

Mobile2Air™

White Paper
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Introduction

Broadcast news and sports coverage are demanding environments where success depends heavily both on technology and the end user. Building4Media's **Mobile2Air™** Application is designed for reporters and video contributors to record and upload broadcast quality video content to a centralized facility using an Apple iPhone 3GS.

Mobile2Air™ enables video recording and uploading over Wi-Fi or 3G connections, complete with metadata ready for air to any broadcast facility equipped with Building4Media's **FORK Production Suite**. **Mobile2Air™** utilizes packet-loss recovery technology and bandwidth segmentation to guarantee original, native-recorded quality all the way to final playout. Automatically embedded metadata permits easy content cataloging and location mapping.

Mobile2Air™ features Building4Media's tight integration with Apple Final Cut Pro coupled with FORK's proven master control playout automation. It provides the ability to present content with integrated streaming, mobile video, IPTV transcoding and delivery. **Mobile2Air™** transforms the iPhone 3GS into a professional mobile video news and information content creation and transmission platform.

As a highly cost-effective solution compared to traditional satellite and microwave uplinks, **Mobile2Air™** also saves thousands of dollars by leveraging inexpensive existing cellular data 3G networks and Wi-Fi connections (Table 1.1). **Mobile2Air™** offers remote access controlled convenience and comprehensive data security both for users and content via unique iPhone unit identification and SSL-secured user accounts.

Comparative Data Cost

Table 1.1
Comparative Data Costs

Connection Type	Cost
KU band live uplink	\$650/first 10 minutes
C band live uplink	\$825/first 10 minutes
iPhone 3G data connection	\$30/month unlimited data
Public WiFi connection	\$10/24 hours unlimited data

Sources: Intelsat 2008 Rate Card / AT&T Data Plans

Technical Specifications

Mobile2Air™ maximizes the built-in video capabilities of the iPhone 3GS to provide the best possible native video quality.

User definable data rates allow for a trade-off between transmission speed and image quality at up to 3.8 Mbits/sec H.264 video up to 30 fps and 640x480 resolution with 44.1 kHz AAC digital audio.

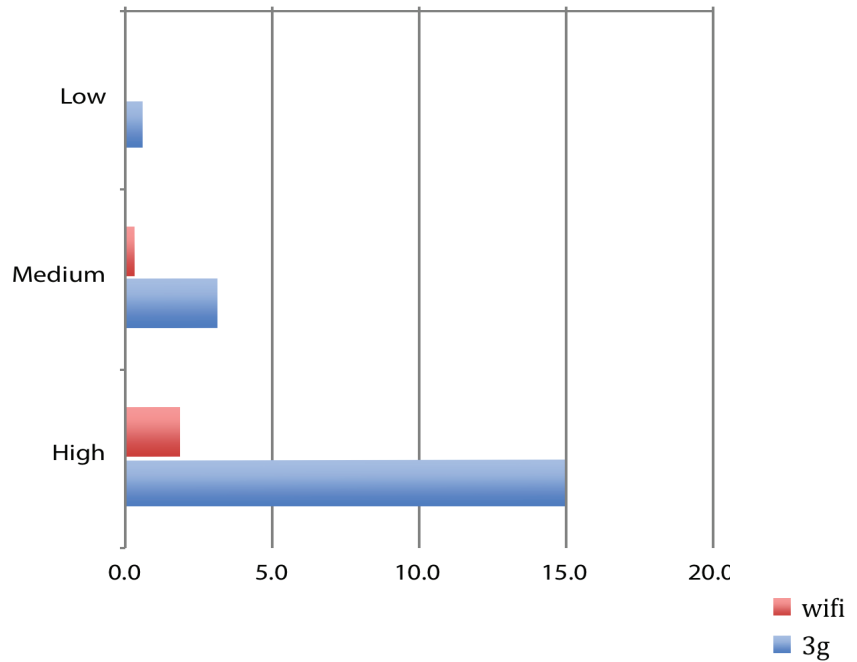
Mobile2Air™ uses the fastest mobile network connection available at the time of upload, making faster than real-time transmission of content possible (Table 1.2). Wi-Fi connections permit transmission speeds of 2Mbps and higher, depending on router specifications and ISP performance. 3G network connections offer more remote location flexibility with transmission speeds up to 250kbps, depending on 3G provider coverage and network conditions.



Data Transmission Times

Table 1.2
Data Transmission Times for a one minute clip (in minutes)

Codec Quality Setting	3G	WiFi
High	15	1.9
Medium	3.2	0.4
Low	0.66	0.09



Security Specifications

Mobile2Air™ employs powerful security features to protect content transmission from field to broadcast. Far from being a typical iPhone application, **Mobile2Air™** offers integrated protection at the user level. Each iPhone is assigned a username and password and is identified via built-in hardware using the iPhone's UDID (Unique Device Identifier). This allows only registered iPhones and users to log into a **Mobile2Air™** installation. An SSL connection between the **Mobile2Air™** client and server adds a secure method for authentication as well as two-way data communication.

As an additional security precaution, if an iPhone is stolen or lost, the administrator can deactivate the iPhone's UDID from the **Mobile2Air™** database and transfer the username and password to a new iPhone. This enables seamless performance and continuity for field reporters while maintaining total content security.

iPhone Application Installation Procedure

The **Mobile2Air™** iPhone application is designed for simple installation by the end user, facilitating remote bureau setup while saving on training and administrator costs. The process begins by launching iTunes and connecting an iPhone. The user then clicks on the serial number of their iPhone within iTunes to reveal the unit's UDID, which is then sent to the system administrator.

The administrator registers this number with the **Mobile2Air™** database, providing enhanced security by uniquely tying the specific iPhone unit and username together. The administrator next sends an application and provision file back to the user. These files are dragged into iTunes and synced to the iPhone. The **Mobile2Air™** application appears on the iPhone and the unit is ready for use as a secure, mobile reporting studio.

Mobile2Air™ Server Integration

Mobile2Air™ seamlessly integrates with the **FORK Automation Environment** through the Building4Media iPhone gateway, allowing for instant editor and playout access to received media. As incoming video arrives to the **FORK server, Edit2Playout** automatically converts it to the house codec, placing it on shared server space while maintaining all the original metadata and aspect ratio.

FORK's Command and Control Web Application map interface allows an operator to monitor all remote reporters and content being uploaded to the system. The interface also has an embedded chat utility, facilitating task distribution and user status reports.

Metadata within Mobile2Air™ on iPhone

iPhone **Mobile2Air™** users enter metadata such as video title, subject and location before transmitting content. These descriptors become instantly available in the **FORK Automation** Environment upon receipt and ingest. Metadata such as the username and satellite coordinate-accurate recording location are also automatically captured and sent to FORK.

Examples of Mobile2Air™ in-use / News Broadcast

Broadcast field content producers transmit breaking news live on-site as well as operate foreign remote bureaus using **Mobile2Air™**. Mobile reporters travel directly to the remote site and login to the **Mobile2Air™** Command and Control Center over the fastest available 3G or Wi-Fi connection. Logging into **Mobile2Air™** also automatically broadcasts their current location to administrators.

They then record their report using the iPhone 3GS's integrated video camera and microphone, with user-selectable video quality to maximize the currently available data rates. When the recording is complete, the reporter has the option to enter additional metadata such as video title and description as well as determine which inbound locations should receive the transmission.

The reporter activates the upload process and receives a status report as the content uploads. Previously recorded material stored on the iPhone can also be transmitted. The reporter can chat directly with the administrator within **Mobile2Air™** while uploading content, useful for tasks such as communicating notes about the footage and receiving new assignments from producers.

As soon as the content upload completes, the footage is viewable and editable within the **FORK Production Suite** and available to send directly into Final Cut Pro with all attached metadata. Incoming content is also automatically transcoded to the house codec and available for playout with **FORK Live Assist**.

Government/Emergency

City and state government, insurance adjusters and FEMA services use **Mobile2Air™** both to coordinate emergency response efforts and provide live updates for existing informational public and private websites. These services start by sending their personnel out with iPhones to capture pictures and/or video with metadata. Upon 3G or Wi-Fi transmission, all incoming documentation is stored on a centralized server, which is organized and searchable through **FORK Production Suite**. **Mobile2Air™** also enables easy tagging of all pictures and video of related incidents with metadata, facilitating future response efforts and improving efficiency and safety.

Conclusion

Mobile2Air™ is a secure, cutting-edge tool leveraging the power of the iPhone and existing 3G and Wi-Fi networks to transmit content from anywhere in the world directly to air. It offers a unique solution in the news and information marketplace with a simple, highly cost-effective alternative to traditional satellite uplink connections. With the deep metadata and proven automation capabilities of Building4Media's **FORK Production Suite** enabling a fast and reliable workflow from ingest to playout, **Mobile2Air™** is the new generation in broadcast and field reporting.