

# vRapid Mobile FOTA® (Firmware Over-the-Air) Update Solution



Eliminate mobile phone recalls, ensure reliability and enhance customer satisfaction using Red Bend's vRapid Mobile FOTA (firmware over-the-air) update solution. vRapid Mobile FOTA dramatically shrinks update file size and overcomes barriers to reliable and cost-effective updating of firmware on mobile devices in the hands of consumers.

## ■ vRapid Mobile FOTA Handset Update Suite

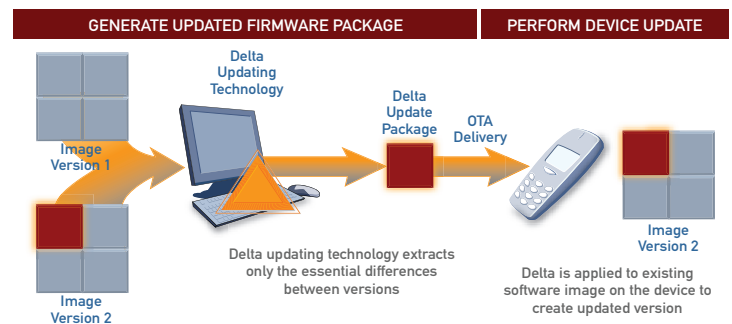
vRapid Mobile FOTA enables manufacturers and operators to create compact firmware updates for mobile phones and other wireless devices and to install the updates over the air rapidly and with complete reliability. Based on Red Bend's patented technology, vRapid Mobile FOTA is composed of two primary components: an update generator and an update installer.

vRapid Mobile's Update Generator identifies the essential changes from an existing firmware version to a new, updated version and automatically creates an extremely compact package of these changes. The Update Generator also supports updating a handset's file system, which typically stores images, sounds, configuration data, settings, design themes, icons, menus, system status and other information that affects device appearance, configuration and branding.

vRapid Mobile's Update Installer resides on the mobile device itself and performs the update installation. Optimized for the limited memory available within the device, vRapid Mobile Update Installer applies the updates in-place on the phone's firmware accurately and reliably. It performs this update on feature phones with monolithic firmware images and on smart-phones with compressed, multi-section images. The update installer also performs file system updates.

## ■ vRapid Mobile FOTA Advantages

**Proven and patented Red Bend delta-update technology overcomes bandwidth and memory constraints.** Red Bend's patented delta-update technology extracts only the essential changes between mobile phone firmware versions, reducing update file size by up to 97% and lowering device memory and bandwidth requirements, while maintaining 100% data accuracy.



**vRapid Mobile FOTA supports advanced device architectures.** Using advanced algorithms, vRapid Mobile FOTA supports Symbian OS and other architectures that employ compressed multi-section images, read-only file systems, a combination of NAND and NOR flash and other advanced features.

**vRapid Mobile FOTA performs updates in the background.** vRapid Mobile FOTA is the only FOTA solution to perform firmware updates in the background while the consumer is using the phone, without taking the device offline. This innovation completely changes the FOTA paradigm by making irrelevant the issue of update time. vRapid Mobile FOTA's patented computational update technology guarantees consistent update performance for an unlimited number of on-device updates, from any firmware version to any other version.

**vRapid Mobile FOTA optimizes on-device memory.** Using a unique "in place update" algorithm, vRapid Mobile FOTA requires only minimal working memory to perform updates while providing control over the amount of flash memory required. This patented technology resolves complex "write before read" issues so that firmware can be updated rapidly without adding costly memory.

**vRapid Mobile FOTA can be integrated into device firmware in a matter of days.** vRapid Mobile FOTA's unique technology and proven integration process allow manufacturers to efficiently integrate the firmware update technology without restructuring device firmware and with no impact on the firmware development tool chain. As a result, integration has been proven to be significantly faster and less expensive than alternative solutions.

**vRapid Mobile FOTA ensures 100% fault-tolerant update integrity and completion.** vRapid Mobile FOTA eliminates the risk of disabling devices due to errors or unexpected disruptions in the update process. In the event of a power loss, it automatically resumes the update from the point of interruption.

**vRapid Mobile FOTA ensures security for all stages of the update process.** Using a patented pre-installation verification technique, vRapid Mobile FOTA verifies that the newly created software version is 100% accurate, defect-free and will install properly, prior to the update process getting under way.

**vRapid Mobile FOTA is interoperable with mobile device management solutions.** vRapid Mobile FOTA works with all existing mobile device data distribution and transfer solutions and all standard protocols, including the Open Mobile Alliance.

**vRapid Mobile Update Installer minimizes the on-device footprint.** The Update Installer software requires only one flash sector of 64KB as permanent allocation for the Update Installer (about 20KB) and the device specific Update Agent, and one to be temporarily allocated upon running for the update-specific data, to ensure start-to-finish integrity of the update install process.

**vRapid Mobile Update Installer is updateable over the entire device lifecycle.** The Update Installer software itself can be quickly updated over the air, allowing it to be embedded during the manufacturing process and upgraded remotely and transparently, as required, throughout the life of the device.

### Benefits of vRapid Mobile FOTA

- Accelerate time-to-market and adoption of new features and services
- Reduce cost of repair, service and troubleshooting
- Increase ROI and extend product lifecycle
- Improve customer satisfaction, strengthen customer loyalty, and boost revenue per subscriber

### Features of vRapid Mobile FOTA

- Smallest possible update files
- 100% reliability and security
- Optimized use of on-device memory
- Fast, accurate updating; minimal downtime
- Consistent performance for multiple updates
- Any-to-any firmware version updates
- Rapid integration into handsets
- Unobtrusive to firmware development tool chain
- Proven technology

## ■ About Red Bend Software

Red Bend Software, the leader in Mobile Software Management (MSM), provides software solutions for managing firmware, applications and devices over the air. The company's award-winning MSM products enable device manufacturers, mobile operators and software developers to increase revenues, reduce support costs and achieve faster time to market by remotely managing their software assets on mobile devices. Red Bend's software has been deployed in more than 620 million mobile devices and adopted by eight of the top 10 handset manufacturers, including Kyocera, LG Electronics, Motorola, Sharp, Sony Ericsson and ZTE, as well as dozens of other leading companies in the mobile, M2M and WiMAX markets. Unlike device management vendors with proprietary end-to-end systems and manufacturers' internally developed solutions that are platform specific, Red Bend is the only company offering independent client software that is interoperable with any standards-based server and that works with any platform on any type of mobile device. Founded in 1999, Red Bend is a privately held, venture capital-financed company with offices in China, Israel, Japan, Korea, the U.K. and the U.S. Visit [www.redbend.com](http://www.redbend.com).



400-1 Totten Pond Road, Suite 130  
Waltham, MA 02451, USA

+1 781-890-2090  
+1 781-890-5251 fax

[www.redbend.com](http://www.redbend.com)