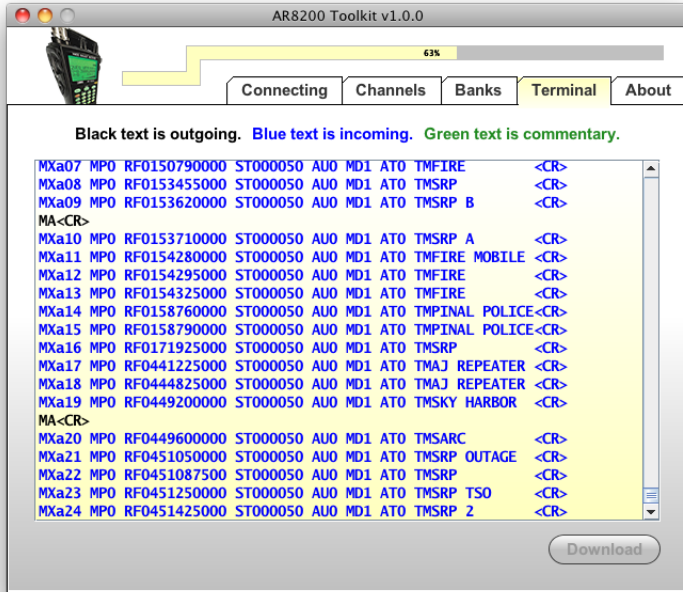
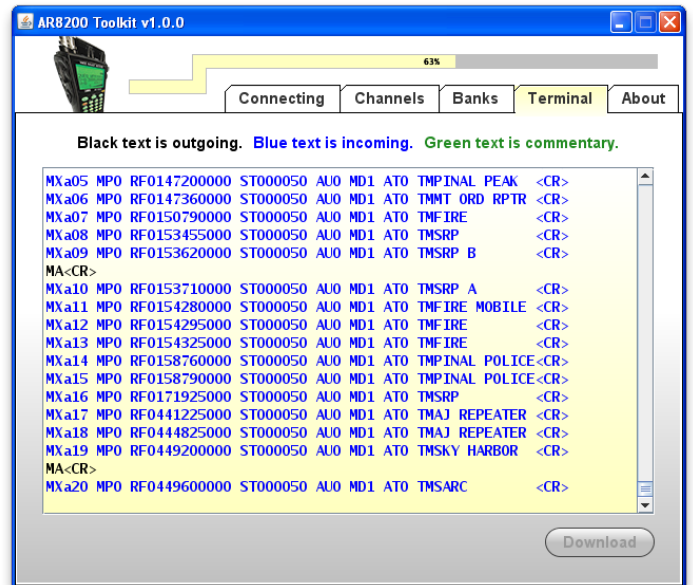


AR8200 Toolkit

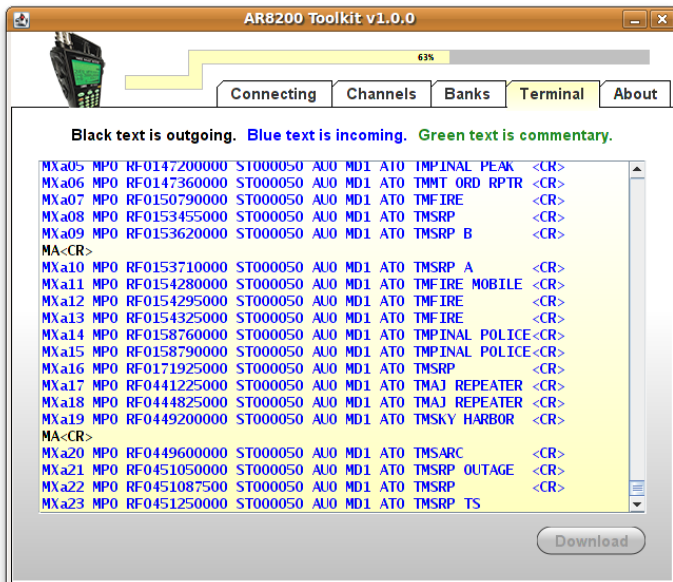
Multiplatform Channel and Bank Management
for the AOR AR8200 Radio Scanner



on Mac



on Windows



and on Linux

INTRODUCTION

AR8200 Toolkit (henceforth referred to as **Toolkit**) was born of a simple need: to interface with an AOR AR8200 scanner from a variety of different platforms, including Windows, Mac OS X, and Linux.

While **Toolkit's** ability to run on different platforms is ambitious, its feature set is more modest. **Toolkit** does not attempt to do everything well, but merely a few things excellently. Its scope is therefore limited to channel and bank management, addressing what we believe is the most tedious aspect of the AR8200. Those familiar with other offerings will find many features conspicuously lacking, most notably the ability to control the radio from a computer in real-time.

But **Toolkit** makes up for this by offering a number of innovative features, including Smart Uploading—the ability to keep track of changes and only upload what is necessary, and a Smart Terminal, which not only displays commands sent to the radio and the radio's responses, but also diagnostic interpretation and commentary. And of course **Toolkit** provides the same user experience whether running from a desk-bound PC or a svelte Linux netbook.

- Manages channels and banks, including bank linking.
- Numerous channel filters so that you only work with the channels that interest you.
- Copy or move any memory channel to any other memory channel location.
- Clear selected, clear filtered, or clear all memory channels.
- Smart Sorting—channels can be sorted and reindexed in one step to improve scanning speeds.
- Memory bank linking and reallocation—all from the same screen.
- Smart Updating—the ability to keep track of changes and only upload what is necessary.
- Smart Terminal—see all commands sent to the radio and the raw data received from the radio, as well as diagnostic information.
- Auto-save. All changes are automatically

saved to a plain-text editable XML file.

- Compatible with a variety of platforms including Windows, Mac OS X, and Linux.
- Open and extensible. All settings are saved to an XML file that can be edited by other applications. An XSD is also provided so that changes to the XML file can be validated.
- Small footprint. Requires very little screen real-estate or system memory.
- Built-in RXTX drivers for many popular platforms. Or use RXTX drivers of your choice.
- Keyboard friendly. Tab from one memory channel to the next and edit without ever touching your mouse.

INSTALLATION

Toolkit is written in Java and uses RXTX serial drivers. It's distributed as an executable (double-clickable) JAR file that will run on Mac OS X (including Snow Leopard), most flavors of Windows, and most flavors of Linux. Basically, it should work fine on any platform that supports a Java Runtime Environment (JRE) version 1.6 or higher, and for which RXTX serial drivers exist.

1. If necessary, install JRE 1.6 or higher. To determine if you already have Java or if you need to install or update the version you have, open a command line interface and type:

```
java -version
```

2. Download **Toolkit** from:

<http://efferential.com/AR8200Toolkit/>

There is no installer, just a single file called: AR8200Toolkit.jar

Windows users may find that IE helpfully decided to rename the file, rendering it useless in the process. If that is the case, simply rename the file back to what it should be.

Toolkit does not require different builds for different platforms; the same file will run on a variety of platforms, although different RXTX drivers will be needed and are specific to each platform. **Toolkit** includes drivers for the most popular platforms: Mac OS X, Windows, and Linux.

- Place **Toolkit** wherever you want. As **Toolkit** generates a number of files in the same directory in which it is executed, it is recommended that **Toolkit** be placed in its own directory to keep its files separate from others on your computer.

If you're upgrading from a previous version, simply overwrite the old JAR file with the new one. Always backup your channel and bank data before upgrading, ideally by uploading to the radio itself.

- Launch **Toolkit** like any other application, by double-clicking. If **Toolkit** fails to launch then you likely don't have Java installed (see step 1). If your system doesn't know what to do with a JAR file, and you're provided with a list of "open with" options, then choose "JAR Launcher" or "Java Platform". Again, if you don't have these options then you likely need to install Java (see step 1).

Alternately, **Toolkit** may also be launched from a command line interface by navigating to wherever **Toolkit** is located and typing:

```
java -jar AR8200Toolkit.jar
```

- Upon launching, **Toolkit** will generate a number of files in the same directory in which it is executed. Do not rename these files. If the files are moved or deleted, **Toolkit** will regenerate them as needed.
- Mac users should execute the helper script—`macSerial.sh`—if necessary (if you

FILE	PURPOSE
AR8200Toolkit.log	Log file.
AR8200Toolkit.pdf	This documentation.
AR8200Toolkit.xml	Configuration file where all settings are stored.
AR8200Toolkit.xsd	Schema used to validate the configuration file.
librxtxSerial.jnilib	RXTX serial driver for Mac OS X.
librxtxSerial.so	RXTX serial driver for Linux.
rxtxSerial.dll	RXTX serial driver for Windows.
macSerial.sh	A shell script that may be required by some Mac environments.

see this file, then you need it; if you don't see this file, then you don't need it). Instructions for executing the script are located in the script file itself. It only needs to be launched once and can then be discarded forever.

- Ensure that your radio is on and attached to your computer. Ensure that you have the necessary serial hardware and associated serial hardware driver. Note that the serial hardware driver is not the same as the RXTX serial driver. If you're using Linux and in need of a hardware serial driver to go with a USB-to-serial adapter, try searching for "modprobe usbserial" on the Web.
- In most cases, the default connection settings should work fine. Select an appropriate port (one that corresponds to your serial

port or adapter). Ensure that the baud rate set in **Toolkit** corresponds to the baud rate set on the radio. Press the Test button. If the test is successful, you're ready to start using **Toolkit**.

TROUBLESHOOTING

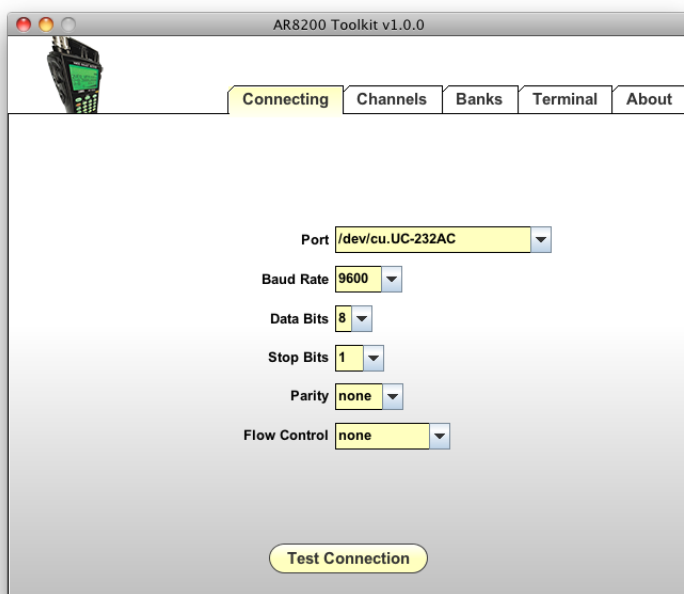
If you don't see a list of ports, then you're likely having issues with the RXTX driver. This will likely happen on Linux, as **Toolkit** includes only one Linux driver, while there are many different Linux distributions. If the included Linux driver does not work with your particular distribution, try manually installing RXTX from a command line interface by typing:

```
sudo apt-get install librxTx-java
```

Only one file—`librxTxSerial.so`—is actually needed, and you may need to copy this file to wherever you launched **Toolkit** so that Java can locate the driver.

In the event that **Toolkit** encounters multiple RXTX drivers, it will try to load the first one it finds in accordance with the Java library path. This path is viewable in the log and will look similar to this:

```
/home/user/Desktop/AR8200Toolkit:/usr/
```



```
lib/jvm/java-6-openjdk/jre/lib/i386/
client:/usr/lib/jvm/java-6-openjdk/
jre/lib/i386:/usr/lib/jvm/java-6-open-
jdk/jre/./lib/i386:/usr/java/pack-
ages/lib/i386:/usr/lib/jni:/lib:/usr/
lib/
```

Note that **Toolkit** always places its own parent directory first, ensuring that a driver located in the same directory always gets loaded first. If you want **Toolkit** to load a driver from a different location, either copy it to **Toolkit's** directory or create a symbolic link. For example:

```
sudo ln -s /usr/lib/librxTxSerial.so /home/
user/Desktop/AR8200Toolkit/librxTxSerial.so
```

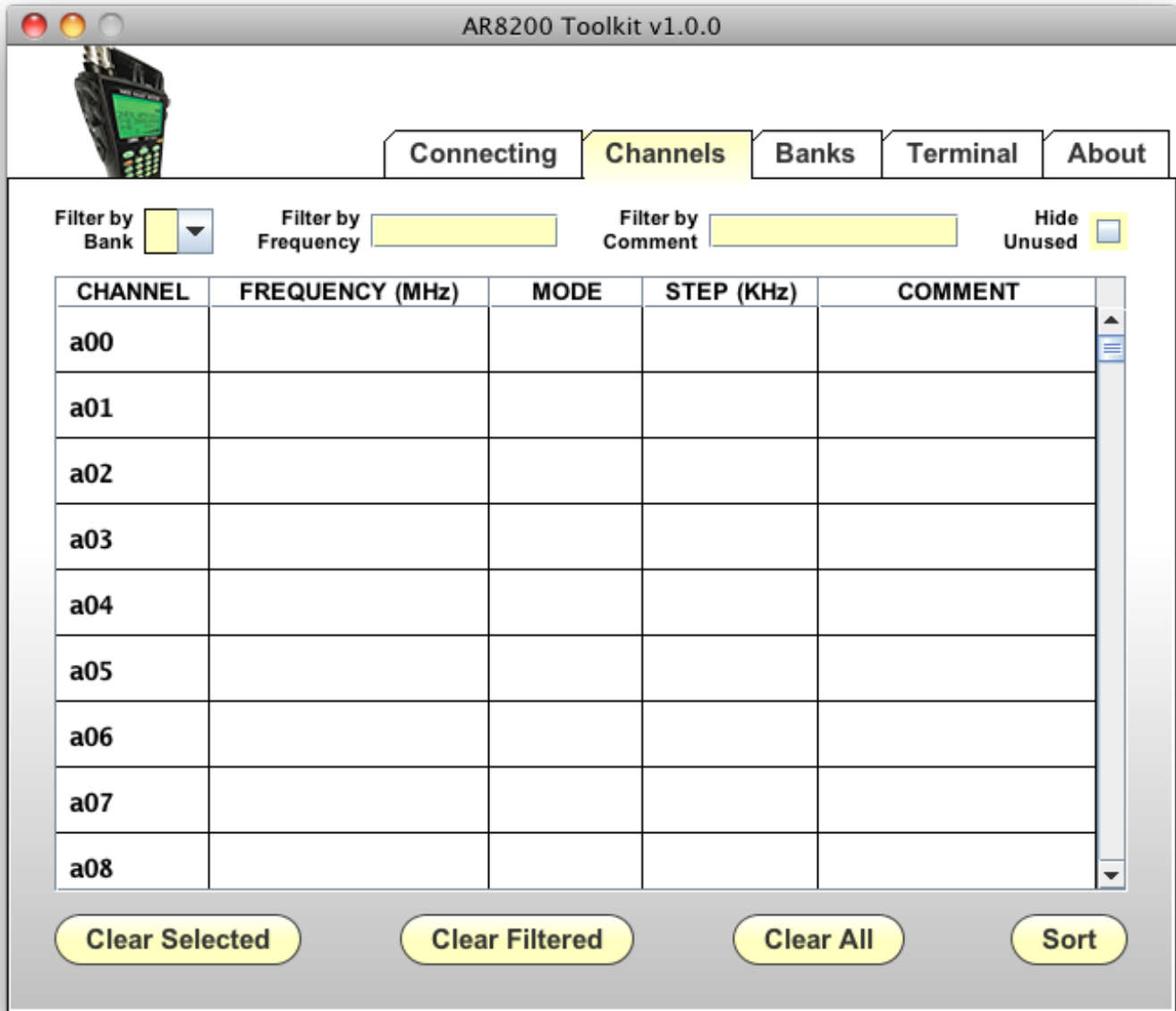
Other likely driver issues will result from trying to run a driver compiled for a 32-bit system on a 64-bit system. In this case, it's possible to run **Toolkit** in 32-bit mode from a command line interface by navigating to wherever **Toolkit** is located and typing:

```
java -jar -d32 AR8200Toolkit.jar
```

If you see a list of ports, but not the port you were expecting to see, then you're likely having issues with either your serial adapter, your serial adapter drivers, or your cabling.

If you don't have any driver or port issues but nonetheless can't connect to the radio and the test is unsuccessful:

- Ensure that all your cables are firmly connected. The one that attaches to the radio itself requires a firm push to engage.
- Ensure that the radio's baud rate matches the baud rate you selected. Try using a lower baud rate (e.g, 9600 or 4800).
- Mac users: ensure that you have run the `macSerial.sh` script (if it was created; if not you don't need it).
- Try restarting the radio, restarting **Toolkit**, reattaching any serial adapters you may be using.



CHANNELS

Toolkit starts with a blank slate of 1000 unused memory channels. You may want to begin by downloading existing channel data from your radio prior to adding new data. If so, skip to the Terminal section of this guide. Otherwise, begin entering channel data by selecting the frequency cell of a particular channel. You must enter a valid frequency for a channel to become active. This frequency can be a duplicate, and you will be warned if it is. All changes are automatically saved to AR8200Toolkit.xml. A radio is not required when editing channels.

Just above the channels table is a row of filters that can be used to hide channels you're not interested in viewing.

Clearing memory channels means clearing the channel data they contain, making them inactive. **Toolkit** offers a variety of clearing options, most notably the Clear Filtered option, which is used in combination with the channel filters to clear an arbitrary subset of channels. For example, you can use Clear Filtered to clear all the channels from a particular bank, or that contain a particular comment.

Toolkit offers a smart sorting option which automatically sorts and reindexes channels within a bank. The sort rearranges channel data by frequency from low to high, which improves the scanning rate. Reindexing has the effect of removing any gaps and placing all unused channels at the end, after those that are in use. For example, if you begin with channel data at 00 and 02, with 01 empty, sorting will leave you with channel data at 00 and 01, with 02 now empty.

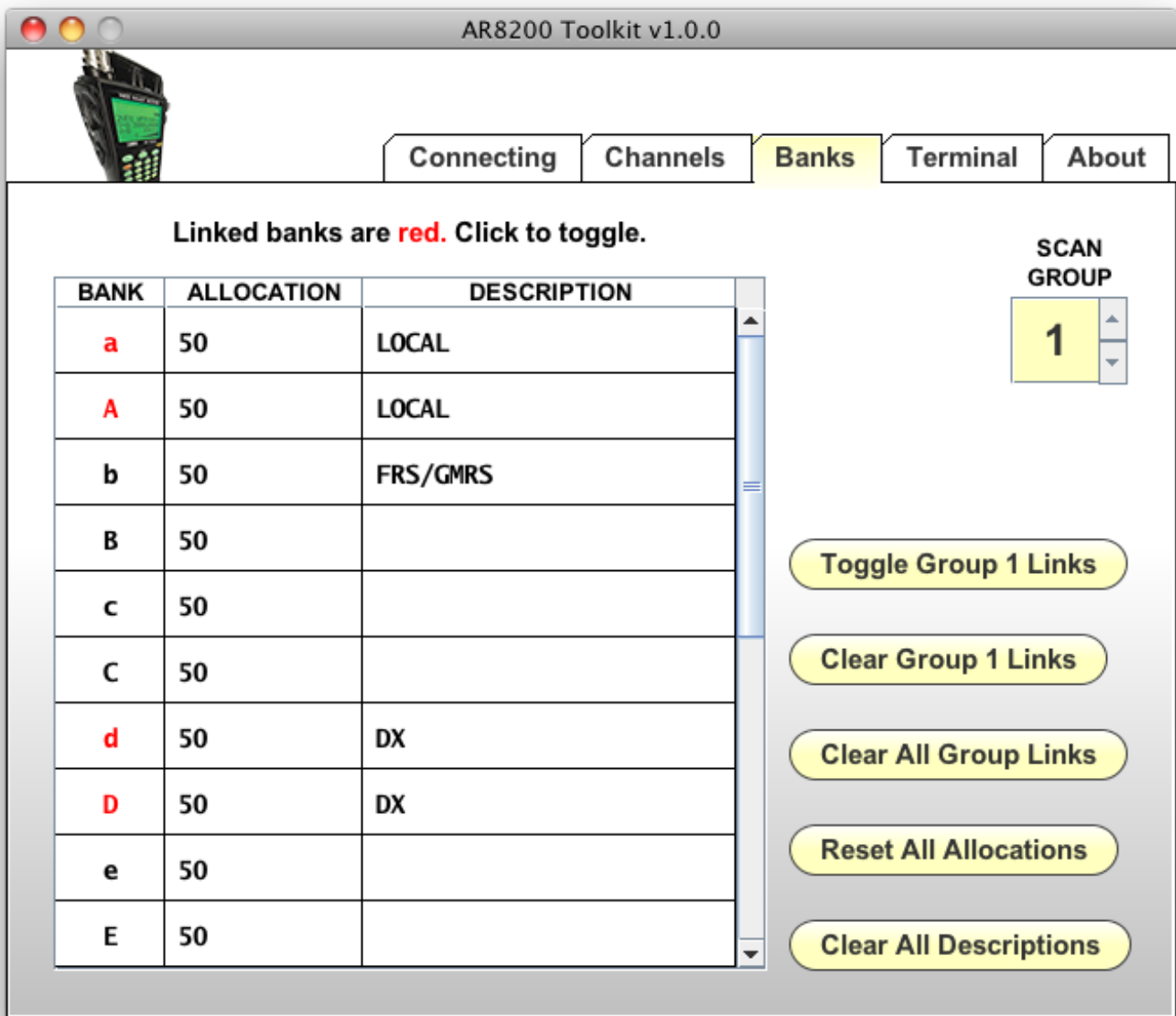
BANKS

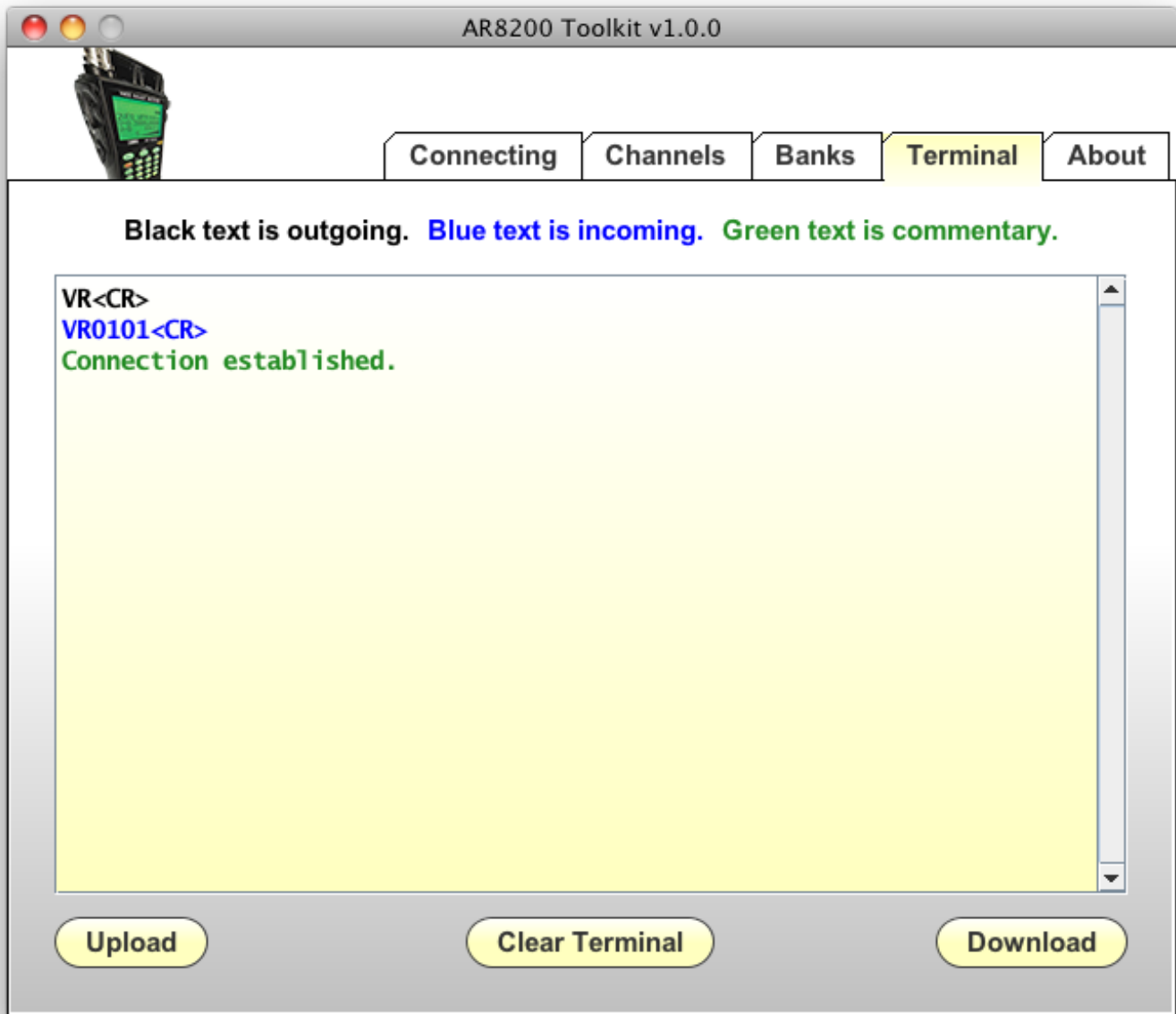
Scan banks can be managed largely independent of memory channels except where reallocation is con-

cerned. As with the radio itself, reallocating a bank will result in channel reindexing, but no loss of channel data.

Bank linking is accomplished by clicking on the banks and toggling their linked state. Red denotes linked banks whereas black denotes unlinked. The AR8200 radio allows for nine different bank-linking “Scan Group” configurations, plus a default that turns off all linking.

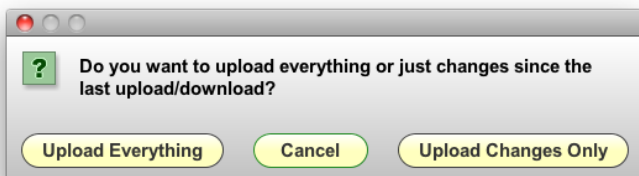
As with channel editing, all changes are automatically saved to AR8200Toolkit.xml, and a radio is not required until changes are ready to be committed.





TERMINAL

Toolkit provides an innovative diagnostic terminal—a smart terminal—that displays commands in black, responses in blue, and interpretation or commentary in green. It is here that communication with your radio takes place.



Downloading is straightforward; existing memory channel data in **Toolkit** will be replaced with data from the radio.

Uploading offers a choice: everything or changes only. The latter is known as smart updating, as it will limit uploads to only what has changed since the last upload or download. This can significantly reduce uploading times. For example, if all you changed was a single comment in a single memory channel, then that channel data is all that will be uploaded.

ABOUT

Toolkit was written by Scott Edward Skinner with the help and support of many. **Toolkit** would not be possible without RXTX and the work of those who contribute open source code to the public domain.

CONTACT

We are avid users of our own products and are always looking for ways to improve them. Please send us your questions, comments, and suggestions. Contact us at: ar8200toolkit@effeential.com

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