IBM QRadar
7.4.3

Security Technical Implementation Guide (STIG)

Note

Before you use this information and the product that it supports, read the information in “Notices” on page 13.

Contents

About this STIG for QRadar guide

This documentation includes the requirements and procedures for configuring STIG on IBM® QRadar®.

Intended audience

The intended audience for this guide is system administrators or developers who are configuring STIG for IBM QRadar.

Technical documentation

To find IBM Security QRadar product documentation in the QRadar products library, see Accessing IBM Security Documentation Technical Note (www.ibm.com/support/docview.wss?rs=0&uid=swg21614644).

Contacting customer support

For information about contacting customer support, see the Support and Download Technical Note (http://www.ibm.com/support/docview.wss?uid=swg21616144).

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Chapter 1. STIG for QRadar installations

This Security Technical Implementation Guide (STIG) provides the configuration standards and steps that are required for IBM QRadar deployments to achieve the level of security that is required to operate in US Department of Defense (DoD) computer networks.

This STIG implementation follows IBM secure engineering practices.

What systems can you run STIG scripts on?

You can run STIG scripts on QRadar All-in-One consoles. You can also run STIG scripts on Event Processors and Flow Processors, but you must use the expert guidance of your IBM QRadar Client Technical Professional (CTP) or IBM QRadar Product Professional Services to complete the task.

IBM QRadar is working to support running STIG scripts on the following products, but they are not currently supported:

- IBM QRadar Network Insights
- IBM QRadar Incident Forensics
- IBM QRadar Network Packet Capture
- Data Nodes
- IBM QRadar Risk Manager
- IBM QRadar Master Console
- App Nodes

STIG is not supported in QRadar high-availability (HA) deployments.

Exceptions to STIG compliance

For operational and performance reasons, full-disk encryption, SELinux (Security-Enhanced Linux), and patch maintenance are intentionally excluded from the hardening procedures for full STIG compliance.

Full-disk encryption

The Red Hat Enterprise Linux 6 Security Technical Implementation Guide (STIG) states that you must enable *LUKS* (Linux Unified Key Setup-on-disk-format), which is full-disk encryption to satisfy SV-50460r2_rule. However, the performance degradation that is experienced in a QRadar deployment prohibits this full-disk encryption.

The suggested solution is to maintain all QRadar hosts in a physically-secure environment.

SELinux considerations

If you enable SELinux in enforcement mode, the performance of QRadar is significantly impacted. An alternative template for QRadar hosts is not available.

You must protect your privileged user passwords so that access to the operating system is restricted.

Software maintenance

IBM regularly provides software fixes and updates for product defects and known vulnerabilities within QRadar and Red Hat Enterprise Linux, whether RHEL is installed separately or not.

You must disable Red Hat Enterprise Linux subscription feeds. All RPM software fixes and updates must be provided only by IBM.

Root logins

When you run STIG on an All-in-One appliance, you can't use the SSH root account to log in remotely to the QRadar Console.

SSH access control

IP (Internet Protocol) based access controls for SSH connections are applied to managed hosts but not to Consoles.

Note: Use iptables rather than SSH configuration to restrict SSH access.

See the *IBM QRadar Administration Guide* for information about creating iptables rules.

Routing and Bridging

Docker containers that run on QRadar hosts use bridged interfaces for connecting and routing to the host. You can't disable forwarding (routing) on a QRadar host because it might block communication with the containers. To limit the risk with forwarding, use iptables firewall filtering instead.

FTP

An FTP server package (vsftpd) is installed on QRadar hosts but is unavailable on all QRadar hosts except for QRadar Incident Forensics hosts.

When the FTP server package is enabled it uses TLS authentication and chroot to restrict access. The FTP daemon only runs when QRadar Incident Forensics is being used.

Note: You can remove the FTP package but it might impact future product upgrades and cause them to fail.

Chapter 2. QRadar installations for highly secure environments

This Security Technical Implementation Guide (STIG) provides guidance for implementing security standards for IBM QRadar deployments in highly secure environments, such as the federal government. These security standards meet the requirements set by the Defense Information Systems Agency (DISA).

Hardening of the operating system and QRadar hosts to implement the Security Technical Implementation Guide (STIG) standards is part of making QRadar deployments more secure. Some of the steps that are required to secure a QRadar deployment are not specified in the Red Hat Enterprise Linux STIG documents.

The procedures in this guide are not suitable for every QRadar deployment, however, you must complete the procedures if you want your deployment to be STIG compliant.

1. Ensure that your system meets the hardware and software requirements.
2. Install the software.
3. Create a non-root user.
4. Run the hardening script on the QRadar console.
5. Edit the QRadar configuration.
6. Modify the GRUB2 boot loader configuration.
7. Verify the installation.

Prerequisites for implementing STIG

You must prepare your IBM QRadar setup before you implement STIG.

Hardware

All QRadar hardware that is required in the deployment must be available and ready to configure.

Software

The hardening script is included in the QRadar ISO image. You can install RHEL separately, but you don't have to because QRadar 7.4.3 comes with the pre-requisite RPMs installed, suitable partitioning, and uses LVM.

The only time you might need to pre-install RHEL is when you use custom hardware, or if you use software features that are not supported by QRadar, such as full disk encryption.

Installing QRadar and RHEL in a STIG environment

You can deploy QRadar by installing a QRadar appliance, or you can install QRadar and Red Hat Enterprise Linux (RHEL) on your own hardware.

Before you begin

If you are installing QRadar on your own hardware, you must ensure that your system meets the minimum hardware requirements and that you follow the partitioning guidelines as specified in the *IBM QRadar Installation Guide* .

Procedure

1. If you are installing on IBM QRadar hardware, follow the steps for Installing a QRadar appliance.

2. If you are installing QRadar on your own hardware, follow these steps for QRadar software installations::
   a) Ensure that your system has the correct mount paths and partition sizes.
   b) Install Red Hat Enterprise Linux (RHEL).
   c) Install QRadar.
3. Copy the hardening scripts to each QRadar host in the deployment.
4. Add the following line to the `/etc/profile` file to configure the QRadar Console root user timeout:

   ```
   [ $UID -eq 0 ] && TMOUT=600
   ```

Creating a non-root user in a STIG-compliant environment

You can't log in remotely as the root user in a STIG-compliant environment.

On each host in the QRadar deployment, create a non-root user who has **sudo** access and choose a non-root user name such as *stiguser*.

Procedure

1. To create the non-root user, type the following commands:

   ```
   useradd -c 'Admin User' -d /home/stiguser -m -s /bin/bash stiguser
   ```

   ```
   passwd stiguser
   ```

   The password must follow these guidelines:

   - Consist of 15 or more characters.
   - Not repeat the same character consecutively more than two times.
   - Not repeat the same character type consecutively more than two times.
   - Have at least one uppercase character.
   - Have at least one numerical character.
   - Have at least one special character.

   Tip: These new password requirements are enforced when the STIG script is run. If your root password doesn't meet these requirements, you can change it now.
2. Edit the `/etc/sudoers` file.
   a) At the end of the file, type the following line:

   ```
   stiguser ALL=(ALL) ALL
   ```

   Note: It is conventional to use tabs for white space but it's not a requirement; for example:

   ```
   stiguser ALL=(ALL) ALL
   ```

   b) Use the # symbol to comment out any lines that contain `NOPASSWD`.

   Tip: If you use the Vim text editor, type **`:/NOPASSWD`** in command mode to search for any instances of `NOPASSWD`.
3. Verify that the new user can log in from a remote host and use the **sudo** command to become a root user.

   For example, use an SSH client such as PuTTY to log in to IBM QRadar as *stiguser*, and then run a command by using **sudo**.

   ```
   sudo cat /etc/shadow
   ```

What to do next

Run the hardening script on the QRadar console.

Running the hardening script on the Console

To help secure the system, you must run hardening scripts on the IBM QRadar Console.

Before you begin

Before you run the hardening script, verify that the *stiguser* can log in remotely.

Procedure

1. Go to the STIG directory by typing the following command:

   ```
   cd /opt/qradar/util/stig/bin
   ```

2. Run the STIG hardening script by typing the following command:

   ```
   ./stig_harden.sh -h
   ```

   Type `yes` at the following prompt: **Do you want to continue (yes/no)?**

   Note: You must run the script only once.

3. Restart the QRadar appliance.

   Note: Remote login as root has been disabled. You must login as root from the console.

4. While you are logged in as an administrator, verify that the `stiguser` can log in remotely at the same time that you (as administrator) are logged in as a root user.

   If you are hardening a managed host, change the root user's password to meet the password requirements. Ensure that the root authentication works locally.

What to do next

Edit the QRadar configuration.

Editing scripts to configure QRadar in STIG environments

Extra configuration tasks, such as configuring the mail server, disabling the DHCP client, updating IPtables, and changing the backup log directory location are required when you configure QRadar in STIG environments.

Procedure

1. To ensure that the mail server on each host is listening on local interfaces.
   a) Make a backup copy of the `/etc/postfix/main.cf` file.
   b) Edit the `/etc/postfix/main.cf` file and verify that the `inet_interfaces` line is similar to one of the following examples:
      - `inet_interfaces = localhost`.
      - `inet_interfaces = loopback-only`.
2. Verify that the **BOOTPROTO** parameter is set to **none** or **`static`** in the configuration files.
   a) Type the following command:

      ```
      grep -r BOOTPROTO /etc/sysconfig/network-scripts/ifcfg*
      ```

   b) For each interface configuration file that is returned, where **BOOTPROTO** does not equal **none** or **`static`**, change the **BOOTPROTO** value to **none**.

      Example:

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=none
IPADDR=192.168.122.254
IPADDR=192.168.122.254
```

3. Change IPtables and set the default INPUT policy to *DROP*.
   a) Make a backup copy of the `/opt/qradar/bin/iptables_update.pl` file.
   b) Edit the `/opt/qradar/bin/iptables_update.pl` file and change `{{INPUT ACCEPT [0:0]}}` to `INPUT DROP [0:0]` for both the ipv4 and ipv6 sections.
   c) Run the `/opt/qradar/bin/iptables_update.pl` script.
4. Add the following line to the `/etc/hosts.allow` file on the QRadar Console:

```
time: ALL
```

5. Change the backup log directory.
   a) Search for the `/var/log/backup.log` log file and if it exists, move the file to `/store/LOGS`.

      Note: The `/var/log/backup.log` does not exist on a fresh install.
   b) Make a backup copy of the `/opt/qradar/bin/backup.sh` file.
   c) Edit the `/opt/qradar/bin/backup.sh` file and change this line:

```
InitLog @syslog:local1.info || ErrorExit 'Failed to initialize logging'
```

      to this:

```
InitLog /store/LOGS/$(basename ${0} .sh).log || ErrorExit 'Failed to initialize logging'
```

6. Create an AIDE baseline, schedule integrity checks, and create the baseline and schedule updates.
   a) As root user, initialize the AIDE database by typing the following line:

```
aide --init
```

   b) Create a cron script in `/etc/cron.d` with the following text:

      `mv -f /var/lib/aide/aide.db.new.gz /var/lib/aide/aide.db.gz ; aide --update`
   c) Perform a Full Deploy in QRadar.
   d) Run the script created in step 6 b.

      The content in the monitored fields changes when configuration changes are made after a deployment.
7. Disable packet forwarding on non-consoles.
   a) Run the following script to disable forwarding on non-consoles:

      `sysctl -w net.ipv4.ip_forward=0`
   b) Edit the `/etc/sysctl.conf` file to add the `net.ipv4.ip_forward = 0` line.
8. Configure **audit logging** to forward to the remote log server.
   a) In the `/etc/syslog-ng/syslog-ng.conf.default` file, change the following entry from

```
#local4.info / var/log/audit/audit.log
filter local4_info { facility(local4) and level(info..emerg); };
destination audit { file("/var/log/audit/audit.log" perm(0600) create_dirs(yes)
flush_lines(20) flush_timeout(500)); };
log { source(local); filter(local4_info); destination(audit); };
```

      to

```
#local4.info / var/log/audit/audit.log
filter local4_info { facility(local4) and level(info..emerg); };
destination audit { file("/var/log/audit/audit.log" perm(0600) create_dirs(yes)
```

```
flush_lines(20) flush_timeout(500)); };
destination remote_audit { udp("$$LOGHOST$$" port(514) };
log { source(local); filter(local4_info); destination(audit); };
log { source(local); filter(local4_info); destination(remote_audit); };
```

b) Replace $$LOGHOST$$ with the IP address of the appropriate log host.

What to do next

Modify the GRUB2 boot loader configuration.

Changing the boot loader configuration

You must update the GRUB2 configuration to configure the non-root user for the STIG environment, and for the changes that were made by the hardening script to be effective. You must update the GRUB2 configuration on the QRadar Console, event processors, and flow processors.

Procedure

1. Enter the following command to back up the GRUB 2 configuration files:

   `tar -cvf /root/grub2backup.tar /etc/grub.d /etc/default/grub /boot/grub2`
2. Create a `/boot/grub2/user.cfg` file that uses the GRUB password utility by running the following command that prompts for the password:

   `grub2-setpassword -o /boot/grub2/`
3. Edit `/etc/grub.d/10_linux` to replace `--unrestricted` with `--users root` on the line beginning with `CLASS=`.
4. Save the changes and exit.
5. Run the command `grub2-mkconfig -o /boot/grub2/grub.cfg`.

   If you are completing a software (non-appliance) installation, the procedure is now complete.

   Important: If you are completing an appliance installation (there is a `/recovery` partition), then the following steps must also be completed or you cannot boot the system.
6. If the file `/recovery/grub2/grub.cfg` exists, copy the users file `cp /boot/grub2/user.cfg /recovery/grub2/`.
7. Edit `/recovery/grub2/grub.cfg` and find the line `menuentry "Normal System"`.

   a) Insert the content of file `/boot/grub2/user.cfg` on the line before the `menuentry "Normal System"` line. The result appears similar to the following example (all one line):

   ```
   GRUB2_PASSWORD=grub.pbkdf2.sha512.10000.00F025BA99D48B00BCCA5C45F9F3
   0A29AAB2B1B2B6369B3783A948DB117E81CE0A6ADD035CF0C4E2F223455869944B142F41B265C
   59E242E8661B2D0B0CC9D37.871FE29A0318BA50F40C103346EC5DFB5573F141D5D98ABE9B5B9
   85804FF95B2392D5497247F820100212BFF4E3FCA0525FD28A0C60E4E961AE9A94DB0086B3F
   ```

   b) On the line after `GRUB2_PASSWORD`, insert the following lines:

   ```
   set superusers="root"
   password_pbkdf2 root ${GRUB2_PASSWORD}
   ```

   c) At the end of each `menuentry` line, and before the { add `--users root`.

   ```
   menuentry "Normal System" --users root {
   ```

   And

   ```
   menuentry "Factory re-install [QRadar <version_number>]" --users root {
   ```
8. Run the script `grub2-mkconfig -o /boot/grub2/grub.cfg`.
9. Save and exit and then restart the system.

   The bootup user is `root` and the password is the one from the previous step, `grub2-setpassword`.

What to do next

Reboot the appliance and log in.

Post-installation checks

Post-installation checks are required to complete your STIG compliance.

Note: If you've install QRadar and RHEL from the QRadar ISO image, the following checks might not be necessary.

Passwords restricted to 1-day minimum lifetime

Type the following command to check for any violations:

```
awk -F: '$4 >= 1 {print $1}' /etc/shadow
```

You must change the password-restriction setting for any non-system accounts or non-user accounts that are displayed.

Passwords restricted to 60-day maximum lifetime

Type the following command to check for any violations:

```
awk -F: '$5 >= 1 {print $1}' /etc/shadow
```

You must change the password-restriction setting for any non-system accounts or non-user accounts that are displayed.

Duplicate user IDs (UID)

Type the following command to check for duplicate user IDs:

```
pwck -rq
```

Accounts that are displayed are in violation of this rule.

Logging in to QRadar

To access the web interface on your IBM QRadar appliance, log in remotely using your web browser.

About this task

IBM QRadar is a web-based application. For the features to work properly, you must use a supported web browser.

Table 1. Supported web browsers for QRadar products

Web browser	Supported versions
64-bit Mozilla Firefox	60 Extended Support Release and later
64-bit Microsoft Edge	38.14393 and later
64-bit Google Chrome	Latest

Procedure

1. In your browser window, type `https://<QRadar_IP_Address>`.

To log in to QRadar in an IPv6 or mixed environment, wrap the IP address in square brackets: `https://[<QRadar_IP_Address>]`.

2. Type the log in credentials:

   - User name: admin
   - Password: *<Password that was created during the installation process>*

   The default license key provides you access to the system for 5 weeks.

   Note: To access the command-line interface on your IBM QRadar appliance, type the following command in a terminal on a remote system:

   `ssh stiguser@<QRadar_IP>`

Chapter 3. Maintenance in STIG-compliant QRadar deployments

QRadar updates or upgrades might undo the configuration changes that were made to make your IBM QRadar deployment STIG compliant.

Software updates

Files or scripts in the `/opt/qradar` directory might be impacted by QRadar software updates, including the logging configuration and SSHD configuration.

After applying updates, restore the hardening configuration by rerunning the hardening scripts, and then verify that the manual changes that you made are implemented.

Software upgrades

Before you upgrade a STIG-compliant QRadar deployment, ensure that you have a full backup that is up to date, and that you test the software upgrades in a pre-production environment.

If you can't test a software upgrade in a pre-production environment, and you want to be fully protected before you upgrade QRadar software on a STIG hardened system, back up your data and system configuration and then take the following steps:

1. Reinstall RHEL and QRadar software.
2. Install software fixes.
3. Restore the data and system configuration.
4. Run the STIG scripts.

For more information about backing up your QRadar deployment, see Backup and recovery in the *IBM QRadar Administration Guide*.

Vulnerabilities

Vulnerability scans often report false positives for critical software such as Apache, and OpenSSH. Some false positives are caused by outdated software banners.

For example, the Apache version that is shown in the banner might display an older version than the installed version. To verify the installed Apache version, type the command `httpd -vhttpd2 -vIf`. If the installed version is not version 2.2.31 or higher, install the latest version.

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