



Technical Information Bulletin – SkyRouter Firmware Update Application

TIB002 22 August, 2007

Purpose:

This Technical Information Bulletin provides the information required to configure and use the SkyRouter firmware update application. The firmware update application supports automatic and manually applied updates that can be targeted globally or selectively across a network of SkyRouters deployed in production environments.

Scope:

This Technical Information Bulletin specifically addresses the configuration and operation of the firmware update feature. This feature is available in every SkyRouter firmware release beginning with the following release levels:

4100S (Old style - serial number of 050320036-0100 or lower) Release CK402_2.03
4100S (New style - serial number of 0504038001 or higher) Release CK405_3.01
4100E – Release CK403_1.03
4200E – Release CK407_1.00

Theory of Operation

The SkyRouter firmware update feature consists of a client process, resident on the SkyRouter unit, that periodically connects to a customer supplied FTP server configured with a directory structure specified in this document.

Server Configuration

SkyRouter's firmware update mechanism supports global and selective updates. Global updates will be applied to all units of a specified model and hardware revision. Selective updates may be applied to one or more units, each identified by its Mobile Directory Number (MDN). To support the entire SkyRouter product line the update FTP server requires the following subdirectories, each built under a common directory which may be either the home directory of the FTP login or a user defined directory specified in the firmware update configuration application. The required directories are:

```
./GLOBAL_4100E  
./SELECT_4100E  
./GLOBAL_4100S  
./SELECT_4100S  
./GLOBAL_4200E  
./SELECT_4200E
```

The update server is a standard FTP server supporting the FTP protocol on IP ports 20 (data) and 21 (control).



Technical Information Bulletin – SkyRouter Firmware Update Application TIB002 22 August, 2007

Update File Naming Conventions

Global update files must be named by the convention CKnnn_mmmm where nnn is the hardware version to be updated and mmmm is the sequence number of the update. The update client checks its locally stored sequence number against the sequence available on the update server to determine if an update is required. CKnnn values are currently defined as:

CK402 - 4100S (Old style - serial number of 050320036-0100 or lower)
CK403 - 4100E
CK405 - 4100S (New style - serial number of 0504038001 or higher)
CK407 - 4200E

Example: When it is necessary to distribute a firmware update, an archive file containing the update is distributed by Ctek to be placed in the appropriate directory. A global update file for all 4100E units would be named as follows:

CK403_0001

This file would be placed in the GLOBAL_4100E directory and all 4100E units will look for this file when they check for updates. If a second global update becomes necessary, the file would be named as follows:

CK403_0002

Each time a SkyRouter successfully installs an update, it increments an internal register and expects the next update to be in sequential order.

Selective update files are named by the convention CKnnn_MDN(10Digit)_mmmm. In this case CKnnn and the sequence mmmm are identical to the definition for a global update. The ten digit MDN (Mobile Directory Number aka phone number) identifies the specific unit to be updated.

Example: When it is necessary to distribute a selective firmware update, an archive file containing the update is distributed by Ctek to be placed in the appropriate directory. A selective update file for a 4100E having a phone number of 9995551212 would be named as follows:

CK403_9995551212_0001

Update Client Configuration

The SkyRouter firmware update feature consists of a client process resident on the SkyRouter unit that periodically connects to a customer supplied server that supports the File Transfer Protocol (FTP). The update process starts automatically when the SkyRouter is powered up or rebooted. Unless Auto Update Frequency has been set to never, the update process will check the FTP update server to see if a new global or selective update must be done whenever the unit reboots or restarts. The server will always check for global updates first. The update process will then settle in to the normal cycle of checking for updates at the frequency defined through the interface screen. If Auto Update Frequency has been set to never, update checks will only be done upon receipt of a manual update command from the interface screen or upon receipt of an



Technical Information Bulletin – SkyRouter Firmware Update Application TIB002 22 August, 2007

SMS update command. The SMS update command is the single word update, which is not case sensitive.

Figure 1 below shows the update application administration screen which is accessed through the “Applications” selection on the top level SkyRouter Administration menu.

Last Global Update:	0015	Last Selective Update	0002
IP Address Of Update Server:	<input type="text" value="68.15.90.10"/>	User Name:	<input type="text" value="Your_User_ID"/>
Auto Update Frequency:	<input type="text" value="Daily"/>	Password:	<input type="password" value="*****"/>
		File Path:	<input type="text"/>

Administrative Screen Field Description

Last Global Update and Last Selective Update – These are read only fields that display the last update sequence numbers processed on this SkyRouter

IP Address Of Update Server – The IP address to be used by this SkyRouter to access its assigned FTP update server

Auto Update Frequency – A pull down menu that can be used to set the maximum length of time that the SkyRouter update client will wait before checking for new updates on its assigned server. Unless this field is set to Never the SkyRouter will also check for updates every reboot or restart. The settings available for this field are Never, Daily, Weekly, or Monthly

User Name – The FTP login username to be used with the assigned FTP server

Password - The FTP login password to be used with the assigned FTP server

File Path – A optional directory specification to be used if the update hierarchy is not contained in the FTP user’s home directory

Update Process Description

When the update process finds a new update on the FTP update server, it FTP transfers the update archive file (compressed tar format) into the /var/tmp/ctek_update directory of the



Technical Information Bulletin – SkyRouter Firmware Update Application **TIB002 22 August, 2007**

Skyrouter. The file is then expanded in that directory. One of the files contained in the update archive file must be a script called do_update. The update process will execute the do_update script, which installs files and makes any required configuration changes. Upon successful completion of the do_update script the update process will update the appropriate update sequence register in the SkyRouter and set a flag indicating that the SkyRouter should reboot when it next enters a dormant state. Updates will not take effect until the unit has rebooted.

The update process uses straight forward error recovery methods. If the update process cannot reach the FTP update server, it will retry 3 times at 5 minute intervals. If retries are not successful, the update process will terminate its current update attempt and will wait as defined by the Auto Update Frequency for another opportunity to perform the update process.

If the update script (do_update) fails the update process will terminate its current update attempt and will wait as defined by the Auto Update Frequency for another opportunity to perform the update process. In this case the update process will start from the very beginning by loading a new copy of the update tar file down from the FTP update server.