog does not seem to have correct alignment. **Workaround:** In the new WebGUI SBR Administrator, to have a better readability, use the View option in "Failed Authentication Requests" under Authlog.

New Features in 6.25-R1 Release

The following table describes the major features that are introduced in this release.

Feature	Description
Automating Backup	SBR Backup that used to be done manually has been automated now. Following are the available options for the customer to choose the frequency period. • Daily • Hourly • Weekly • Monthly
Password Encryption in Configuration Files	Clear text password present in the following configuration files have been encrypted using AES/DES, thereby eliminating the security vulnerability. • sqlauth.aut/radsqljdbc.aut • sqlacct.acc/radsqljdbc.cc • ldapauth.aut • tac_plusd.cfg
Windows Server 2016	Steel Belted Radius is qualified in Windows Server 2016 from SBR-E 6.25 release onwards.

Fixed Issues in 6.25-R1 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-354390	**Summary:** Updating sbr.jar of Admin UI in Linux platform
PRS-354159	**Summary:** Upgrading SBR Admin GUI Client to TLSv1.2 in Linux Platform
PRS-346961	**Summary:** There is more than one client with an IPv6 Address of ::" log message getting displayed
PRS-351046	**Summary:** After upgrading the SBR to 6.23.x a new folder in D drive with dll files appears (Windows only)
PRS-356381	**Summary**: FATAL: Unable to configure SNMP (Linux only)
PRS-354395	**Summary:** SBR 6.24.2 - LDAP auth stops working for one domain after random time interval (Windows only)

Problem Report Number	Release Note
PRS-357359	**Summary:** SBR 6.24.3 - Using UPN formatted name caused EAP-PEAP to fail with error - server issued alert 'Incorrect MAC received' (Windows only)
PRS-353424	**Summary:** Changes made to radW2kdomainusers.dll in SBR 6.2.x cause SBR to crash
PRS-366792	**Summary:** Removing EAP-Fast references from SBR 6.2.5

Known Issues in 6.25-R1 Release

The following table lists known issues in this release.

Problem Report Number	Description
PRS-344244	**Symptom:** SBR does not handle IPv6 conflicts for RADIUS clients – While adding a NASClient with a duplicate IPv6 address, the GUI does not prompt for the error unlike IPv4 address. **Work Around:** User needs to manually ensure that duplicate IPv6 addresses is not entered.
PRS-332208	**Symptom:** Invalid Shared Secret Request Log's file shows empty – When SBR receives authentication request with invalid shared secret, an empty record is inserted in authlog reports. **Work Around:** None
PRS-332202	**Symptom:** OnNotFound=$accept, SBR should send access-accept for LDAP users - When external LDAP authentication is configured and if OnNotFound=$accept is configured in ldapauth.aut file, SBR is not sending Access-Accept, if searched user is not found in external LDAP server. **Work Around:** None

New Features in 6.24 Release

The following table describes the major features that are introduced in this release.

Feature	Description
TACACS+ Support in SBR-E Linux Platform	SBR-E from 6.24 Release onwards acts as a TACACS+ server in Linux platform. tac_plus is a TACACS+ daemon. It provides Steel-Belted Radius server with TACACS+ authentication, authorization and accounting services. **Key Features** • NAS specific host keys, prompts, enable passwords

Feature	Description
	- NAS and ACL dependent group memberships - Flexible external back ends for user profiles (e.g. via PERL scripts or C LDAP (Active Directory), SHADOW) - Connection multiplexing (multiple concurrent NAS clients per process) - Session multiplexing (multiple concurrent sessions per connection, single-connection) - Scalable, no limit on users, clients or servers - Compliant to latest TACACS+ protocol specification
OpenSSL Dynamic Linking	Steel-Belted Radius uses OpenSSL libraries for various security functionalities. These OpenSSL libraries were statically linked by SBR-E libraries and binaries. From SBR-E 6.24 release onwards, OpenSSL libraries will be dynamically linked to SBR-E libraries and binaries. However, the OpenSSL libraries will be shipped as part of SBR-E package and Steel-Belted Radius will use the shipped OpenSSL libraries irrespective of the OpenSSL version installed in the Linux machine.
RHEL 7.3	Steel Belted Radius is qualified in RHEL 7.3 from SBR-E 6.24 onwards.

New Features in 6.23 Release

The following table describes the major features that are introduced in this release.

Feature	Description
Implementation of IPv4 - IPv6 Dual stack support for RADIUS clients	RADIUS client enhancement to configure single entry for IPv4 and IPv6 addresses in SBR and accept both IPv4 and IPv6 addresses for the same RADIUS client entry.

Note: The OpenSSL version used in SBR is upgraded from OpenSSL 1.0.2d to OpenSSL 1.0.2j in order to support TLSv1.2 and address various security vulnerabilities.

New Features in 6.22 Release

Evolving malware and threats along with the growing need of anytime access to enterprise applications and data has created new network vulnerabilities. To address this, Pulse Secure Steel-Belted Radius, released the following features:

Feature	Description
Implementation of TLSv1.2 Protocol in EAP Plugins	• Transport Layer Security (TLSv1.2) protocol provides improved flexibility and enhanced security • TLSv1.2 supports modern encryption algorithms such as SHA-256, AES cipher suites • The newly introduced parameter AllowTLSFallback enables fallback to support SSL/TLS protocol versions • The newly introduced parameter MinimumProtocolVersion specifies the protocol version (TLS v1.0/TLS v1.1/TLS v1.2) to be used for EAP

Note: The OpenSSL version used in SBR is upgraded from OpenSSL 1.0.0s to OpenSSL 1.0.2d in order to support TLSv1.2 and address various security vulnerabilities.

New Features in 6.20 Release

The following table describes the major features that are introduced in this release.

Feature	Description
Support for SHA-2 for LDAP/AD	• SBR communicates with backend LDAP & AD servers using LDAP protocol to fetch the user credentials. • The LDAP protocol supports storing passwords in the encrypted format on the LDAP server and SBR LDAP module supports only SHA1 encryption. • The feature supports SHA-2 encryption for LDAP external authentication.
Support for SHA256, SHA512	• SBR uses the Linux OS user groups and login accounts, as one of the authentication methods • Support user passwords stored in OS DB are limited to MD5 and Blowfish algorithms only • The feature is to support SBR GUI authentication with stronger encryption (SHA256 and SHA512) • Support user passwords stored in OS DB using SHA256 & SHA512 encryption
Update to OpenSSL libraries	OpenSSL upgrade feature: The OpenSSL version used in SBR upgraded OpenSSL 1.0.0s to support features like SHA2 and to fix various vulnerabilities reported.
Update to OpenLDAP libraries	OpenLDAP upgrade feature: The LDAP libraries used in SBR is migrated to OpenLDAP on Linux and the MS LDAP SDK on Windows.

Fixed Issues in 6.24-R3 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-352254	**Summary:** SBR customer reporting 2 vulnerabilities CVE-2013-2566 and CVE-2015-2808 • Since the TLS 1.0 ciphers are vulnerable, SBR-E Administrator Client GUI has been enhanced to support TLS 1.2 and hence automatically initiate TLS 1.2 ciphers during initial HTTP handshake • Only the TLS 1.2 RSA ciphers with RSA certificates have been validated. DSA ciphers along with DSA certificates have not been validated • SBR-E Administrator Client GUI support for TLS 1.2 is provided only on Windows machines from where the GUI is launched
PRS-352490	**Summary:** SBR admin does not list current session count.

Fixed Issues in 6.24-R2 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

ℹ️ **Note**: If you have already installed Steel-Belted Radius 6.24.1 on the Windows platform, there is no need to install in this release. The 6.24.2 release contains fixes to issues on the Linux release only. We are publishing the Windows release to maintain consistent versioning across platforms.

Problem Report Number	Release Note
PRS- 353041	**Summary:** If an invalid TACACS+ Server config is entered into the tac_plusd.cfg, it will terminate SBR Steel-Belted Radius Release Notes.
PRS- 353051	**Summary:** When using LDAP backend with TACACS+ server, mavis config is ignoring TLS setting and is using TLS configuration.
PRS- 353173	**Summary:** TACACS+ processes are killed if sbrd start is given when SBR is in running state.

Fixed Issues in 6.24-R1 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS–347577	**Summary:** To revise the default ciphers in SBR-E TLS, TTLS, PEAP auth files.
PRS–344497	**Summary:** Session being removed for unknown reason.
PRS–345931	**Summary:** Modify SBR-E License Evaluation period from 150 days to 30 days.
PRS–347409	**Summary:** Remove Delete button from Locked Accounts page in SBR admin GUI Updating sbr.jar of Admin UI in Linux platform.
PRS–350961	**Summary:** SBR XML import won't import radius clients that has "range" field configured.
PRS-352799	**Summary:** Admin GUI jar/ Activex files are required to be signed by SHA2 certificate for resolving security issue seen in latest Java.

Fixed Issues in 6.23 Build 3

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-346432	**Summary:** Watchdog feature in SBR is not working.
PRS-346092	**Summary:** Sep 2016 openssl vulnerabilities to be addressed in SBR-E.
PRS-344594	**Summary:** The validation information class request was invalid.

Fixed Issues in 6.23 Build 2

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-345030	**Summary:** Unable to establish connection to MS-SQL 2014 with SBR v6.21.1.
PRS-344658	**Summary:** March/May 2016 OpenSSL vulnerabilities to be addressed in SBR-E.
PRS-341842	**Summary:** Expired client certificates are not rejected when CRL checking is enabled and that cert is not revoked.

Fixed Issues in 6.23 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-342520	**Summary:** SBR LDAPS is not completing SSL/TLS 1.2 handshake correctly
PRS-344242	**Summary:** Core is getting dumped in Linux when authenticating SBR with AD LDAP user

Fixed Issues in 6.22 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-331654	**Summary:** EAP-PEAP fails with a message "client issued alert 'client closed the session before handshake was completed'.
PRS-331360	**Summary:** SBR Admin GUI is not launching on 64-bit linux machines.
PRS-327904	**Summary:** Unexpected error while trying to save Auth reports in SBR.

Fixed Issues in 6.21 Release

The following table lists issues that have been fixed and are resolved by upgrading to this release.

Problem Report Number	Release Note
PRS-334439	**Summary:** CRL check fails when the LDAP CDP does not contain the server IP address or DNS name.
PRS-335962	**Summary:** SBR installation on D: drive fails.

Known Issues in 6.20 Release

The following table lists known issues in this release.

Problem Report Number	Description
PRS-344244	**Symptom:** SBR does not handle IPv6 conflicts for RADIUS clients – While adding a NASClient with a duplicate IPv6 address, the GUI does not prompt for the error unlike IPv4 address. **Work Around:** User needs to manually ensure that duplicate IPv6 addresses is not entered.

Problem Report Number	Description
PRS-332208	**Symptom:** Invalid Shared Secret Request Log's file shows empty – When SBR receives authentication request with invalid shared secret, an empty record is inserted in authlog reports. **Work Around:** None
PRS-332202	**Symptom:** OnNotFound=$accept, SBR should send access-accept for LDAP users - When external LDAP authentication is configured and if OnNotFound=$accept is configured in ldapauth.aut file, SBR is not sending Access-Accept, if searched user is not found in external LDAP server. **Work Around:** None

Limitations

Following limitations have been identified in the Steel-Belted RADIUS release 6.20 software:

- There will be only one Shared secret field per RADIUS client and it would be used for both IPv4 and IPv6 addresses.
- IP Address range is created only for IPv4 networks and is not available for IPv6 networks.

List of Technical Publications

The documentation for Steel-Belted Radius consists of the following manuals, which can be downloaded from the Pulse Secure Technical Publications Web page located at: https://www.pulsesecure.net/techpubs

- Steel-Belted Radius Installation and Upgrade Guide— Describes how to install and upgrade the Steel-Belted Radius software on a server running the Linux Operating System or the Windows Operating System.
- Steel-Belted Radius Administration Guide—Describes how to configure and administer the Steel-Belted Radius server software.
- Steel-Belted Radius Reference Guide—Describes the configuration files and settings used by Steel-Belted Radius.
- Steel-Belted Radius Scripting Guide—Describes how to use scripts written in the JavaScript programming language to enhance the RADIUS request processing capabilities of the Steel-Belted Radius server.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the Steel-Belted Radius documentation. You can send your comments to

techpubs-comments@pulsesecure.net or fill out the documentation feedback form at

https://www.pulsesecure.net/techpubs. If you are using email, please be sure to include the following information with your comments:

- Documentation name
- Documentation part number
- Software release version
- Page number

Modified Open-Source Software

Embedded in this version of Steel-Belted Radius is open-source software that Pulse Secure, LLC has been modified. The modified software includes:

- LDAP C SDK from The Mozilla Foundation
- HTTPClient from Ronald Tschalär
- sunmd5.c, from The OpenSolaris Project
- tac_plus from http://www.pro-bono-publico.de/projects/tac_plus.html

You can obtain the source code for the above modifications by requesting them from Pulse Technical Support.

Technical Support

When you need additional information or assistance, you can contact "Pulse Secure Global Support Center (PSGSC):

- https://www.pulsesecure.net/support
- support@pulsesecure.net
- Call us at 1- 844-751-7629 (toll-free USA)

For more technical support resources, browse the support (https://www.pulsesecure.net/support).

When you are running SBR Administrator, you can choose Web > Steel-Belted Radius User Page to access a special home page for Steel-Belted Radius users.

When you call technical support, please have the following at hand:

- Your Steel-Belted Radius edition and release number (for example, Steel-Belted Radius/Global Enterprise Edition Release 6.22).
- Information about the server configuration and operating system, including any OS patches that have been applied.
- For licensed products under a current maintenance agreement, your license or support contract number.
- Question or description of the problem, with as much detail as possible.

- Any documentation that may help in resolving the problem, such as error messages, memory dumps, compiler listings, and error logs.