

Remote Updates

Ethernet/FTP

Description:

Upgrade the firmware on deployed devices via FTP from a remote FTP client.

1. The application and kernel/boot code are built as separate code entities.
2. The design of the RTX Quadros operating system allows the kernel to be linked to the application at runtime—only the application is updated; the kernel remains intact. This preserves the integrity of the kernel and provides a utility to reboot the system if the flash burn is corrupted.
3. In the event that a corrupt program is detected, the system will execute a reset to the last previously known “good” boot sector.

Advantages:

1. No local technician required
2. Can update from running system; RTX RTOS can be linked at runtime

Development issues:

1. Flash management; requires flash device that can be partitioned so that a portion of the device can be re-flashed.
2. System space and application space
 - a. How to recover from failed update
 - b. How to do run-time linking to RTX RTOS
3. Size of bootloader

Web Server

Description:

Upgrade the firmware on deployed devices from a remote web browser.

1. Utilizes RTX Quadnet web server and SSL application security.
2. Developer must build a web application that allows the remote browser to upload a file.



3. The remote user must log-in to the secure server (https).
4. The design of the RTXC Quadros operating system allows the kernel to be linked to the application at runtime—only the application is updated; the kernel remains intact. This preserves the integrity of the kernel, and provides a utility to reboot the system if the flash burn is corrupted.
5. In the event that a corrupt program is detected, the system will execute a reset to the last previously known “good” boot sector.

Advantages:

1. No local technician required
2. Can update from running system; RTXC RTOS can be linked at runtime

Development issues:

1. Flash management; requires flash device that can be partitioned so that a portion of the device can be re-flashed.
2. System space and application space
 - a. How to recover from failed update

On-Site Updates

USB Device

Description:

Connect the embedded system to a PC for a software update.

Option 1 – USB CDC (communications device class) Serial emulation. The embedded system will enumerate to the PC as a device that can be addressed via one of the COM ports. The embedded developer will need to write an application that accepts a “file” over the serial link, and writes it to flash memory for later use.

Option 2. USB mass storage. The embedded system enumerates to the PC as an external drive. The technician “drags and drops” the updated files from the PC into the embedded system folder.