



RHINO EQUIPMENT CORP.

# **Ceros II Chassis**

## **Designed for Asterisk\***

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### **User Manual**

Rhino Equipment Corp. is proud to manufacture our products in the U.S.A.

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\* Asterisk is a registered trademark of Digium.



Managing your open source telecommunication needs has never been easier than with Rhino products. The Rhino Ceros II provides instant credibility to your Value Added Reseller (VAR) product line, by providing an unmarked PC chassis that is simply customized with your logo graphic and text information by editing a text file. This information is displayed on the Organic Light Emitting Diode (OLED) display for your customers to visually identify your own branded PBX product.

Knowing that Rhino products are ready to perform right out of the box means that you can spend more time developing important customer relationships. The Ceros II comes preloaded with Linux and Asterisk, along with all the necessary configurations for the specific installed Rhino hardware. All that is needed is to customize extensions and other outside system environment configurations.

The Ceros II chassis was designed with VARs in mind. The chassis comes with no external markings or silk screening, and comes shipped in two cartons -- an outside carton that can be discarded so that a pristine, inside carton can be cleanly shipped to your end customer.

Rhino Equipment Corp. offers you a complete line of low cost PCI plug-in cards including Single T1/E1, Dual T1/E1, Quad T1/E1, Quad FXO analog, Octal FXS/FXO and 24-port mixed mode analog interfaces. And don't forget the full line of Rhino Channel Bank products, for large scale analog FXS or FXO applications.

Rhino designed products are tough. In the rare case of trouble, our technical support staff is ready to give you the support you need, when you need it. Our 5-year, limited warranty means that you can be confident that Rhino will always work hard in your Open Source Telephony application.

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## 1. PREINSTALLATION

Thank you for purchasing a Ceros II chassis with Serial LED Interface (SLI) front panel. For unparalleled performance and years of operation please follow the instructions provided in this user manual.

The Rhino Ceros II is easy to setup and use, which we hope will make your telephony life easier! Please spend a few minutes reviewing these instructions to ensure a successful installation.

### 1.a Warranty

The Ceros II chassis is covered by a 5 year limited factory warranty. The warranty statement is available on the Rhino CD-ROM, the Rhino Public FTP, the Rhino website [www.rhinoequipment.com/warranty.html](http://www.rhinoequipment.com/warranty.html) or by request.

Contact [helpdesk@rhinoequipment.com](mailto:helpdesk@rhinoequipment.com) to request a copy.

**Please note that damage caused by improper installation or acts of nature are not covered by this warranty.**

### 1.b Standards

The telephony cards comply with Part 15 and Part 68 of the FCC Rules. The number is located on the back of the individual Rhino OST PCI Cards and equipment. The label contains the FCC Registration Number for this equipment. If requested, this information must be presented to your telephone company.

If trouble is experienced with this unit, please contact customer service at the address and phone listed below. **DO NOT DISASSEMBLE THIS EQUIPMENT.**

**Contact:** Rhino Equipment Corp.  
**Attn:** CUSTOMER SERVICE DEPT.  
8240 S. Kyrene Rd. Suite 107  
Tempe, AZ 85284  
480-621-4002, Fax 480-961-1826  
Email: [helpdesk@rhinoequipment.com](mailto:helpdesk@rhinoequipment.com)

You must receive an RMA (Return Material Authorization) number from us so that your return is handled promptly. Failure to do so may result in a lost or delayed replacement.

### **1.c Surge Protection**

It is recommended that a surge protector or uninterruptible power supply (UPS) be installed in conjunction with the Ceros. This will help minimize damage as a result of lightning strikes and other AC line surges. Failure to use a UPS could affect the 5 year limited warranty.

### **1.d Unpacking**

It is recommended that once you unpack your Ceros II you save the packaging. The Ceros packaging was designed to support and protect your purchase from potentially harsh handling while in route. Please note that this packaging can be used again to ship the Ceros to another location.

The Ceros II is suspended in packaging to help protect it from an impact it may receive during shipment or storage; however it is still a good idea to visually inspect the box and its contents to see if any thing has been damaged before receiving the unit. It is also a good idea to take this time and make sure all appropriate cables and accessories have arrived with the unit; this may vary depending on what if any cards have been added to the Ceros II, for all units you will receive a power cable as well as mounting brackets and hardware for rack mounting your Ceros.

The minimal contents that you should find the Ceros II box is:

- 1) Ceros II chassis
- 2) 19" or wall mount brackets and mounting hardware
- 3) Rubber bumper feet
- 4) AC power cord

## **2. INSTALLATION**

Installing the Ceros requires choosing a suitable long term location for the unit. The Ceros II has two cooling fans, one located in the front left of the chassis, and one in the center of the rear panel. These fans allow for air to be pulled in from the front and exhausted out the back. Pick a location that is free from dust and debris so that the inside of the chassis does not become contaminated over time.

### ***2.a Ceros II Installation***

#### ***i. Rack Mounting***

Locate the two larger rack mount ears, and install the correct side to the Ceros chassis using three Philips head screws on each side. Note that the enclosed rack ears are for both 19" rack mounting, and wall mounting depending on if you install them at the front or the side of the chassis.

#### ***ii. Wall Mounting***

Locate the two rack ears, and install the correct side to the Ceros chassis using three Philips head screws on each side. Mount the other side to a suitable wall location.

#### ***ii. Desktop Location***

Locate the four rubber bumper feet, peel off the backing and stick to the chassis bottom.

#### ***iii. Cleaning the Front Air Filter***

The front air filter can be removed without any tools. Simply grab onto the lower front grill section on the two outside finger brackets and pull. The air filter can be removed, washed, dried and replaced. To install the front grill, simply snap it into place.

#### ***iv. AC Power***

The standard Ceros II system comes with a 400W, 1U server grade power supply. Please note that the Ceros II has an optional redundant power supply add-on. If you purchase this upgrade please make sure that both power supplies are plugged in at all times.



Also note that the additional power supply can be purchased at any time and installed quite easily. The internal 1U power supply will need to be removed, a blanking plate removed, and the redundant power supply added.

All AC connections should be plugged in to an un-interruptible power supply (UPS) with surge suppression for protection against lightning and up stream electrical damages.

#### ***v. Ethernet***

This in almost all cases will plug directly in to your network and can be configured in software to use DHCP or static IP address as needed. **DHCP is default.**

#### ***vi. Monitor and Keyboard***

In almost all cases, a keyboard and mouse are unnecessary since you can use SSH to login to the system for configuration. This can also be connected all of the time.

**vii. Usernames and passwords:**

**SSH:** Use the IP address that is located on the front panel

**Shell Login and Password Data**

**Login:** root

**Password:** rhino

**Web GUI Login and Password Data**

- Elastix Users:  
Login: admin  
Password: rhino
- PBX in a Flash users:  
Login: admin  
Password: rhino
- Trixbox CE users:  
Login: maint  
Password: rhino

**Front Panel OLED Key Unlock** – press the red keys in this sequence: top, right, bottom, left

**2.b Operating System Configuration**

Your Ceros II most likely came preloaded with one of two configurations:

- 1) Rhino special Linux build
- 2) Elastix, PBX in a Flash, trixbox, or another popular distribution with the front panel Rhino OLED system installed

Most, if not All of the configuration can be accomplished via SSH.

**2.c Setting Up the IP Address of the Ceros II**

The Ceros II ships with DHCP as a method for automatically setting the IP address of the system. If DHCP is your method, then simply look to the front OLED panel for the current IP address. If a static IP address is needed use netconfig or ifconfig in the command shell to configure your static IP, Subnet, Gateway and DNS.

## **2.d How to configure your Network in Linux:**

Login to your Linux shell as root

The recommended usage for configuring your Ethernet interface is netconfig

Type the following:

- netconfig

Follow all of the prompts and fill in any pertinent information

OR

If you would like to use ifconfig please read the following for usages:

- man ifconfig
- ifconfig --help

## **3. Rhino Front Panel Display**

The Rhino front panel display is not only a display element, but also can be used to Reset the Ceros II, and power on and off the Ceros II. The display has a “sleep mode” that extends the life of the display; touch any red button to bring the display out of sleep mode.

**IN CASE OF A NON-RESPONSIVE SYSTEM:** To reset the Ceros II, hold down the left and top buttons (west and north buttons) for 4 seconds, and the Ceros II will reset.

**IN CASE THE CEROS II DOES NOT POWER ON:** To power ON the Ceros II, hold down the right and bottom buttons (east and south buttons) for 4 seconds, and the Ceros II will power ON.

Most all pertinent system information can be viewed from the Rhino front panel display. **Unlock the interface using the key press sequence top button, right button, bottom button and then the left button.** The display will change to the main menu, indicating that the system is now unlocked. (In /etc/rhino.conf this key unlock sequence can be customized for security reasons.)

You can navigate using the up and down buttons to point at different menus, and use the center button to select or view the desired menu. To leave any menu, in most cases you

can use the left button to go back to the last menu, and if you are at the main menu this will lock the keys.

### **3a. Statistics**

View the up time of the system and the load on the system.

### **3b. Information**

This menu has three sub menus, *Versions*, *Span(s)*, and *Freespace*. The versions menu will show you what version of system software you are currently running on the system, along with patch information, under the Rhino System Image menu; also under the versions menu you will be able to see what Rhino PCI cards are installed and what version they are, under the Rhino Hardware submenu. *Span(s)* menu will allow you to see how spans are defined and their state. The *Freespace* menu will show the amount of available system media storage.

### **3c. Advanced**

This menu has three submenus: *Logs*, *Reboot*, and *Power Off*. *Logs* has two log files; System Boot Log will show you a log starting with Linux boot and all the way through the ACPI and information that Linux collects on start up; System Update Log that shows information about updating patches and status during the update.

Reboot will first confirm that you want to restart the system and then perform a full system restart. Power off will again confirm that you want to power down the system and then perform a proper shutdown of the system.

## **4. Front Panel Splash Screen**

Please note that the “splash screen” data can be changed by editing the text file located at `/etc/rsli_splash.xml`. This is an XML text file, and follows standard XML programming practices. Use a text editor such as “nano” (make sure to use the `-w` option!) to edit this file to add whatever data you wish to display.

```
nano -w /etc/rsli_splash.xml
```

The display also includes a screen saver to keep the display from exhibiting “burn-in”. Simply press any key to bring the display back to the splash screen.

### **4a. XML Commands**

The display uses XML programming keywords to allow the inclusion of graphics as well as text on your splash, or “home” screen. The following is an example of a typical XML

file, including a graphic in BMP format, plus six lines of information. Please note that the Rhino.bmp file and this sample file are what come with the base Ceros Mini build.

**NOTE:** There may be two sections to this XML file, one for the standard Rhino LCD display, denoted by the <rsli> and </rsli> tags, and the <osli> and </osli> tags. You do not need to worry about the information between the <rsli> and </rsli> sections. Your specific installation may or may not have this section included.

### Contents of /etc/rsli\_splash.xml

```
?xml version='1.0' encoding='UTF-8' ?>
<conf>
  <osli>
    <IMG value = '/etc/1.bmp' inverse = '1' row = '0' col = '0'/>
    <TXT value = 'Rhino Equipment Corp.' row = '1' col = '10'/>
    <TXT value = '8240 S. Kyrene Rd. Ceros Mini' row = '2' col = '10'/>
    <TXT value = 'Tempe, AZ 85284' row = '3' col = '10'/>
    <TXT value = '(480) 621-4000 (877) RHINO-T1' row = '4' col = '10'/>
    <TXT value = 'MAC:' row = '5' col = '10'/>
    <MAC device = 'eth1' row = '5' col = '15'/>
    <TXT value = 'eth0:' row = '6' col = '1'/>
    <IP device = 'eth0' row = '6' col = '7'/>
    <TXT value = 'eth1:' row = '6' col = '22'/>
    <IP device = 'eth1' row = '6' col = '28'/>
  </osli>
</conf>
```

The first line should be copied exactly as is; it is the definition of the file type and must be present! The second and third, plus the last two lines define the sectioning of the file where the actual data lives, these should also be left exactly as is.

There are four different and optional user “tags” associated with the software system, which are **IMG**, **TXT**, **IP** and **MAC**. These are the four categories of items that can be placed on the home screen. Note that all of these tags use a “row” and “col” placement argument set to locate the items to the screen. “row” is the vertical placement, and “col” is the horizontal, starting at location zero, zero (row = 0, col = 0). Also note that all values are delimited with single quote characters, a must!

**IMG** = defines the bit mapped file that will be displayed. The file is read the first time the software detects a new graphic file. The bit map (BMP) file should be in 8 bit, gray scale to be displayed to the best performance. Other formats however will be converted

to the best of the system's display capability. The optimal size that fits into the first 9 characters by 6 lines is a 50 by 50 (or so) sized bmp graphic.

NOTE: If you do not want a graphic to display, we have included a one pixel BMP file called "1.bmp" that should be used to replace the Rhino graphic that ships with the display.

**TXT** = defines text to be located on the display.

**IP** = displays the current IP address of the Ceros Mini box to the display in XXX.XXX.XXX.XXX format.

**MAC** = displays the current MAC address of the Ceros Mini box to the display in YY:YY:YY:YY:YY:YY format.

#### ***4b. Graphics and Text Together***

It is important to note that the display has the capability of 64 X 256 pixels of graphic area. Any 8 bit map file (.bmp) of this size will be converted and simply put to the display. If you want to put a graphic with text overlaying the graphic, it is possible to completely write the display with a graphic and then selectively place the text.

It is best to experiment with the graphic and text, to get the best looking presentation of your data possible.

### **5. freePBX Web GUI**

Elastix, trixbox and PBX in a Flash all use freePBX and can be accessed by using your web browser and going to the IP address of the Ceros II. For more information on how to configure asterisk using this interface we suggest going to: <http://asterisktutorials.com/>, or <http://www.freepbx.org> there are also a ton or great community supported forum you can google for, or just give Rhino Support a call and we can help out with the basics and point you in the right direction to get you going.

### **6. SSH (Secure Shell)**

You may SSH into the Ceros II operating system using a SSH client. For Windows, a good choice is PuTTY, which can be downloaded from the PuTTY site at:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/>



Use PuTTY to set up a SSH session using the IP address of the Ceros system, and be sure to use root and rhino as the login name and password.

For security purposes It is highly recommended to change the root password ASAP.

You can do this by typing:

```
passwd root
```

It is good to be in the habit of generating a password that has both numbers and letters, and make sure that your password is not based on a dictionary word.

## 7. Upgrade / Reinstall

Please contact us at [helpdesk@rhinoequipment.com](mailto:helpdesk@rhinoequipment.com) if you need to reinstall or upgrade your Ceros II operating system we can help to make sure that your upgrade or reinstall goes as smoothly as possible.

## 8. Support Options

Use Rhino's self support system.

<http://support.rhinoequipment.com>

### Community Support

<http://trixbox.org/forum>

<http://voip-info.org>

<irc:irc.freenode.net>

#asterisk

### Rhino Trouble Tickets

You may create a trouble ticket at <http://support.rhinoequipment.com>

## 9. Ceros II BIOS Configuration Instructions

\* Connect a video monitor and keyboard, as well as Ethernet connections into the I/O shield protected portion of the Ceros unit.

- Connect power to the platform, and turn on the power switch on the back of the Ceros unit.
- Using a screwdriver, locate the red power ON connections on the motherboard and short those two together until the unit powers on.

\* While the Ceros unit is powering up, hold the DEL button down. This will take you into the BIOS.

\* From the main screen choose **Standard CMOS Features**

- Down arrow to **drive A**, hit return.
- Down arrow to **none**, hit return.
- Press ESC

\* From the main screen choose **Advanced BIOS features** and then hit return.

- Down arrow to **First Boot Device**, hit return.
- Down arrow to **Hard Disk**, hit return.
- Down arrow to **Second Boot Device**, hit return.
- Down arrow to **disable**, hit return.
- Down arrow to **third boot device**, hit return.
- Down arrow to **disabled**, hit return.
- Hit ESC.
- Down arrow to **HDD S.M.A.R.T. capability**, hit return.
- Down arrow to **enable**, hit return.
- Down arrow to **Frame Buffer**, hit return.
- Down arrow to **16M**, hit return.
- Hit ESC.

\* From the main screen arrow to **Integrated Peripherals**, hit return.

- Down arrow to **IDE Configuration**, hit return.
- **On-chip IDE Channel0**, hit return.
- Choose **disable**, hit return.
- **On-chip IDE Channel1**, hit return.
- Choose **disable**, hit return.
- Hit ESC.
- Down arrow to **Onboard Audio Function**, hit return.
- Down arrow to **disable**, hit return.
- Down arrow to **Onboard LAN Boot ROM**
- Hit return and down arrow to **enable**
- Hit return.
- Down arrow to **1394 Function**, hit return.
- Down arrow to **disable**, hit return.
- Down arrow to **Onboard Serial Port 1**
- Hit return
- Down arrow to **disable**, hit return.
- Down arrow to **Parallel Port**, hit return.
- Down arrow to **disable**, hit return.
- Down arrow to **Legacy USB Storage Detect**
- Hit return
- Down arrow to **disable**, hit return.
- Hit ESC.

\* From the main screen arrow to **PC Health Status**

- Down arrow to **CPU Fan Fail Warning**
- Down arrow to **enabled**
- Down arrow to **CPU Smart Fan Control**
- Down arrow to **enabled**
- Down arrow to **System Smart Fan Control**
- Down arrow to **enabled**
- Hit ESC

\* Down arrow to **Power Management**, hit return.

- Down arrow to **AC Back**, hit return.
- Down arrow to **Full On**, hit return.
- Hit F10.
- Press Y.
- Hit ESC.

System will reboot. After Ceros reboots successfully then please shutdown Ceros unit and power back on normally.

## 10. Packing Instructions for the Ceros II

The Ceros II is packaged in a special reusable suspension package. The Ceros II can be repackaged in the same suspension package for shipment if special care is taken to be certain that the package is sound.

- 1) Locate the Korvu suspension package inserts. Korvue is a special plastic that does not rip or tear when puncturing. Note that the Korvu sheet is glued to the cardboard package, do not tear that from the cardboard. The most important aspect of the packaging is to realize that the Ceros II will be suspended between the two Korvu inserts like a trampoline, and the Ceros II will not touch any side of the carton if properly installed.
- 2) Remove the rack mount ears from the Ceros II.
- 3) Place the Ceros II into the protective plastic bag that originally shipped with the Ceros II.
- 4) Place the Ceros II inside the cardboard box, on top of the lower Korvu insert. Note that at this time the Ceros II will be suspended on the Korvu sheet and will not be touching the bottom of the cardboard box.
- 5) Insert the top Korvu insert, 180 degrees from the orientation of the insert that is already in the box. Note that the top Korvu insert should be sticking out of the top of the cardboard box about 1", and it seems as if the box cannot be closed.
- 6) Press down on the Korvu insert until flush with the top of the cardboard box, and now close the box lids. Note that this may take two people since the Korvu sheets need to be compressed to keep the Ceros II trapped and suspended.
- 7) Add any other needed items to the package in the special accessory compartment.
- 8) Tape box shut.



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## User Access Interface Quick Reference

**SSH:** Use the IP address that is located on the front panel

### **System Console Login and Password Data**

Login: **root**

Password: **rhino**

### **Web GUI Login and Password Data**

- Elastix Users:  
Login: admin  
Password: rhino
- PBX in a Flash users:  
Login: admin  
Passowrd: rhino
- trixbox CE users:  
Login: maint  
Passowrd: rhino

**Front Panel OLED Key Unlock** – press the red keys in this sequence: top, right, bottom, left. Another way to remember this is 12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock.

**Power ON** – if the system is not ON, or the text “----- SYSTEM NOT READY ----” is displayed on the last line of the front panel for an extended time period, you can “Power ON” the system by holding down the 3 o'clock and 6 o'clock keys **AT THE SAME TIME** for more than five seconds.

**Power OFF** – the system can be powered down using the front panel by holding down the 3 o'clock and 6 o'clock keys **AT THE SAME TIME** for more than five seconds as long as “----- SYSTEM NOT READY ----” is displayed on the last line. If “KEYS LOCKED...” is shown, unlock the keys and use the “Advanced” menu to Reboot or Power Off the system.

**Hard Reset** - the system can be hard reset down using the front panel by holding down the 9 o'clock and 12 o'clock keys **AT THE SAME TIME** for more than five seconds. This is not recommended unless the system has locked up and a reset is needed.



RHINO EQUIPMENT CORP.

**If you have any other questions regarding the configuration or operation of your Rhino® Equipment please contact our support staff:**

**Email** [support@rhinoequipment.com](mailto:support@rhinoequipment.com)

**Phone** (480) 621-4000 or (877) RHINO-T1

**Thank you for choosing Rhino Equipment.**

**Version 1.00**