How to use the Raven II CDPD modem with the Lantronix MSS100 serial-to-ethernet device

355 Beth Bartel January 23, 2009 Lantronix, Raven 3135

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There are outdated links in this article that we have not yet been able to update. Outdated urls are shown in brackets [].

This document describes how to set up the Raven CDPD, which is a wireless modem using digital cellular technology. One advantage to using this technology is that it minimizes telemetry infrastructure, allows for a complete standalone system, and an internet presence is established for the remote GPS system.

Raven II Wireless CDPD Modem

The Raven CDPD modem is a wireless modem using digital cellular technology. The three major CDPD service providers are AT&T, Verizon Wireless, and Cingular Wireless. The advantage for using such technology is that it minimizes telemetry infrastructure, allows for a completely standalone system, and an internet presence is established for the remote GPS system. The disadvantage is that CDPD converage is not nearly as extensive as traditional analog or digital service. CDPD tends to be concentrated about major metropolitan areas within the United States. Please see the coverage maps for AT&T and Verizon.

As of January 2002 the cost of service with AT&T which includes unlimited useage is about $50 per month, government rate.

The Raven has relatively low power requirements which is important for a solar powered station. The Raven is capable of a maximum 19200bps throughput. This limitation is generally not a problem for most applications.
The following page provides information, documentation, and links to obtain firmware upgrades for the Raven II:

[www.airlink.com/info/rav2_mkt.html]

The Raven modems are available from Sierra Wireless (previously Airlink). Upon request the modem is preconfigured with a static IP address before shipping. If you are interested in obtaining a modem and setting up CDPD service please contact [Mary Brandow at mary@airlink.com].

1. Installation and Setup

The product manual provides detailed information on how to connect the Raven to your PC to enable access for configuration. You may download the pdf from:

[http://www.airlink.com/support/docs/RavenII_Manual.pdf]

There are two methods for connecting to the Raven II for configuration. These methods are explained in the manual. For the sake of expediency they are summarized here.

Method 1 (fast):

The device is Hayes modem compatible and accepts AT commands. You may issue AT commands to configure the modem using a terminal application such as Hyperterm (Windows) or cu (Linux). There is no special setup required.

The requirements are as follows:

- straight serial (9 pin, M-F) to PC's COM port
- com parameters set to 9600 baud, 8N1 (factory default settings)

The entire list of accepted AT commands is available for download in pdf format here:

[http://www.airlink.com/support/docs/ATCommands_QuickRef.pdf]

Configuration (Method 1):

The script called ravencfg will automatically configure the modem. Before running the script make sure that the communications parameters match the requirements stated above. Additionally, the script assumes that /usr/bin/cu and /usr/bin/expect are installed in your linux system.

At the command line type

> 27078amp;gt; ./ravencfg

The script will take a few short moments to run. Afterwards the modem will be ready to go. This is the fastest way to configure the modem.

You may find ravencfg located here:

[http://www.unavco.ucar.edu/~jaskl/lanrav/ravencfg]

Method 2 (slow):

This method provides a GUI to view and modify all the configuration parameters of the modem.

The requirements are as follows:

- straight serial (9 pin, M-F) to PC's COM port
- Wireless ACE ([http://www.airlink.com/support/modems/ace.html]) configuration program
- PPP connection to Raven II modem

Configuration (Method 2):

The details of setting up the PPP connection are explained in the Raven II manual ([http://www.airlink.com/support/docs/RavenII_Manual.pdf]). The appropriate settings to use can be found within the ravencfg script itself.

Lantronix MSS100 Serial-to-Ethernet Hardware Port Redirector

At the time of this writing there were no software port redirection solutions available for linux. The MSS100 provides a hardware solution that has been sucessfully tested using lapdogs (rtilities) and a Trimble 4000ssi gps receiver in combination with the Raven II modem.

Communications requirements:

- null modem adapter
- 25pin female to 9pin male adapter
- straight serial (9 pin, M-F) to PC's COM port
- comm parameters set to 9600 baud, 8N1 (factory default settings)

Several scripts were written to automate the configuration process of the MSS100. You may find a listing of all available scripts (including one for the Raven) at:

[http://www.unavco.ucar.edu/~jaskl/scripts.html]

The web page explains the function of each script.

Since the MSS100 requires network access you will need to provide the IP, gateway, and subnet mask adresses. This will allow the MSS to redirect the RS-232 traffic to the internet and back.

Configuration:

Requires the following scripts:

- localcfg
- remotecfg
- makesite

The configuration of the MSS is a two-stage process. The initial step sets up the serial port communications and ethernet network parameters. This is done via the serial port itself using the factory default settings. The script localcfg will do the initial configuration.

If you find that you are not able to communicate with the device using factory settings try resetting the unit. You will find the reset button between the power input and the RJ-45 port. Press and hold the button with a pointed object for about ten seconds with the power on. It may take up to 45 seconds to reboot.

The second step involves communicating with the MSS via the ethernet. This step sets up the MSS for communicating with the remote system (Raven II modem). The script remotescg will do the secondary configuration.

Run the scripts in the following order:

1. localcfg
   Issue the command

   27078amp;gt; ./localcfg

   You will be prompted for the com port, baud rate, IP, gateway, and subnet mask. The baud rate is the new setting that will be used for the MSS. The baud rate should be set to 19200.

2. remotecfg
   Issue the command

   27078amp;gt; ./remotecfg

   You will be prompted to enter the IP address of both the MSS100 and the remote device. Note that this script sets the baud rate to 19200.

One additional script, called makesite, creates custom configuration scripts which are based upon remotecfg. For each remote site you want to communicate with via the MSS100/Raven combination there must be one site file containing the site's IP address and baud rate (no higher than 19200).

makesite will prompt you for a 4 character site ID, the site's IP address, the MSS100's address, and the site's baud rate.

This is for the purpose of maintaining automated downloading using lapdogs and cron if there is more than one site to contact. An example of a cron looks like:

```
 # DO NOT EDIT THIS FILE - edit the master and reinstall.
# (/tmp/crontab.17740 installed on Wed Feb 20 11:30:25 2002)
# (Cron version -- $Id: crontab.c,v 2.13 1994/01/17 03:20:37 vixie Exp $)
0 0 * * * /home/lapdogs/SITE_remote
5 0 * * * /home/lapdog/Lapdogs/dwnld_Trimble SITE
```

The script must be run before every unique lapdogs download.

Online URL:
https://kb.unavco.org/article/how-to-use-the-raven-ii-cdpd-modem-with-the-lantronix-mss100-serial-to-ethernet-device-355.html