



# SEL-3610, SEL-3620, and SEL-3622 Firmware Upgrade Instructions

## Introduction

SEL occasionally offers firmware upgrades to improve the performance of your device. Your device stores firmware in nonvolatile memory, therefore, changing physical components is not necessary. These instructions give a step-by-step procedure to upgrade the device firmware by uploading a file from a personal computer to the gateway via the web interface. All firmware updates are logged.

Firmware releases are enhancements to improve functionality that change the way your device is configured or maintained, and can be installed in increasing or decreasing order. All existing settings will be transferred to newer firmware. Settings may not be transferred to older firmware. After a firmware update it is possible to revert to the previously installed firmware version.

To perform an upgrade you will need the appropriate firmware upgrade file(s) and access to an administrative account on the device.

## Firmware Files

The firmware upgrade file has the tar.gz file extension. An example firmware filename is 3620.R120.tar.gz.

Firmware files are cryptographically signed to enable the device to recognize official SEL firmware. Any uploaded files that cannot be verified as being produced by SEL will not be processed.

## Upgrading Firmware From Older Revisions

Some firmware versions have special needs or restrictions on their upgrade path. It is important to know the current firmware version for your device and what requirements or restrictions your new firmware has. To aid you in this, the following tables list the released firmware for the SEL-3610, SEL-3620, and SEL-3622. The first column of each table lists the released firmware versions for each device. The second column lists the upgrade path, which includes any special files that may need to be applied before the new firmware will be accepted. The third column lists the target firmware. The fourth column provides restriction information on downgradability.

**Table 1 SEL-3610 Firmware (Sheet 1 of 2)**

Firmware Version	Upgrade Path	Latest Firmware	Restrictions
R100 R110 R120	Direct	R122	None
R121 R122	Preload-R132.tar.gz	R132	None

**Table 1 SEL-3610 Firmware (Sheet 2 of 2)**

Firmware Version	Upgrade Path	Latest Firmware	Restrictions
R132 R133 R137 R140	Direct	R142	R132 and higher cannot downgrade or revert to a version lower than R132.
R142 or higher	Direct	R211	R200 or higher cannot downgrade to a version lower than R200, but R208 and lower can revert to a previous version. R210 or later cannot downgrade or revert to R208 or to any other previous version. R211 cannot downgrade to R210 but can revert to R210 if it was previously installed.

**Table 2 SEL-3620 Firmware**

Firmware Version	Upgrade Path	Latest Firmware	Restrictions
R110 R112	Direct	R120	None
R120	Preload-R132.tar.gz	R132	None
R132 R133 R134 R135 R138 R139 R141	Direct	R142	R132 and higher cannot downgrade or revert to a version lower than R132.
R142 or higher	Direct	R211	R200 or higher cannot downgrade to a version lower than R200, but R208 and lower can revert to a previous version. R210 or later cannot downgrade or revert to R208 or to any other previous version. R211 cannot downgrade to R210 but can revert to R210 if it was previously installed.

**Table 3 SEL-3622 Firmware**

Firmware Version	Upgrade Path	Latest Firmware	Restrictions
R136 R138 R139 R141	Direct	R142	None
R142 or higher	Direct	R211	R200 or higher cannot downgrade to a version lower than R200, but R208 and lower can revert to a previous version. R210 or later cannot downgrade or revert to R208 or to any other previous version. R211 cannot downgrade to R210 but can revert to R210 if it was previously installed.

There is a special upgrade process for upgrading to version R132 because of special startup requirements when installing that version. **Please note that this process will reset your device to factory-default settings. Make certain to manually copy down your device settings or take screenshots before beginning the process.** You must carefully perform the following procedure to upgrade to R132:

- Step 1. Upgrade to the latest version of R12x firmware for your device.
- Step 2. From the device webpage, perform a factory-default reset by navigating to the **Reset** webpage.
- Step 3. Commission the device after performing the factory-default reset. Load the Preload-R132.tar.gz file for your product from the CD.
- Step 4. Load the R132 firmware file (i.e., 3610.R132.tar.gz or 3620.R132.tar.gz). Note that this file must be loaded without rebooting the device after installing the preload file.
- Step 5. Wait for the system to start R132 by itself, and then wait ten full minutes.
- Step 6. Log in to the device and reboot the unit from the diagnostics page of the web UI (do not cycle power).

See *Firmware File Loading Procedure* for instructions on how to load individual upgrade files.

## Special Firmware Upgrade Process

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**NOTE:** Do not turn off the unit until the firmware upgrade is complete, or it may become non-functional.

Firmware revision R210 requires a one-way upgrade path. Users will not be able to use the revert feature after performing the upgrade from a lower firmware version to R210. This upgrade process takes much longer than the normal upgrade process. To provide users with feedback on the status of the upgrade, the lights on the unit have been programmed to show that the upgrade process is working. The VPN, SYS, and CERT LEDs on the device front panel flash green on and off in sequence during the upgrade of an SEL-3622. The VPN SYNC, TIME SYNC, and X.509 ERROR LEDs on the device front panel flash green on and off in sequence during the upgrade of an SEL-3610 or SEL-3620. Once the firmware has been upgraded to the new version, subsequent firmware upgrades will go back to the normal process.

The upgrade could take up to 40 minutes with a large, complex connection directory of devices on the SEL-3622. Do not power off the unit during the upgrade process. This could prevent the unit from rebooting, and you would need to return the unit to SEL.

Beginning with firmware version R210, certificates used for IPsec Key Exchange (IKE) on the SEL-3620 and SEL-3622 that contain a keyUsage extension must also have either the digitalSignature or nonRepudiation bits set. This change makes the SEL-3620 and SEL-3622 more compliant with RFC 4945, section 5.1.3.2. Certificates that do not comply may cause the IKE process to fail, preventing a connection from being established. Ensure that any X.509 certificates used for IKE are compliant with RFC 4945, section 5.1.3.2 prior to upgrading to firmware version R210 or later.

# Downgrading Firmware to an Older Revision

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**NOTE:** All device settings are removed during this process.

Firmware revision R200 was released with a new version of the SEL-3610, SEL-3620, and SEL-3622 circuit boards that replaced a number of obsolete components. Because these components require support from the firmware, the device would become inoperable if an older version of firmware were to be installed.

For this reason, firmware version R200 includes a feature that prevents loading a previous version of the firmware, though you can revert to an earlier version if it is already present on the device.

Firmware version R208 may be downgraded directly to R207 (any version) or to R206-V2. Versions R207 and higher require using R206-V2 as the first step in a downgrade. Once R206-V2 has been installed, you may install any desired firmware version R200 or higher.

Firmware version R210 includes many new features, such as an updated settings database. For this reason, R210 may not be downgraded to any lower firmware version. Note that in the extremely rare case that a firmware upgrade to R210 fails, all device settings will revert to default values and no syslog message about the failure will be generated. System backups made prior to the attempted upgrade will not be able to restore settings, so contact the factory if the upgrade fails.

Firmware version R211 includes support and drivers for future hardware. For this reason, R211 may not be downgraded to any earlier firmware version but may be reverted to R210 if it was previously installed. Apply the same considerations to R211 as indicated above for R210.

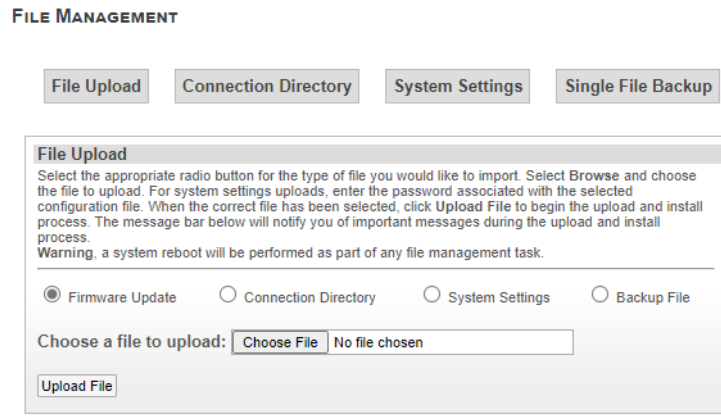
## Firmware File Loading Procedure

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Perform the following steps to load a firmware file.

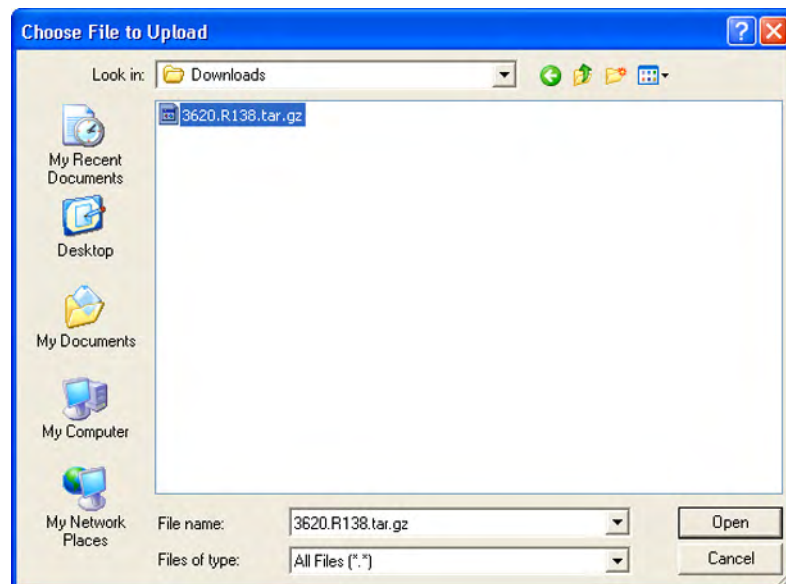
- Step 1. Access the device by using an account with administrative-level privileges. Nonadministrative accounts cannot perform firmware upgrades.
- Step 2. Select the **File Management** link from the navigation panel. This will show the File Management page, where firmware upgrades may be performed.
- Step 3. In the File Management window, select **Firmware Update**, and select **Browse** to show a file browser window (see *Figure 1*).

**NOTE:** If you select Firmware Update, the system restarts as part of the upgrade process.



**Figure 1 File Management Window**

- Step 4. Navigate to the location the correct upgrade files are stored, and select it (see *Figure 2*).
- Step 5. Select **Open**.



**Figure 2 Select Firmware File**

- Step 6. Select **Upload File** to upload and install the new firmware. Status messages will be displayed in the bar at the bottom of the page. These status messages will indicate success or failure.

During the firmware upgrade, the old firmware will be placed into the Previous Firmware slot. This firmware stays on the device until another firmware upgrade occurs. This feature allows for quick recovery if a firmware upgrade causes system instability. Installing an upgrade can take between five and ten minutes to complete.

## Reverting to Previous Firmware

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Perform the following steps to revert the device to the previous firmware version. Settings will not transfer from your current firmware version to the backup firmware version. For easy reconfiguration, be sure to record the current system settings before reverting firmware. Firmware versions prior to R130 do not allow importing of system settings.

Remember to refer to *Table 1*, *Table 2*, or *Table 3* for downgrade or reversion restrictions that your firmware may have.

- Step 1. Access the device by using an account with administrative-level privileges. Nonadministrative accounts cannot perform firmware revisions.
- Step 2. Select the **File Management** link from the navigation panel. This will show the File Management page.
- Step 3. In the Firmware Version window, select **Revert** to change the firmware of the device to the Previous Firmware Version. After the process is completed, the previous firmware will become the current firmware and the current firmware will become the previous firmware, as in *Figure 3*.

### CAUTION

If you revert the firmware to a previous version, and then go through a firmware upgrade process, your device will inherit the settings that were on the unit immediately before the revert function was activated. Please be aware of this behavior before upgrading firmware if you have previously activated the revert function.



**Figure 3** Firmware Versions

## Technical Support

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We appreciate your interest in SEL products and services. If you have questions or comments, please contact us at:

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**⚠ WARNING**

Operator safety may be impaired if the device is used in a manner not specified by SEL.

**⚠ AVERTISSEMENT**

La sécurité de l'opérateur peut être compromise si l'appareil est utilisé d'une façon non indiquée par SEL.

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This product is covered by the standard SEL 10-year warranty. For warranty details, visit [selinc.com](http://selinc.com) or contact your customer service representative.

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