# **USER MANUAL**

## **ET100**R

ET100R router module for ETU/TTU Access Units and MUX devices.





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#### NOTICES:

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This device complies with EMC directive of the European Community and meets or exceeds the following technical standard. EN 55022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment. This device complies with CISPR Class A.

#### CE NOTICE

Marking by the symbol CE indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards: EN 55022:1994/A1:1995/A2:1997 Class A and EN61000-3-2:1995, EN61000-3-3:1995 and EN50082-1:1997

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#### ET00R

ETU/TTU Access and Multiplexer Series Internet Protocol Routing Module

#### **User Manual**

Version 0.99 Nov 2006 Final Draft (Pre-Release)

This manual supports the following models: **ET100R Router Module** 

This document is the final draft or pre-release manual. Please check CTC Union's website for any updated manual or contact us by E-mail at info@ctcu.com. Please address any comments for improving this manual or to point out omissions or errors to marketing@ctcu.com. Thank you.

CTC Union maintains a support web site (support.ctcu.com) where you may obtain the latest manual, quick installation guide, and operational firmware. Membership to this web site is free, however, you must be a registered member in order to access any software updates.

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## **Chapter 1 Introduction**

Thank you for choosing the ET100R router module. The ET100R router module has been designed to provide SME's (Small to Medium Enterprises) with fast, cost effective network connections. When installed into one of our DSU/CSUs or multiplexers, the ET100R allows SMBs to share information, connect remote users, or access the Internet over E1 or T1 leased lines.

This chapter will introduce the features and specifications of the ET100R router module.

## 1.1 Features

The ET100R is an advanced networking device, used by SMBs, with the following hardware and software features.

#### Hardware

- \* Samsung ARM9 166MHz communications processor.
- \* 8 MB Flash.
- \* 32MB SDRAM.
- \* Auto sensing, Auto MDIX, 10/100 Ethernet Interface.
- \* Synchronous Nx56/Nx64 WAN connection speed up to full, unframed T1 or E1.
- \* Hardware module for any one of our standalone ETU or TTU series DSU/CSUs.

#### Software

- \* Static routing table (up to 32 entries)
- \* RIP I, RIP II, send or receive on WAN or Ethernet
- \* DCHP client/server function
- \* DNS Proxy
- \* NAT function
- \* PPP, HDLC and Cisco<sup>™</sup> HDLC WAN protocol encapsulation
- \* IP mapping / client filtering functions
- \* TFTP upgradeable firmware
- \* Web based management
- \* SNMP MIB-II (RFC1213) supported

#### Physical



Figure: ET100R Cover Plate

- 1. A push button switch is provided with the following function:
  - Pressing and holding this switch for 8 seconds when powering on will return the router to factory defaults.

1 8	Normal
	1.Tx+
	2.Tx-
╎└╌ <sub>╘───╛</sub> ─┘╎	3.Rx+
	6.Rx-

Figure: ET100R RJ-45 Ethernet Connector

- 2. The Ethernet connector for the ET100R supports 10/100 Half/Full auto negotiation and auto MDIX.
- 3. The Two LEDs have the following meanings:
  - a. 100, when lit this LED indicates the Ethernet is 100Base-TX, when off the Ethernet is 10Base-T
  - b. Link/ACT, when lit the LED indicates the Ethernet has link, when flashing it indicates activity

4. The RS-232 uses a 9pin mini-DIN connector. A mini-DIN to DB9 serial cable is provided with the router for console configuration.



Figure: Mini-DIN 9 Pin Assignment

Pin	Circuit	Direction	Description
1	NC		
2	RD	Output	Receive Data
3	TD	Input	Transmit Data
4	DTR	Input	
5	GND		Signal Ground
6	DSR	Output	Data Set Ready
7	RTS	Input	Request To Send
8	CTS	Output	Clear To Send
9	NC		

Table: Mini-DIN Pin Assignment

Whether included in the original purchase of one of our DSU/CSU units or purchased separately as an upgrade item, we would again like to thank you for choosing the ET100R router module.

## **Chapter 2 Installation**

This chapter will describe the procedure for installing the ET100R router module into one of our typical DSU/CSU units.



Figure 2-1 Package Contents

Item	Package Contents
1	DB9F to mini-DIN9, Serial console cable
2	Cover, beauty plate
	Mounting screws x 3
	Cover screws x 2
3	ET100R module, PCB Assembly
4	User's Manual CDROM
5	Quick Start Guide, Hard Copy (not shown)

Table: Package Contents

#### Safety Recommendations

Follow these guidelines to ensure general safety:

\* Keep the chassis area clear and dust-free during and after installation.

\* Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.

- \* Keep tools away from walk areas where you and others could fall over them.
- \* Do not wear loose clothing that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- \* Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- \* Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.

\* Never assume that power is disconnected from a circuit. Always check.

#### **Preventing Electrostatic Discharge Damage**

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing components. Ensure that the chassis is electrically connected to earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to safely channel unwanted ESD voltages to ground. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of a grounded chassis.

## **2.1 Installation Procedure**

The ET100R Router Module is designed for installation into one of the following ETU/TTU series units: ETU01, TTU01, ETU01-U, ETU01A, ETU02-MUX, or TTU02-MUX

1. Disconnect all power and signal lines from the unit.

2. Place the unit on a well lit work bench.

3. Loosen the two rear thumb screws and slide the PCBA assemble out the rear of the unit. (See Figure 2-2)

4. If there is already an ETU/TTU module in the unit, remove the rear face cover (if applicable) and the three screws that secure the module to the unit. Pull up the connector header end and remove the module.

5. Before installing the ET100R module, check to be sure the header pins are straight and not bent.

6. Install the module by placing the connector end (serial DIN, RJ-45 Ethernet connector) into the rear panel's chassis hole from the inside. (See Figure 2-3)

7. Align the header pins with the socket on the main PCB assembly. (See Figure 2-4)

8. Seat the module in the header until the module rests on the main PCBA's standoffs.

9. Install the three holding screws for the module and tighten moderately tight, but do not over tighten. (See Figure 2-5) 10. From the rear of the unit, align the beauty plate with the LEDs, connectors and reset switch.

11. Use the two flat-head screws to secure the beauty plate. (See Figure 2-6)

12. Return the PCBA to the housing of the ETU/TTU unit, seating it fully and retightening the two rear panel thumb screws. (See Figure 2-7)



Figure 2-2: Open ETU/TTU Series Unit



Figure 2-3: Insert the ET100R module



Figure 2-4: Align the header pins to PCB header.



Figure 2-5: Secure the module with three supplied screws.



Figure 2-6: Install the beauty panel.



Figure 2-7: Final Installation Complete

This completes the physical assembling of the ET100R module. Please refer to Chapter 3 for the Provisioning of the ET100R Router.

## **Chapter 3 Provisioning**

This chapter provides the provisioning steps for the ET100R Router using the Command Line Interface (CLI) in detail. They are all Cisco like commands. Typical application examples are provided for setting the major features of the ET100R. The complete CLI Reference is outlined in a separate chapter.

## 3.1 Console Configuration

A notebook computer has become an invaluable tool of the Systems Engineer. The ET100R acts as a DCE to the PC's DTE communications port. The ET100R is provided with a mini-DIN 9 to DB9 cable for easy connection to a PC's RS-232 COM: port with the console port of ET100R. A convenient application, provided with the Microsoft Windows® 9X, NT®, or XP operating systems, is "HyperTerminal<sup>TM</sup>". Set the properties to match the ET100R's console port factory defaults as follows: Baud=115.2K, Data bits=8, Parity=None, Stop bits=1, and handshaking=none. If you are using "HyperTerminal " the display should look like the following.

COM1 Properties	? 🛛
Port Settings	
<u>B</u> its per second:	115200
<u>D</u> ata bits:	8
<u>P</u> arity:	None
<u>S</u> top bits:	1
<u>F</u> low control:	None
	<u>R</u> estore Defaults
	K Cancel Apply

Figure 3-1: HyperTerminal Properties

Make the appropriate connections, start the terminal application, and apply power to the ET100R. There are two operational modes for the ET100R, basic mode and privileged mode. The user may login to basic mode by entering the default "admin" username at the login prompt. There will be a ">" prompt on every command line. Privileged mode is required to make any configuration changes to the ET100R router. The user will login to privileged mode from basic mode by entering the "enable" command, followed by the privileged mode password. In privileged mode, there will be a "#" prompt on every command line. Enter the "disable" command to go back to basic mode. Entering the "quit" command, will logout of both the basic and the privileged modes.

## **3.2 Applications**

## 3.2.1 Cisco HDLC Encapsulation

#### 3.2.1.1 Scenario

This is a typical application using CTC Union's ET100R with E1/T1 series access units or multiplexers. The ET100R router module with Cisco HDLC WAN encapsulation enables you to access the Intranet or Internet resource through Cisco routers or other ET100R in E1/T1 connection.



Figure 3-2: ET100R Point-to-Point Application with Cisco router

#### 3.2.1.2 Preparation

Although this is a simple point-to-point application, you must deal with it very carefully. There are some reference points to consider regarding this application.

- E1 or T1 connectivity establishment.
- IP addressing scheme and planning. (Table 3-1)

LAN A	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.1.0	255.255.255.0			
PC	192.168.1.1	255.255.255.0			
ET100R	192.168.1.254	255.255.255.0	10.0.0.1	255.255.255.252	10.0.0.2
LANB	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.0.0	255.255.255.0			
PC	192.168.0.1	255.255.255.0			
ET100R	192.168.0.254	255.255.255.0	10.0.0.2	255.255.255.252	10.0.0.1

Table 3-1 Address scheme and planning

- Routing protocol: Static route
- Encapsulation: Cisco HDLC
- Administration: System name, System information, Configuration check, Interface summary
- Deployment: CLI commands

#### 3.2.1.3 Deployment procedures

#### 1. E1 or T1 connectivity establishment.

Please refer to CTC Union's E1/T1 DSU/CSU product manual for further operation.

#### 2. IP addressing setting: Configure static IP addresses in PCs on LAN A (local) and LAN B (remote).

#### 3. Local ET100R CLI commands.

System status check: System, Interface Summary, Routing Table, System Memory... CLI Commands: show config show system show memory show interface summary show ip route

ET100R login: admin Welcome to CTC UNION TECH. CO., LTD. ET100R Router ET100R>*enabl e* Enter Password: ET100R#*show config* # this is the running configuration file ET100R#show system Model: ET100R Serial Number: none Firmware Version: 1.00.b76 Firmware Build Time: Sat Jun 10 02:34:14 PDT 2006 TxClk invert: off System Name: ET100R Login Name: admin Session Timeout: 10 min System Time: Thu Jan 01 12:00:45 AM 1970 System Up Time: 00:00:45 up 0 min, load average: 1.12, 0.30, 0.10 ET100R#show memory shared: buffers: cached: total : used: free: Mem: 30908416 5644288 25264128 0 12288 28672 Swap: 0 0 0 MemTotal: 30184 kB MemFree: 24672 kB MemShared: 0 kB Buffers: 12 kB Active: 8 kB 32 kB I nacti ve: HighTotal : 0 kB HighFree: 0 kB LowTotal : 30184 kB 24672 kB LowFree: SwapTotal: 0 kB SwapFree: 0 kB ET100R#

ET100R# <i>show interface summary</i>											
name	hw type	hw ad	ldr		iр	addr		ip mas	ĸ	sta	tus
eth1 hdlc1 lo	Ethernet UNSPEC Loopback	00: 02	:: AB: 06: 00 - -	D: 01	19: 19: 12 <sup>:</sup>	2. 168. 2. 168. 7. 0. 0.	0. 1 1. 1 1	255. 255 255. 255 255. 0. (	5. 255. 5. 255. ). 0	0 192	up up up
ET100R# <i>sl</i>	how ip route	9									
Kernel IF	, routina ta	able									
Destinati	on Gatewa	ay	Genmask			FI ags	Metri	c Ref	Use	e Ifa	ace
192. 168. 1	I. 0 0. 0. 0.	0	255. 255.	255.	192	U	0	0	(	) hdl	l c1
192. 168. 0	). 0 0. 0. 0.	0	255. 255.	255.	0	U	0	0	(	) etl	n1
ET100R#											

#### Configure and Verify Local ET100R router module. *CLI commands: (must be in enable)*

Г

config system name local config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.1.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap cisco config interface hdlc1 ip 0 addr 10.0.0.1 netmask 255.255.255.252 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.2 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

ET100R>*enabl e* Enter Password: ET100R#config system name local local #config ip rip off local #config interface eth1 off local #config interface eth1 ip 0 addr 192.168.1.254 netmask 255. 255. 255. 0 (Continued on the next page)

local# <i>config interface hdlc1 off</i>								
local# <i>config interface hdlc1 encap cisco</i>								
l ocal # <i>conf</i>	îg interface l	hdlc1 ip 0 a	ddr 10.	0. 0. 1	netmasi	k 255.	255. 255	5. <i>252</i>
l ocal # <i>conf</i> <i>hdl c1</i>	ig ip route a	dd net 0.0.0	). O neti	mask 0. (	0. 0. 0	gw 10.	0. 0. 2 1	ſſ
l ocal # <i>conf</i>	îg interface l	ndlc1 on						
l ocal # <i>conf</i>	îg interface e	eth1 on						
l ocal # <i>conf</i> Savi ng c	<i>îg save</i> onfiguration	. Please wa	it!					
Confi gur	ation saved.							
local# <i>show</i>	interface sum	nmary						
name hw	type hw addr	-	ip add	dr	ip r	nask	S	status
eth1 Eth hdlc1 UNS lo Loo	ernet 00:02: <i>F</i> PEC pback	AB: 06: 00: 01	192. 16 10. 0. 0 127. 0.	58. 1. 254 ). 1 0. 1	4 255. 255. 255.	255.2 255.2 0.0.0	55. 0 55. 252	up down up
local# <i>show</i>	ip route							
Kernel IP Destinatio 10.0.0.0 192.168.1. 0.0.0.0 local#	routing table n Gateway 0.0.0.0 0 0.0.0.0 10.0.0.2	Genmask 255.255.2 255.255.2 0.0.0.0	55. 252 55. 0	Flags M U ( U ( UG (	Metric ) ) )	Ref O O O	Use   0 h 0 e 0 h	face ndl c1 eth1 ndl c1

#### 4. Remote ET100R CLI commands.

System status check: System, Interface Summary, Routing Table, System Memory... CLI Commands:

show config show system show memory show interface summary show ip route ET100R login: admin Welcome to CTC UNION TECH. CO., LTD. ET100R Router ET100R>enable Enter Password: ET100R#*show config* # this is the running configuration file ET100R#show system Model: ET100R Serial Number : none Firmware Version: 1.00.b76 Firmware Build Time: Sat Jun 10 02:34:14 PDT 2006 TxClk invert: off System Name: ET100R Login Name: admin Session Timeout: 10 min System Time: Thu Jan 01 12:00:45 AM 1970 System Up Time: 00:00:45 up 0 min, load average: 1.12, 0.30, 0.10 ET100R#show memory shared: buffers: free: total : used: cached: 5644288 25264128 30908416 Mem: 0 12288 28672 Swap: 0 0 0 MemTotal: 30184 kB MemFree: 24672 kB MemShared: 0 kB Buffers: 12 kB 8 kB Active: 32 kB I nacti ve: HighTotal : 0 kB HighFree: 0 kB LowTotal: 30184 kB LowFree: 24672 kB 0 kB SwapTotal: 0 kB SwapFree: ET100R#show interface summary ip addr name hw type hw addr ip mask status eth1 Ethernet 00: 02: AB: 06: 00: 23 192. 168. 0. 1 255.255.255.0 uр hdl c1 UNSPEC \_\_\_\_\_ 192.168.1.1 255. 255. 255. 192 up Loopback -----10 127.0.0.1 255.0.0.0 up ET100R#show ip route Kernel IP routing table Destination Gateway Genmask Flags Metric Ref Use I face 192.168.1.0 0.0.0.0 255. 255. 255. 192 U 0 0 0 hdl c1 192.168.0.0 0.0.0.0 255.255.255.0 0 0 0 eth1 U ET100R#

#### **Configure and Verify Remote ET100R router module.** *CLI commands: (must be in enable)*

config system name Remote config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.0.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap cisco config interface hdlc1 ip 0 addr 10.0.0.2 netmask 255.255.255.252 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.1 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route ping 192.168.1.254 ---- This should be successful pinging to PC in LAN A ping 10.0.0.1 ---- This should be successful pinging to WAN I/F in ET100R located in LAN A.

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

ET100R> <i>enabl e</i> Enter Password:
ET100R# <i>config system name remote</i>
remote# <i>config ip rip off</i>
remote# <i>config interface eth1 off</i>
remote# <i>config interface eth1 ip 0 addr 192.168.0.254 netmask</i> <i>255.255.255.0</i>
remote# <i>config interface hdlc1 off</i>
remote# <i>config interface hdlc1 encap cisco</i>
remote#config interface hdlc1 ip 0 addr 10.0.0.2 netmask 255.255.255.252
remote# <i>config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.1 if hdlc1</i>
remote# <i>config interface hdlc1 on</i>
remote# <i>config interface eth1 on</i>
remote# <i>config save</i> Saving configuration Please wait!
Configuration saved.
(continued on next page)

remote#*show interface summary* name hw type hw addr ip addr ip mask status Ethernet 00: 02: AB: 06: 00: 23 192. 168. 0. 254 255. 255. 255. 0 eth1 up 10. 0. 0. 2 UNSPEC hdl c1 255. 255. 255. 252 up \_ \_ \_ \_ \_ \_ Loopback 127.0.0.1 255.0.0.0 10 \_ \_ \_ \_ \_ \_ up remote#*show ip route* Kernel IP routing table Flags Metric Ref Destination Gateway Genmask Use I face 10.0.0.0 0.0.0.0 255. 255. 255. 252 U 0 0 0 hdl c1 192. 168. 0. 0 0.0.0.0 U O UG O 255.255.255.0 U 0 0 eth1 0. 0. 0. 0 10. 0. 0. 1 0 0 hdl c1 0.0.0.0 remote#*ping 192. 168. 1. 254* PING 192.168.1.254 (192.168.1.254): 56 data bytes 64 bytes from 192.168.1.254: icmp\_seq=0 ttl=64 time=9.0 ms 64 bytes from 192.168.1.254: icmp\_seq=1 ttl=64 time=8.5 ms 64 bytes from 192.168.1.254: icmp\_seq=2 ttl=64 time=8.6 ms 64 bytes from 192.168.1.254: icmp\_seq=3 ttl=64 time=8.6 ms --- 192.168.1.254 ping statistics ---4 packets transmitted, 4 packets received, 0% packet loss round-trip min/avg/max = 8.5/8.6/9.0 ms remote#*ping 10.0.0.1* PING 10.0.0.1 (10.0.0.1): 56 data bytes 64 bytes from 10.0.0.1: icmp\_seq=0 ttl=64 time=8.6 ms 64 bytes from 10.0.0.1: icmp\_seq=1 ttl=64 time=8.6 ms 64 bytes from 10.0.0.1: icmp\_seq=2 ttl=64 time=8.6 ms 64 bytes from 10.0.0.1: icmp\_seq=3 ttl=64 time=8.7 ms --- 10.0.0.1 ping statistics ---4 packets transmitted, 4 packets received, 0% packet loss round-trip min/avg/max = 8.6/8.6/8.7 ms remote#

## 3.2.2 Raw HDLC Encapsulation

#### 3.2.2.1 Scenario

This is a typical application using CTC Union's ET100R with E1/T1 series access units or multiplexers. The ET100R router module with Raw HDLC WAN encapsulation enables you to access the Intranet or Internet resource through the E1/T1 connection.



Figure 3-3 ET100R Point-to-Point Application example

#### 3.2.2.2 Preparation

Although this is a simple point-to-point application, you must deal with it very carefully. There are some reference points to consider regarding this application.

- E1 or T1 connectivity establishment.
- IP addressing scheme and planning.(Table 3-2)

LAN A	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.1.0	255.255.255.0			
PC	192.168.1.1	255.255.255.0			
ET100R	192.168.1.254	255.255.255.0	10.0.0.1	255.255.255.252	10.0.0.2
LANB	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.0.0	255.255.255.0			
PC	192.168.0.1	255.255.255.0			
ET100R	192.168.0.254	255.255.255.0	10.0.0.2	255.255.255.252	10.0.0.1

Table 3-2 Addressing scheme and planning

- Routing protocol: Static route
- Encapsulation: Raw HDLC.
- Administration: System name, System information, Configuration check, Interface summary.
- Deployment: CLI commands.

#### 3.2.2.3 Deployment procedures

#### 1. E1 or T1 connectivity establishment.

Please refer to CTC Union's E1/T1 DSU/CSU product manual for further operation.

#### 2. IP addressing setting: Configure static IP addresses in PCs on LAN A (local) and LAN B (remote).

#### 3. Local ET100R CLI commands.

show ip route

System status check; System, Interface summary, Route table, System memory... *CLI Commands:* show config show system show memory show interface summary

#### Configure and Verify Local ET100R router module.

*CLI commands: (must be in enable)* config system name Local config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.1.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap hdlc config interface hdlc1 ip 0 addr 10.0.0.1 netmask 255.255.255.252 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.2 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

#### 4. Remote ET100R CLI commands.

System status check; System, Interface summary, Route table, System memory... *CLI Commands:* show config show system show memory show interface summary show ip route

#### Configure and Verify Remote ET100R router module.

CLI commands: (must be in enable) config system name Remote config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.0.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap hdlc config interface hdlc1 ip 0 addr 10.0.0.2 netmask 255.255.255.252 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.1 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route ping 192.168.1. 254 ---- This should be successful pinging to PC in LAN A ping 10.0.0.1 ---- This should be successful pinging to WAN I/F in ET100R located in LAN A.

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

## 3.2.3 PPP Encapsulation

#### 3.2.3.1 Scenario

This is a typical application using CTC Union's ET100R with E1/T1 series access units or multiplexers. The ET100R router module with PPP WAN encapsulation enables you to access the Intranet or Internet resource through the E1/T1 connection.



Figure 3-4 ET100R Point-to-Point Application example

#### 3.2.3.2 Preparation

Although this is a simple point-to-point application, you must deal with it very carefully. There are some reference points to consider regarding this application.

- E1 or T1 connectivity establishment.
- IP addressing scheme and planning.(Table 3-3)

LAN A	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.1.0	255.255.255.0			
PC	192.168.1.1	255.255.255.0			
ET100R	192.168.1.254	255.255.255.0	10.0.0.1	255.255.255.252	10.0.0.2
LANB	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.0.0	255.255.255.0			
PC	192.168.0.1	255.255.255.0			
ET100R	192.168.0.254	255.255.255.0	10.0.0.2	255.255.255.252	10.0.0.1

Table 3-3 Addressing scheme and planning

- Routing protocol: Static route
- Encapsulation: PPP.
- Administration: System name, System information, Configuration check, Interface summary.
- Deployment: CLI commands.

#### 3.2.3.3 Deployment procedures

#### 1. E1 or T1 connectivity establishment.

Please refer to CTC Union's E1/T1 DSU/CSU product manual for further operation.

#### 2. IP addressing setting: Configure static IP addresses in PCs on LAN A (local) and LAN B (remote).

#### 3. Local ET100R CLI commands.

show interface summary

show ip route

System status check; System, Interface summary, Route table, System memory... *CLI Commands:* show config show system show memory

Configure and Verify Local ET100R router module.

*CLI commands: (must be in enable)* config system name Near config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.1.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap ppp config interface hdlc1 ip 0 addr 10.0.0.1 netmask 255.255.255.252 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.2 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

#### 4. Remote ET100R CLI commands.

System status check; System, Interface summary, Route table, System memory... *CLI Commands:* show config show system show memory show interface summary show ip route

#### Configure and Verify Remote ET100R router module.

CLI commands: (must be in enable) config system name Remote config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.0.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap ppp config interface hdlc1 ip 0 addr 10.0.0.2 netmask 255.255.255.252 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 10.0.0.1 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route ping 192.168.1.254 ---- This should be successful pinging to PC in LAN A ping 10.0.0.1 ---- This should be successful pinging to WAN I/F in ET100R located in LAN A.

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

## 3.2.4 Static Routing Table Example

#### 3.2.4.1 Scenario

This is a typical application using CTC Union's ET100R with E1/T1 series access units or multiplexers. The ET100R router module with PPP WAN encapsulation enables you to access both Intranet and Internet resource through E1/T1 connections.



Figure 3-5 ET100R Static Routing Example

#### 3.2.4.2 Preparation

This is a more complex application where LAN B now has 2 routers, one for Internet access and one for LAN-to-LAN access over E1/T1.

- E1 or T1 connectivity establishment.
- IP addressing scheme and planning.(Table 3-4)

LAN A	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.1.0	255.255.255.0			
PC	192.168.1.1	255.255.255.0			
ET100R	192.168.1.254	255.255.255.0	10.0.0.1	255.255.255.252	10.0.0.2
LANB	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.0.0	255.255.255.0			
PC	192.168.0.10	255.255.255.0			
ET100R	192.168.0.254	255.255.255.0	10.0.0.0.2	255.255.255.252	10.0.0.1
ET100R-2	192.168.0.1	255.255.255.0	216.239.32.1	255.255.255.252	216.239.32.2

Table 3-4 Addressing scheme and planning.

- Routing protocol: Static route
- Encapsulation: PPP.
- Administration: System name, System information, Configuration check, Interface summary.
- Deployment: CLI commands.

#### 3.2.4.3 Deployment procedures

#### 1. E1 or T1 connectivity establishment.

Please refer to CTC Union's E1/T1 DSU/CSU product manual for further operation.

#### 2. IP addressing setting: Configure static IP addresses in PCs on LAN A (local) and LAN B (remote).

#### **3. Local ET100R CLI commands.**

Follow the procedures in previous Cisco, HDLC or PPP examples for configuring the local ET100R.

#### 4. Remote LAN-to-LAN ET100R CLI commands.

CLI commands: (must be in enable) config system name Remote config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.0.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap ppp <<use the right encapsulation for your application config interface hdlc1 ip 0 addr 10.0.0.2 netmask 255.255.255.252 config ip route add net 192.168.1.0 netmask 255.255.255.0 gw 10.0.0.1 if hdlc1 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 192.168.0.1 if eth1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route ping 192.168.1.254 ---- This should be successful pinging to PC in LAN A ping 10.0.0.1 ---- This should be successful pinging to WAN I/F in ET100R located in LAN A.

#### 5. Internet Access ET100R CLI commands.

CLI commands: (must be in enable) config system name Internet config ip rip off config interface eth1 off config interface eth1 ip 0 addr 192.168.0.1 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap cisco <<use the encapsulation required by your ISP config interface hdlc1 ip 0 addr 216.239.32.1 netmask 255.255.255.252 config ip route add net 192.168.1.0 netmask 255.255.255.0 gw 192.168.0.254 if eth1 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 216.239.32.2 if hdlc1 config interface hdlc1 on config interface eth1 on config save show interface summary show ip route ping 192.168.1.254 ---- This should be successful pinging to PC in LAN A ping 216.239.32.2 ---- This should be successful pinging to WAN I/F of ISP

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

## 3.2.5 RIP Configuration

#### 3.2.5.1 Scenario

This is a typical application using CTC Union's ET100R with E1/T1 series access units or multiplexers. The ET100R router module performs either RIP 1, RIP 2 IP packets forwarding function from network to network, enabling you to access the Intranet or Internet resource through the E1/T1 connection.



Figure 3-6 ET100R Point-to-Point Application and RIP implementation

#### 3.2.5.2 Preparation

Using RIP, the routing applications can be simplified with dynamic routing tables replacing static ones. There are some reference points to consider regarding this application.

- E1 or T1 connectivity establishment.
- IP addressing scheme and planning.(Table 3-5)

LAN A	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.1.0	255.255.255.0			
PC	192.168.1.1	255.255.255.0			
ET100R	192.168.1.254	255.255.255.0	10.0.0.1	255.255.255.252	10.0.0.2
LANB	LAN IP	Netmask	WAN IP	Netmask	Peer IP
Network ID	192.168.0.0	255.255.255.0			
PC	192.168.0.1	255.255.255.0			
ET100R	192.168.0.254	255.255.255.0	10.0.0.2	255.255.255.252	10.0.0.1

Table 3-5 Addressing scheme and planning.

- Routing protocol: RIPv1, RIPv2
- Encapsulation: Cisco HDLC, Raw HDLC, or PPP
- Administration: System name, System information, Configuration check, Interface summary.
- Deployment: CLI commands.

#### 3.2.5.3 Deployment procedures

#### 1. E1 or T1 connectivity establishment.

Please refer to CTC Union's E1/T1 DSU/CSU product manual for further operation.

#### 2. IP addressing setting: Configure static IP addresses in PCs on LAN A (local) and LAN B (remote).

#### 3. Local ET100R CLI commands.

show ip route

System status check; System, Interface summary, Route table, System memory... *CLI Commands:* show config show system show memory show interface summary

#### 4. Configure and Verify Local ET100R router module.

CLI commands: (must be in enable) config system name Local config interface eth1 off config interface eth1 ip 0 addr 192.168.1.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap cisco config interface hdlc1 ip 0 addr 10.0.0.1 netmask 255.255.255.252 config interface hdlc1 on config interface hdlc1 ip 0 peer 10.0.0.2 config ip rip ifadd eth1 config ip rip ifadd eth1 config ip rip on config ip rip version 1 \*Refer to Note 2 config save reboot

Note 1: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

(Please confirm the settings by using the commands below after the ET100R boots up.) show interface summary show ip route

Note 2:

In the example we used the RIP version 1. IF you would like to use RIP version 2, please change the command to 'config ip rip version 2'.

#### 5. Remote ET100R CLI commands.

 $System \ status \ check; \ System, \ Interface \ summary, \ Route \ table, \ System \ memory...$ 

*CLI Commands:* show config show system show memory show interface summary show ip route 6. Configure and Verify Remote ET100R router module. CLI commands: (must be in enable) config system name Remote config interface eth1 off config interface eth1 ip 0 addr 192.168.0.254 netmask 255.255.255.0 config interface hdlc1 off config interface hdlc1 encap cisco config interface hdlc1 ip 0 addr 10.0.0.2 netmask 255.255.255.252 config interface hdlc1 on config interface hdlc1 ip 0 peer 10.0.0.1 config ip rip ifadd eth1 config ip rip ifadd hdlc1 config ip rip on config ip rip version 1 config save reboot

Note: You may type configuration commands to a text file, copy them and paste them into HyperTerminal and it will "run" similar to a run-config-script. Please refer to the scripts folder on the CDROM for many pre-written scripts.

(Please confirm the settings by using commands below after ET100R boots up.) show interface summary show ip route ping 192.168.1.254 ---- This should successfully ping to PC in LAN A. ping 10.0.0.1 ---- This should successfully ping to WAN I/F in ET100R located in LAN A.

## 3.2.6 DNS Proxy Configuration

CTC Union ET100R router module may provide DNS proxy service for your network. With this feature, there is no need to install an extra DNS server in your network. The configuration is easy to perform, using only a few commands.

#### 3.2.6.1 Deployment procedures

Before enabling this function, please complete the ET100R functional configuration, then configure the DNS proxy service in the ET100R router module.

#### 1. Review the basic routing function deployment in the ET100R router module.

*CLI commands:* (please refer to previous sections)

#### 2. DNS proxy service configuration.

*CLI commands: (must be in enable)* config ip dns primary 216.239.32.10 **<<please use DNS server of your ISP** config ip dns secondary 216.239.32.11 config ip dnsproxy on config save

#### **3.** Verifying the name resolution function.

*CLI commands:* ping www.google.com ping www.yahoo.com

## 3.2.7 DHCP Client Configuration

CTC Union's ET100R router module can act as a DHCP client, to automatically acquire an IP address from your network's DHCP server. In this configuration, we also enable the RIP function for automatic router discovery. By using DHCP client and RIP, the router becomes almost "plug-and-play", being able to dynamically change IP or routing depending on the network configuration.

#### 3.2.7.1 Deployment procedures

#### 1. Configure for DHCP client and RIP

CLI commands: (must be in enable) config interface eth1 off config interface eth1 ip 0 addr mode dhcp config interface hdlc1 off config interface hdlc1 encap cisco config interface hdlc1 ip 0 addr 10.0.0.1 netmask 255.255.255.252 config interface hdlc1 on config interface hdlc1 ip 0 peer 10.0.0.2 config ip rip ifadd eth1 config ip rip ifadd hdlc1 config ip rip on config ip rip version 1 config save reboot

## 3.2.8 DHCP Server Configuration

CTC Union's ET100R router module provides DHCP service for your network. With this feature, it is very easy to deploy DHCP service for your network. Just simply perform a few commands and you will have this service.

#### 3.2.8.1 Deployment procedures

1. Review the basic routing function deployment in the ET100R router module.

#### 2. DHCP Server service configuration.

CLI commands: (must be in enable) config ip dhcp on config ip dhcp pool 0 on config ip dhcp pool 0 dns 192.168.1.254 \*Note config ip dhcp pool 0 net 192.168.1.0 config ip dhcp pool 0 gw 192.168.1.254 config ip dhcp pool 0 lease\_time 3600 config ip dhcp pool 0 netmask 255.255.255.0 config ip dhcp pool 0 range\_start 192.168.0.100 config ip dhcp pool 0 range\_end 192.168.0.120 config save

Note: If ET100R performs a DNS proxy service, you should set this field to LAN interface of ET100R. Otherwise, this IP address should be a real DNS server's IP.

#### **3.** Verifying the DHCP server function.

Please set up any PC to Obtain an IP address automatically and from command window do "ipconfig /renew" to obtain an IP address automatically from the assigned address pool in the ET100R. Check the IP and DNS information with the command 'ipconfig /all'.

## 3.2.9 NAT Configuration

CTC Union's ET100R router module is able to provide NAT service for your network. With this feature, it's easy to deploy IP sharing features with DHCP service for your network. Just simply perform few a commands and you will have this service.

#### 3.2.9.1 Deployment procedures

#### 1. Review the basic routing function deployment in ET100R router module.

#### 2. Enable NAT service either in Local end or Remote end router.

#### Near end CLI commands:

config ip nat off config ip nat add type dnat nat\_ip 10.0.0.2 if hdlc1 protocol icmp config ip nat add type snat nat\_ip 10.0.0.1 if hdlc1 config ip nat on config save

#### Remote end CLI commands:

config ip nat off config ip nat add type dnat nat\_ip 10.0.0.1 if hdlc1 protocol icmp config ip nat add type snat nat\_ip 10.0.0.2 if hdlc1 config ip nat on config save

## 3.2.10 SNMP management

CTC Union's ET100R router module provides SNMP management functions via standard MIB-II (RFC1213).

#### 3.2.10.1 Deployment procedures

1. Review the basic routing function deployment in ET100R router module.

#### 2. SNMP management configuration

CLI commands: (must be in enable) config snmp on config snmp read\_only community public \* config snmp read\_write community secret \*\* config save

\* 'public' is typically the default community string for read only access to the SNMP. \*\* 'secret' is an example for the read/write community string. Use this string as your password for SNMP and don't use the 'public' community string for read/write as it may present a security risk.

## 3.2.11 Resetting the ET100R to factory default

CTC Union's ET100R router module may be reset completely to the original factory configuration by either hardware or software. The hardware method must be used if console password is forgotten and the unit cannot be accessed. Software reset can be performed via CLI command (must be in enable).

#### 1. Hardware Reset

Locate the reset push button switch on the rear panel of the ET100R router. With the unit powered off, press and hold the reset switch. Power on the unit and continue to hold the reset switch for at least 8 seconds. Release the switch and wait for the router to fully boot.

### 2. Software Reset

*CLI commands: (must be in enable)* reset

All the current system configuration will be reset to default Do you want to reset? (y/n) y Reset system configuration to manufactory default...

3. Soft Reboot *CLI commands: (must be in enable)* reboot

Note: Be careful, there is no further confirmation, the router will immediately reboot.

## 3.2.12 Firmware upgrade

CTC Union's ET100R router module may be upgraded whenever new firmware becomes available. The upgrade process requires a TFTP server. We provide a free TFTP server for Windows in the 'tools' folder of the CDROM that comes with any ET100R router.

#### 3.2.12.1 Deployment procedures

Before starting to upgrade, please finish the basic setting of the ET100R Ethernet interface.

#### 1. Basic Ethernet interface configuration for ET100R router module.

*CLI commands: (must be in enable)* config interface eth1 off config interface eth1 ip 0 addr 192.168.0.1 netmask 255.255.255.0 config interface eth1 on

#### 2. Setup TFTP server

Connect a PC with IP set on same network as the ET100R (192.168.0.254 in our example). Launch the TFTP server application and place the ET100R F/W code into the TFTP server root directory.

#### 3. Start to upgrade the ET100R F/W code.

CLI commands: (must be in enable)

upgrade tftp server 192.168.0.254 file Timage.b76

Switch from the console window to that of the TFTP server; the screen should be showing the file transfer taking place.

🃭 сто	U TFTP Server						
About							
Name	FFTP Manage	r	IP Address	192.168.0.25	i4	1	
Open	ed  1:02:48 PM		Action Session	1		Total	
Index	Action IP	Туре	Tftp File Name		Status		
1	192.168.0.1	Get	Timage.b76		29 %		
						Clear	
						Close	
1:55:31 PI	M : Start transferring						

Figure 3-7

complete tftp transfer start to upgrade the firmware write block 14 start to upgrade the web write block 16 start to upgrade the kernel write block 64 Restarting system.

The router will now reboot normally. It is recommended by our engineers to repeat the upgrade procedure again.

The latest F/W may be found on our support website at http://support.ctcu.com/.

## 3.2.13 User and Password Configuration

CTC Union's ET100R router provides two levels of management access: user and super-user. User access only allows you to view the operating values; you cannot change any values. Super-user access gives you the power to view and configure all of the router's operating parameters.

#### 1. To create or change the password for the initial login to the ET100R.

*CLI commands: (must be in enable)* config system password Changing password for admin Enter the new password Enter new password: \*\*\*\*\* Bad password: too simple.

Warning: weak password (continuing). Re-enter new password: \*\*\*\*\* Password changed.

Note: If the password length is under 8 characters, the system will flag it as being too simple of a password, but it will still allow the password change. If the password is 8 or more characters there will be no such warning.

#### 2. To create or change the password for the super-user or 'enable' password of the ET100R.

*CLI commands: (must be in enable)* config system enable\_password Enter the new password: New Password: \*\*\*\*\*\*\* Re-confirmed: \*\*\*\*\*\*\*

If you forget either the user password or the super-user password, you must perform the hardware reset as described in 3.2.11.

## **Chapter 4 Web UI Management**

CTC Union's ET100R router provides not only the CLI command interface, either directly connected to console port or Telnet session from any connected network to access the ET100R management function, but also, provides a Web UI (User Interface) for accessing the OAM management. This chapter will describe the Web UI interface and how to configure the ET100R router through the Web UI interface.

Using the Web UI interface provides an easy method to configure the ET100R router. Using any standard web browser enables you to launch the ET100R management interface without any extra management software installed. It is an easy and cost-effective way to manage your devices located anywhere.

## 4.1 Web UI Interface

When using CTC Union Web UI interface at first time, the factory default IP address setting of the ET100R Ethernet interface is 192.168.0.1/255.255.255.0. Or when you finished configuring the ET100R LAN IP setting through terminal console. Then you can launch the Web UI interface using any Internet explorer to access the ET100R router. Figure 5-1 is an example of Web UI interface window.



Figure4-1 Web UI interface window

## 4.2 Web UI Operation

In the CTC Union ET100R Web UI Management interface, we provide OAM&P functions for retrieving configuration data, statistics data, and system information. The commands that for the ET100R Web UI management interface are shown in table 4-1.

Item	Command	Function	Item	Command	Function
			10		Domain Name
1	Logout	Log out system		DNS	service/server
					configuration
		User management changing password	11	NAT	Network address
2	Change password				Translating service
					configuration
	system Info	Retrieve system information	12	RIP	Routing
3					Information
Ĩ					Protocol
			<b> </b>		configuration
		LAN interface configuration	13		Simple Network
4	LAN Setup			SNMP	Management
	Linit Sourp				Protocol
					configuration
		WAN interface	14	SNTP	Simple Network
5	WAN Setup	configuration			Time Protocol
					configuration
	Interface Summary	Retrieve interface either LAN, WAN and Loopback	15	5 show Configuration	Retrieve system
6					running
C					configuration
		interface summary			configuration
		Performance testing	16		F/W code Upgrade
7	Interface Statistics	either LAN and WAN		System Upgrade	only
		interface			onry
8	Routing setup	Routing configuration	14	Load Default	Load the factory
0	Routing setup	Routing configuration		Load Deraun	default value
		Dynamic Host		Reboot	Restart the ET100R
9	DHCP Server	Configuration	18		router
		Protocol setting			Touter

Table 4-1
## 4.2.1 Log-In and Log-Out

Launch Internet Explorer or any web browser and type the ET100R IP address. The Log-in window will appear as shown below (Figure 4-2). Please input the username and password to launch the Web UI management interface. The default username is 'admin' and the password ' ' (null). Before placing the ET100R router on a live public network, please change user name and password. After logging in successfully, the screen will show the ET100R system information.



Figure 4-3 Log-in window



Figure 4-4 First display after login

# 4.2.2 System information

Retrieve ET100R router system information.

ET100R Web Configuration - Microsoft Internet Exp	lorer							
<u>Eile Edit View Favorites Tools Help</u>			A					
لاddress 🕘 http://172.24.1.100/cgi-bin/Login?loginname=admin&password=&ACTION=Submit								
ET100R Change Password System Info LAN Setup Interface Statup DHCP Server DNS NAT Yatual Server BIE SNMP SNTP Show Configuration System Upgrade Load Default Reboot	S Model Serial Number Firmware Version Firmware Build Time TxClk invert System Name Session Timeout System Time System Up Time	Information           ET100R           none           1.00.b76           SatJun 10 02:34:14 PDT 2006           off           ET100R           (null)           10 min           Thu Jan 01 12:11:28 AM 1970           00:11:28 up 11 min, load average: 0.05, 0.08, 0.06						
Interp://172.24.1.100/cgi-bin/ShowSystem			internet					

#### Figure 4-5 System Information

## 4.2.3 Changing the password & System Name

To change the user password and ET100R router system name, just click on the 'Change Password' menu item and key in the new password. After clicking on the 'Save' icon the settings will take effect immediately. The Web UI interface will show a confirmation message.

ET100R Web Configuration - Mice	rosoft Internet Explorer			
<u>File Edit View Favorites Tools H</u>	Jelp			-
Address 🕘 http://172.24.1.100/cgi-bin/Log	gin?loginname=admin&password=&ACTION=Submit		🔽 🄁 Go 🛛 L	inks »
CERESC ET100R Change Password System Info LAN Setup Interface Statics NAT Virtual Setup DHCP Server DNS NAT Virtual Server RP SNMP SNMP SNMP SNMP SNMP SNMP SNMP SNM	Change System Name : Login Password :	Password Local	(current) (new) (confirmed)	
Cone Done			🥑 Internet	

Figure 4-6 Changing System Name & Password



Figure 4-7 Password change confirmation message

## 4.2.4 LAN Interface Configuration

In the 'LAN Setup' section, the system allows you to bind different IP address settings to the ET100R Ethernet interface. When clicking on 'LAN Setup', the system will show the configuration of the LAN interface. You can add a different IP address to Ethernet LAN interface. If you need to configure the LAN Settings, please click on 'Add' icon.



Figure 4-8 LAN Settings

In the 'IP Serial No.:' pull-down, there are 5 LAN IP entries that can be set. The IP binding function enables you to bind different IP address on the Eth1 interface.

When you change the LAN IP 0 to a different IP, you will need to input the same new IP address in the browser to continue to access the Web UI interface.

ET100R Web Configuration - Microsoft Internet Explorer	
Elle Edit View Favorites Iools Help	
Agdress 🗃 http://172.24.1.100/cgi-bin/Login?loginname=admin8password=8ACTION=Submit	🔁 Go 🛛 Links 🂙
ET100R         Change Pastword         System Info         LAN Setup         System Info         LAN Setup         WAN Setup         Interface Status         Interface Status         Barbar         LAN Setup         LAN P I         Interface Status         Box         DNS         NAT         Yitual Server         ElP         SNMP         SNMP         SNP         SNP         SNP         SNP         State Configuration         System Upgrade         Load Default         Rebool	
S nois	et

Figure 4-9 LAN Setup

Add the IP address to LAN interface of ET100R router. Please input the proper values into the correct fields. Ex: LAN IP 1, LAN IP Address:192.168.1.254 Subnet 255.255.255.0. Finish by clicking the 'Apply' button.

Eile get     Eile     Change     Itsp://172.241.1100/cpt-hint.dogn/sognesseerd=0ACTION=5ubmt     I	ET100R Web Configuration	n - Microsoft Internet Explorer	
Addres in http:///12.24.1.100/cg-bin/Logn/Rogmane=admin8password=8ACTION=Submit v is a large service in the ser	<u>File E</u> dit <u>View</u> F <u>a</u> vorites <u>T</u> i	ools <u>H</u> elp	
Charge Parevoid System Info LAN Setup VAN Setup Interface Statics Ruting Setup DICP Server DICP Server	Address 🕘 http://172.24.1.100/cc	gi-bin/Login?loginname=admin&password=&ACTION=Submit	🖌 🏹 🖌 🖌 🖌
Concerned and the second secon	ET100R Change Paseword System Info LAN Setup WAN Setup Interface Statics Routing Setup DHCP Server DNS NAT Yitual Server EIP ShMP SINTP ShMP SINTP ShMP SINTP Show Configuration System Upgrade Load Default Reboot	LAN Setup IP Serial No.: LAN IP 1 LAN IP Address: 192.168.1.254 Subnet: 255.255.0 Mode: Static Interface Status: IN Modify Status Only. Apply	

Figure 4-10 IP binding



Figure 4-11 Success LAN IP entry added.

Click 'View LAN Setup' to review the LAN settings.

jew F <u>a</u> vorites	<u>T</u> ools <u>H</u> elp						-		
tp://172.24.1.100/	/cgi-bin/Login?loginnam	e=admin&password=&ACTION=	=Submit			× 1	🗲 GO L		
TC									
inion									
00R			Interfa	ce LAN					
sword									
	Name	Hardware Type	Hardware Address	IP Address	IP Mask	Status	_		
	eth1	Ethernet	UU:U2:AB:U6:UU:U1	172.24.1.100	255.255.0.0	up			
mmarv	eth1:1	Ethernet	00:02:AB:06:00:01	192.168.1.254	255.255.255.0	up			
<u>tics</u>				Delete					
<del>1</del> 0			Add	Delete					
I									
I		Note	: If You delete all LAN Inte	rface web will not be	functional				
I		Note	: If You delete all LAN Inte	rface web will not be	functional				
<u>r</u>		Note	: If You delete all LAN Inte	rface web will not be	functional				
I I		Note	: If You delete all LAN inte	rface web will not be	functional				
<u>n</u>		Note	: If You delete all LAN Inte	rface web will not be	functional				
ruration		Note	: If You delete all LAN Inte	rface web will not be	functional				
: L uration ade		Note	: If You delete all LAN Inte	rface web will not be	functional				
ration de		Note	: If You delete all LAN Inte	rface web will not be	functional				
r uration ade		Note	: If You delete all LAN Inte	rface web will not be	functional				
ration de		Note	: If You delete all LAN Inte	rface web will not be	functional				
ration de		Note	: If You delete all LAN Inte	rface web will not be	functional				
r urstion ade		Note	: If You delete all LAN Inte	rface web will not be	functional				
r I Ruration rade		Note	: If You delete all LAN inte	rface web will not be	functional				
r r ration t		Note	: If You delete all LAN Inte	rface web will not be	functional				
r r rade ł		Note	: If You delete all LAN Inte	rface web will not be	functional				
r r rade t		Note	: If You delete all LAN inte	rface web will not be	functional				
I II guration rade t		Note	: If You delete all LAN inte	rface web will not be	functional				

Figure 4-12 LAN interface added as Name 'eth1:1'

To delete any LAN entry, click on the check box, then click on the 'Delete' button.

ET100R Web Configuration	n - Microsoft Internet	Explorer						
<u>File Edit View Favorites To</u>	ools <u>H</u> elp						A.	
Address 💩 http://172.24.1.100/cg	uddress 🧃 http://172.24.1.100/cgi-bin/Login?loginname=admin&password=&ACTION=Submit 🔍 🎅 Go Links 🌺							
ET100R			Interfa	ce LAN				
System Info	Name	Hardware Type	Hardware Address	IP Address	IP Mask	Status		
LAN Setup	eth1	Ethernet	00:02:AB:06:00:01	172.24.1.100	255.255.0.0	up		
WAN Setup	eth1:1	Ethernet	00:02:AB:06:00:01	192.168.1.254	255.255.255.0	up		
Interface Statics Routing Setup DHCP Server DNS NAT Vartual Server RIP SIMP SIMP SIMP SIMP Sinte Show Configuration System Upgrade Load Default Reboot		Note: If	(Add) (	Delete face web will not be f	unctional			
ど Done						🥥 Interne	st ":	

Figure 4-13 Delete Entry



Figure 4-14 LAN entry Deleted successfully

# 4.2.5 WAN interface configuration

Click on 'WAN Setup' menu item to enable the WAN interface configuration function.

ET100R Web Configuration	n - Microsoft Internet Ex	plorer					. 🗆 🗙
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> i	ools <u>H</u> elp						<b>1</b>
Address 🕘 http://172.24.1.100/cc	ji-bin/Login?loginname=admin&	password=&ACTION=Submit				💌 🔁 Go	Links »
ET100R Change Password System Info LAN Setup WAN Setup Interface Statup DHCP Server DHCP Server DNS NAT Yatual Server SINMP SINMP SINMP SINMP SINMP SINTP Show Configuration System Upgrade Load Default Reboot	Name Ha	rdware Type Hardware Ad	Interface WAN dress IP Address Add Delete	IP Mask	Echo Ping	Status	
C Noue						a internet	

Figure 4-15 WAN Setup function

Click the 'Add' button. Input the proper WAN values for IP address, subnet mask, peer (gateway) address, encapsulation and status, then click the 'Apply' button.

ET100R Web Configuratio	n - Microsoft Internet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u>	ools Help	
Address 🕘 http://172.24.1.100/co	gi-bin/Login?loginname=admin&password=&ACTION=Submit	🔽 🄁 Go 🛛 Links 🎽
ET 100R Change Paseword System Info System Info LAN Satup WAN Satup Interface Statup DHCP Server DNS NAT Virtual Server EIP SIMMP SIMTP Show Configuration System Upgrade Load Default Reboot	WAN IP Address : 10.0.01 Subnet : 255:255:252 Peer IP Address : 10.0.02 (out mandatory) Encapsulation : Cisco ((same for all IP Serial No.) Interface Status : ON V Echo Ping : Disable V Modify Status Only.	
Cone Done		Internet

Figure 4-16 Input the proper WAN values



Figure 4-17 Successful WAN IP entry added

Click 'View WAN Setup' to review the WAN settings.



Figure 4-18 View the WAN settings

To delete a WAN entry, click the check box for the WAN entry, then click the 'Delete' button.

🕘 ET100R Web Configuration	on - Microsoft Inte	rnet Explorer						
<u>File Edit View Favorites</u>	<u>T</u> ools <u>H</u> elp							
Address 🕘 http://172.24.1.100/0	:gi-bin/Login?loginname	=admin&password=&ACTI	ION=Submit				✓ →	Go Links »
<b>CTC</b> ET100R				nterface WAN				
Change Password		Hardwood Trans		ID Address	ID March	Calua Dina	Chatura	
System Info	Name	Hardware Type	Hardware Address	IP Address	IP Mask	Echo Ping	status	
LAN Setup	hdic1	UNSPEC		10.0.0.1	255.255.255.252	Disable	down	
WAN Setup			_					
Interface Statics			<u> </u>	dd Delete				
Routing Setup								
DHCP Server								
DNS								
<u>NAT</u>								
Virtual Server								
RIP								
SNMP								
Show Configuration								
System Upgrade								
Load Default								
Reboot								
🙆 Done							Internet	

Figure 4-19 Delete WAN interface

ET100R Web Configuration - Microsoft	: Internet Explorer	
nie Euk New Pavontes Tools nep	na zasa – zdraje o zasujavi – 0.4771/M–Subasit	Too Links X
ET100R Change Password		
System Info LAN Setup	Success WAN Entries Deleted	
WAN Setup Interface Summary Interface Statics Routing Setup	View WAN Setup	
DHCP Server DNS NAT		
Virtual Server RIP SNMP		
SNTP Show Configuration System Upgrade		
Load Default Reboot		
Dana		rpat

Figure 4-20 Successfully deleted WAN entries

# 4.2.6 Interface Summary and Statistics

To view the interface summary page, click on the 'Interface Summary' menu item. The following window will be displayed.

ET100R Web Configuratio	n - Microsoft Internet	t Explorer					
<u>Eile E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u>	ools <u>H</u> elp						<b>1</b>
Address 🕘 http://172.24.1.100/c	gi-bin/Login?loginname=adr	min&password=&ACTION=Subm	it			💙 🔁 Go	Links »
ET100R			Interface Sun	nmary			
Change Password Sweten Info	Name	Hardware Type	Hardware Address	IP Address	IP Mask	Status	
LAN Setup	eth1	Ethernet	00:02:AB:06:00:01	172.24.1.100	255.255.0.0	up	
WAN Setup	hdlc1	UNSPEC		10.0.0.1	255.255.255.252	down	
Interface Summary		,	,	,			
Interface Statics				_			
Routing Setup			Refresh				
DHCP Server							
NAT							
Virtual Server							
RIP							
SNMP							
SNTP							
Show Configuration							
Load Default							
Reboot							
<u>é</u>						) Internet	

Figure 4-21 Retrieving interface summary

To view the interface statistics page, click on the 'Interface Statistics' menu item. The following window will be displayed.

ET100R Web Configuratio	n - Microsoft Internet E	cplorer					
<u> Eile Edit View Favorites T</u>	ools <u>H</u> elp						
Address 🕘 http://172.24.1.100/co	gi-bin/Login?loginname=admin8	password=&ACTION	I=Submit			✓ →	Go Links »
Agoress (g) http://172.24.1.100/ci ET100R Change Password System Info LAN Setup WAN Setup Interface Statics Routing Setup DHCP Server DHCP Server DHCP Server DHCP Server SMAP Show Configuration System Upgrade Load Default Rebool	htterface LAN WAN	RX Packets 4274 0	TX Packets 2713 70	Interface Stati	CS RX Bytes 335667 (327.7 KIB) 0 (0.0 B)	TX Bytes 483540 (472.2 KIB) 1540 (1.5 KIB)	
é						🥥 Internet	

Figure 4-22 Retrieving Interface Statistics

## 4.2.7 Routing Configuration

To view the routing table summary page, click on the 'Routing Setup' menu item. The following window will be displayed.

ET100R Web Configuration	on - Microsoft Inter	net Explorer								
Eile Edit View Favorites	<u>T</u> ools <u>H</u> elp									<b>.</b>
Address 🕘 http://172.24.1.100/d	cgi-bin/Login?loginname=	admin&password=&ACTIO	i=Submit						💌 🔁 G	D Links »
ET100R			Ro	uting Tal	le					
Change Password	Destination	Gateway	Genmask	Ref	Falos	Metric	Use	Interface	Delete	
LAN Setup	10.0.0.0	0.0.0.0	255,255,255,252	U	0	0	0	hdic1	Delete	
WAN Setup	172.24.0.0	0.0.0	255.255.0.0	U	0	0	0	eth1	Delete	
Interface Summary	0.0.0.0	172.24.190.254	0.0.0.0	UG	0	0	0	eth1	Delete	
Routing Setup DHCP Server DNS NAT Virtual Server RIP SINMP SINMP SINMP Show Configuration System Upgrade Load Default Reboot				Add						
e)									🗿 Internet	

Figure 4-23 Retrieving Routing Table

To add an entry to the routing table, click on the 'Add' button. The following window will be displayed. Key in the values for IP network, subnet, gateway, and interface, click on 'Add' checkbox and then lastly click 'Apply'

ET100R Web Configuration - Mi	icrosoft Internet I	xplorer				(	
<u>File Edit View Favorites Tools</u>	Help						
Address 🗃 http://172.24.1.100/cgi-bin/L	ogin?loginname=admir	18password=8ACTION=Sub	mit			💙 🄁 Go	Links »
ET100R			Routing Table :	Setup			
System Info I AN Setur	Serial No.	Network IP	Subnet IP	Gateway IP	Interface	Add	
WAN Setup	1.	192.168.1.0	255.255.255.0	10.0.0.2	WAN V		
Interface Summary	2.				I AN 🗸		
Routing Setup	3						
DHCP Server	4						
NAT							
Virtual Server	<b>.</b>				WAN Y		
<u>RIP</u> <u>SNMP</u> <u>SNTP</u> <u>Show Configuration</u>			Apply				
System Upgrade Load Default							
Reboot							
E Done						Internet	

Figure 4-24 Adding routing table entries

ET100R Web Configuration - Microsof	t Internet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp		
Address 🕘 http://172.24.1.100/cgi-bin/Login?log	inname=admin&password=&ACTION=Submit	🖌 🔁 Go 🛛 Links 🂙
System Info LAN Setup	Success Requested Route entries added	
y AN Delup Interface Summary Interface Statics Routing Setup	View Routing Table	
DHCP Server DNS		
Virtual Server RIP		
SNTP Show Configuration		
System Upgrade Load Default Reboot		
E Done		Internet

Here are the results of a successful routing table entry addition.

Figure 4-25 Adding Routing entry successful

To view the results, click on the 'View Routing Table' link.

ET100R Web Configuration	on - Microsoft Inter	net Explorer								
<u>File Edit View Favorites</u>	Tools Help									<u></u>
Address 🕘 http://172.24.1.100/c	cgi-bin/Login?loginname=	admin&password=&ACTION	I=Submit						💙 🄁 Go	) Links »
ET100R			Rot	ıting Tab	le					
Change Password System Info	Destination	Gateway	Genmask	Ref	Falgs	Metric	Use	Interface	Delete	
LAN Setun	10.0.0.0	0.0.0.0	255.255.255.252	U	0	0	0	hdlc1	Delete	
WAN Setup	192.168.1.0	10.0.0.2	255.255.255.0	UG	0	0	0	hdlc1	Delete	
Interface Summary	172.24.0.0	0.0.0.0	255.255.0.0	U	0	0	0	eth1	Delete	
Interface Statics	0.0.0.0	172.24.190.254	0.0.0.0	UG	0	0	0	eth1	Delete	
DHCP Server DHCP Server DNS NAT Virtual Server EIP SIMP SIMP SIMP Show Configuration System Upgrade Load Default Reboot				Add						
🙆 Done									🧿 Internet	

Figure 4-26 Delete a routing table entry

To delete any of the entries, just click on the 'Delete' command that belongs to the entry you wish to delete.



Here are the results of a successful routing table entry deletion.

Figure 4-28 Successful deletion of a the routing table entry

## 4.2.8 DHCP service configuration

To activate the DHCP (Dynamic Host Configuration Protocol) service, click on the 'DHCP Server' menu item, then click the 'ADD' button.



Figure 4-29 DHCP server configuration on LAN Interface

Enter the parameters in the 'DHCP Server of LAN Port Configure' parameter fields, referring to the example below.

ET100R Web Configuration - Microsoft Internet Explorer Eile Edit View Favorites Tools Help 🗸 🄁 Go Address 🕘 http://172.24.1.100/cgi-bin/Login?loginname=admin&password=&ACTION=Submit ET100R DHCP Server of LAN Port Configure Change Password Global Status : OFF 🗸 System Info LAN Setup Select Pool : POOL 0 🗸 WAN Setup Pool Status : ON 💌 Interface Summary Interface Statics Modify Status Only: 📃 Routing Setup Net IP Address: 172.24.0.0 DHCP Server Subnet: 255.255.0.0 DNS NAT IP Range Start : 172.24.1.1 Virtual Server RIP IP Range End: 172.24.1.200 <u>SNMP</u> DNS IP: 216.239.32.10 <u>SNTP</u> Show Configuration Gateway IP: 172.24.190.254 System Upgrade Lease Time: 3600 Seconds Load Default Reboot Configure 🥝 Internet ど Done

Figure 4-30 DHCP server parameters

To view the results, click on the 'View DHCP Server Settings' link.



Figure 4-31 Success message when adding the DHCP Server IP entry

Summary of the DHCP server settings.

ET100R Web Configuratio	n - Microsoft Internet Explorer					
<u>File Edit View Favorites T</u>	ools <u>H</u> elp					
Address 🕘 http://172.24.1.100/co	gi-bin/Login?loginname=admin&password=&ACTION=Submit				💌 🔁 Go	Links »
Change Password System Info LAN Setup WAN Setup Interface Statics Routing Setup DHCP Server DHCP Server DHCP Server Routing Setup SINF SINF SINF SINF SINF SINF SINF SINF	DHCP Serv drs gw leas net stat rang rang Edit	rer Confit Gia se_time mask us ge_end ge_start	guration on LAN In bal Status off POOL 0 216.239.32.10 172.24.190.254 3600 172.24.0.0 255.255.00 on 172.24.1.200 172.24.1.1	Iterface		
🕑 Done					Internet	

Figure 4-32 Summary of DHCP Server Configuration

Additional IP address pools may be added by using the 'Select Pool' pull-down and selecting another pool. Enter the values for that pool and click the 'Configure' button.

ET100R Web Configuration	n - Microsoft Internet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u>	ools Help	
Address 🕘 http://172.24.1.100/cq	gi-bin/Login?loginname=admin&password=&ACTION=Submit	✓ ➡ Go Links ※
Address (1) http://172.24.1.100/cd	Ji-bir/Login?Roginname=admin8password=&ACTION=Submit DHCP Server of LAN Port Configure Global Status : ON Select Pool : POOL 1 Pool Status : ON Modify Status ON! Net IP Address : 172,240.0 Subnet 255,255.0.0 IP Range Start : 172,241,201 IP Range End: 172,241,254 DNS IP: 216,239,32,10 Gateway IP: 172,241,90,254 Lease Time: 4000 Seconds Configure	So unis *
A Dana		
Coue		Threffier

Figure 4-33 Adding Pool 1 DHCP Server Configuration

View the results of the DCHP server configuration.



Figure 4-34 Pool 0 and Pool 1 DHCP Server Configuration

## 4.2.9 DNS service configuration

To configure the DNS Proxy (Domain Name Service), click on the 'DNS' menu item, then click the 'EDIT' button.



Figure 4-35 DNS Configuration

Enter the Primary and Secondary DNS IP addresses for the ET100R to proxy. Select the status 'ON'.



Figure 4-36 DNS Configuring

Click the 'Configure' button to submit the changes.

ET100R Web Configuration - Microsof	t Internet Explorer	
Eile Edit View Favorites Tools Help		A.
Address 🕘 http://172.24.1.100/cgi-bin/Login?log	inname=admin&password=&ACTION=Submit	🔽 🔁 Go 🛛 Links 🎽
ET100R Change Password		
LAN Sature	Success DNS Configuration Modified	
WAN Setup		
Interface Summary		
Interface Statics	View DNS Settings	
Routing Setup		
DHCP Server		
DNS		
NAT		
<u>Virtual Server</u>		
RIP		
SNMP		
Share Configuration		
System Ungrade		
Load Default		
Reboot		
Cone Cone		🖉 Internet 🚏 🚲

Figure 4-37 Success DNS Configuration modified



Figure 4-38 DNS Configuration sample

# 4.2.10 NAT service configuration

In the NAT service configuration section, there are two different ways to configure the NAT service through the Web UI management interface.

#### NAT Function Multi-NAT

ET100R Web Configuration	n - Microsoft Internet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> i	ools Help	
Address 🕘 http://172.24.1.100/cq	gi-bin/Login?loginname=admin&password=&ACTION=Submit	🖌 🄁 Go 🛛 Links 🎽
Conception of the second secon	NAT Configuration  NAT Function:  Disable C Enable  Multi-NAT:  DVirtual Start IP Address Netmask Global Start IP Address Action  Add Add Add Add Finish	
2		

Figure 4-39 NAT service Configuration



For the NAT Function, click the 'Enable' radio button then click the 'Finish' button.

Figure 4-40 Successfully enabled NAT function

To configure the multi-NAT, click the 'Add' link from the NAT service configuration window.

ET100R Web Configuration	1 - Microsoft Internet Explorer			
<u>File Edit View Favorites I</u> d	ools <u>H</u> elp			
Address 🕘 http://172.24.1.100/cg	i-bin/Login?loginname=admin&password=&ACTIO	N=Submit		🖌 🄁 🖸 🖌 Links 🎽
Change Password System Info LAN Stup Interface Stup WAN Stup Interface Stup DHCP Server DNS NAT Yithual Server EIF SIMMP SIMTP Show Configuration System Upgrade Load Default Reboot	Virtual Start IP Address	Add Multi-NAT	WAN IP Address 10.0.0.1	
Conc.				Theorem :

Figure 4-41 Add a Multi-NAT

## 4.2.11 Virtual Server configuration

Virtual server configuration allows a port to be mapped to the public IP through the NAT. In this way a machine running a Web server (port 80) or FTP (port 21) can be accessed from the public IP, even though the server resides on the private address range with private IP.

ET100R Web Configuration	n - Microsoft Internet Explo	orer					
<u>File Edit View Favorites I</u>	pols <u>H</u> elp						<b></b>
Address 🕘 http://172.24.1.100/cg	ji-bin/Login?loginname=admin&pas	ssword=&ACTION=Submit				💙 ラ Go	Links »
ET 100R Change Password System Info LAN Setup WAN Setup	Index	Virtual S	erver Configuration	Port	Action		
Interface Summary	1 maex	Private iP	PTOLOCOL	Pon	Action		
Interface Statics	2				Add		
Routing Setup	3				Add		
DHCP Server DNS	4				Add		
NAT	5				Add		
Virtual Server RIP SINAP SINAP SINTP Show Configuration System Upgrade Load Default Reboot							
٤́						Internet	

Figure 4-42 Add a Virtual Server

Key in IP, protocol, and port for the Virtual Server, then click the 'Apply' button.



Figure 4-43 Key in IP, protocol, and port for the Virtual Server

# 4.2.12 RIP configuration

Choose the RIP item from the menu. Click the 'Edit' button.

ET100R Web Configuration	n - Microsoft Internet Explorer	
Eile Edit View Favorites	iools <u>H</u> elp	A
Address 🕘 http://172.24.1.100/d	gi-bin/Login?loginname=admin&password=&ACTION=Submit	🖌 🔁 Go 🛛 Links 🂙
Change Password System Info LAN Setup WAN Setup Interface Status DHCP Server DNS NAT Virtual Server RIP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShM	RIP Configuration Status of EDIT	
E Done		Internet

Figure 4-44 Edit the RIP configuration

In the example here, RIP is activated for both the LAN and WAN. We have set values for garbage collection, timeout and update time. Lastly make status ON, select RIP version (1 or 2) and click 'Configure'.

ET100R Web Configuration File Edit View Eavorites To	n - Microsoft Internet Explorer	
ET 100R Web Configuration Ele Edk Yew Favorites It Address Thtp://172.24.1.100/cg ET 100R Change Password System Info Change Password System Info Change Password System Info Change Password System Info Change Password System Info Change Password System Info Horfface Statiog Routing Setup DHCP Server DNS NAT Yatual Server RIE ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP ShMP	n- Microsoft Internet Explorer Nole Help Helm/Login?loginname=admin&password=8ACTION=Submit Configure RIP Active on Interface: Both LAN & WAN ♥ RIP Version: RIPI♥ Garbage Collection Timer: 50 (0-65536) Seconds Timeout Timer: 180 (9-65536) Seconds Update Timer: 30 (3-65536) Seconds Status: ON ♥ Modify Status Only: Configure	Contraction of the second seco
Load Default Reboot		
A Dana		

Figure 4-45 RIP configuration



Figure 4-46 Successful RIP configuration

Click the link 'View RIP Settings' to review or further edit the RIP configuration.

ET100R Web Configuration - Micr	rosoft Internet Explorer		
LAN Setup MAdress @ http://172.24.1.100/cg-bin/Log ET100R Change Password System Info LAN Setup WAN Setup Interface Statup WAN Setup Interface Statup DHCP Server DNS NAT Virtual Server RIP Show Configuration System Upgrade Load Default Reboot	pri/loginame=admin&password=&ACTION=Submit RIP Con garbage_collection_timer activated_on itimeout_timer update_timer version E	figuration 60 LAN WAN 180 30 1	Reference of the second
E Done			🔮 Internet

Figure 4-47 View and/or Edit RIP configuration

# 4.2.13 SNMP configuration

SNMP is the Simple Network Management Protocol. Choose the SNMP item from the menu. Click the 'Edit' button.



Figure 4-48 SNMP configuration

Fill in the community strings for read only and read write and make status 'ON', then click the 'Configure' button.



Figure 4-49 SNMP values input

## 4.2.14 SNTP configuration

SNTP is the Simple Network Time Protocol. Choose the SNTP item from the menu.



Figure 4-50 SNTP configuration

#### Click the 'Edit' button.

ET100R Web Configuration -	Microsoft Internet Explorer		
<u>Eile Edit View Favorites Took</u>	s Help		<b>.</b>
Address 🗿 http://172.24.1.100/cgi-b	vin/Login?loginname=admin&password=&ACTION=Submit	🖌 🄁 Co	Links »
Address & http://172.24.1.100/cg-b ET100R Change Password System Info LAN Setup Interface Statics Routing Setup DHCP Server DNS NAT Virtual Server RIP SIMMP SIMMP SIMMP Show Configuration System Upgrade Load Default Reboot	Configure SNTP Server Address: ntp0 cornell.edu ♥ NOT IP Offset Value: GMT(-05:00) EASTERN TIME (US & CANADA) Status : ♥ ♥ Modify Status Only: Configure		
🙆 Done		🥝 Internet	

Figure 4-51 SNTP values input

Fill in the values for Time server and time offset. If the Time Server is called by name, click the 'NOT IP' check box (DNS must be working). A good place to find a time server close to your geographical area is to use the NTP search site:

http://ntp.isc.org/bin/view/Servers/WebHome

# 4.2.15 Show configuration

Choose the 'Show Configuration' item from the menu. All the current configuration setting will be displayed on one page.

ET100R Web Configuration	ı - Microsoft Internet Explo	rer							
<u>File Edit View Favorites I</u> d	ols <u>H</u> elp								-
Address 🕘 http://172.24.1.100/cg	i-bin/Login?loginname=admin&pas:	sword=&ACTION=Subr	nit					🖌 🄁 Co	Links »
ET100R			Rur	ning Con LAN Inte	figuration enface	1			Ê
Change Password System Info									
LAN Setup	IP	P IP Address		Mode Netmask		Netmask			
WAN Setup	0	172.24.1.100		static	255.255.0				
Interface Summary Interface Statics									
Routing Setup			WA	N Interface:	Encap cisco				
DHCP Server	IP IP Ad	dress	Netmas	sk	PeerA	ddress	Echo Ping		
DNS NAT	0 10.0.0	0.1	255.255	5.255.252	Disabl	e			
Virtual Server									
RIP				DNS	S				
SNMP SNTP									
Show Configuration			ondon	Status	00 220.25.15				
System Upgrade		Iser	condary	1210	.238.23.15				
<u>Load Default</u> Rehoot				DIE					
				- NI					
				Status	on				
		garba	age_collec	tion_timer 60	)				
		activa	ated_on	U	AN				
		activated_on WAN		AN					
		umeout_umer		30	30				
		version		1	1				
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		<u> </u> :	server	E	8.95.195.12				
					-				
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									-
	VIRTUAL SERVER								
		Index	Priv	ate IP	Protocol	Port			
		1	192.1	68.1.20	tcp	80			
									~
é								Internet	.:

Figure 4-52 Show Configuration

# 4.2.16 System Upgrade

Occasionally there may be software enhancements or fixes that require updating the code in the router. This may be done through the Web Interface as well as console or Telnet CLI. The process still requires a working TFTP server. The ET100R has a Windows bases TFTP server in the 'tools' directory of the CDROM. Enter the TFTP's IP address in the 'Server IP Address' field and the image filename in its field. Click the 'Upgrade' button.



Figure 4-53 System Upgrade

## 4.2.18 Load Defaults

Choose the 'Load Default' item from the menu. The confirmation screen will be displayed.



Figure 4-54 Load Default Confirmation message

## 4.2.19 Reboot

 ET100R Web Configuration - Microsoft Internet Explorer
 Ele Edit View Favorites Icols Help 🕶 🛃 Go Address a http://172.24.1.100/cgi-bin/Login?loginname=admin&password=&ACTION=Submit Links ET100R Change Password Reconfirm to Reboot the system Change Password System Info LAN Setup WAN Setup Interface Summary Interface Statics Reboot <u>Routing Setup</u> <u>DHCP Server</u> Note: By Default all the confirgurations are saved in system DNS NAT Virtual Server RIP SNMP <u>SNMP</u> <u>Show Configurati</u> <u>System Upgrade</u> <u>Load Default</u> Reboot 🥝 Internet ど Done

Choose the 'Reboot' item from the menu. The confirmation screen will be displayed.

This completes the Web GUI interface operation.

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# **Appendix A - CLI Command Reference**

## A.1. CLI Overview

The ET100R router includes a mini-DIM 9 to DB9 cable to connect a PC's RS-232 COM: port to the console port of the ET100R. The network engineer may use PC HyperTerminal as the console application. The configuration settings are 115200 bps, 8 bits, no parity, 1 stop bit, and no flow control.

There are two access levels of operation for the ET100R, basic mode and privileged mode.

The basic login requires the username 'admin' and has no password set by default. Basic level allows browsing all settings but does not allow any changes to be made.

The network administrator may advance to privileged mode from basic mode by entering the **enable** command, followed by the privileged mode password. The default privileged mode password is also set to a null value, just press enter directly when asked for the password.

In basic mode there will be a ">" prompt on every command line while in privileged mode, there will be a "#" prompt on every command line. Enter the **disable** command to go back to basic mode. Entering the **quit** command, will logout of both basic and privileged modes.

This appendix will provide the functional details of the Command Line Interface (CLI). They are all "Cisco like" commands.

# A.2. Command Types

The shell commands can be categorized into the following different types.

## A.2.1. System Support Commands

These include enable, disable, quit, exit, help,?, and upgrade commands.

## A.2.2. Show Commands

These include all of the show commands and can be run from non-privileged mode (basic mode).

## A.2.3. Configure Commands

These include the config commands and are only available in privileged mode.

## A.2.4. Net Tool Commands

These include the ping, traceroute, and arp commands.

## A.2.5. Miscellaneous Commands

These include up arrow and down arrow. Making it easy to review a history of commands.

## A.3. Command Line Syntax Rules

Command	Base command.
<string></string>	Depends s on specific interface type, item, or value.
	If the string is <b>interface name</b> , it could be <b>eth1</b> for Ethernet or <b>hdlc1</b> for WAN port.
<string a="" b="" string=""  =""></string>	The string can be "string a" or "string b".
[option]	Optional item or value.
$\{A B C\}$	Value A, B, or C. Must select one of them.

## A.4. Command List

## A.4.1 Base Commands

## A.4.1.1 enable

Syntax:

enable

## Description:

This command allows the user to enter the privileged mode to do configuration.

Example:

enable

## A.4.1.2 disable

Syntax:

disable

Description:

This command allows the user to leave the privileged mode and return back to basic mode.

Example:

disable

## A.4.1.3 quit

Syntax:

quit

Description:

This command will log out the user from either basic or privileged mode.

Example:

quit

## A.4.1.4 exit

## Syntax:

exit

## Description:

This command will log out the user from either basic or privileged mode. It has the same function as quit.

## Example:

exit

## A.4.1.5 up arrow

## Syntax:

Description:

This key allows the user to review the history of commands used in a round-robin fashion.

Example:

## A.4.1.6 down arrow

Syntax:

Description:

This key allows the user to review the history of commands used in a round-robin fashion.

Example:

## A.4.1.7 help, or ?

Syntax:

help

Description:

List all of the available commands.

Example:

help

## A.4.1.8 show

### Syntax:

show {arp ... | config ... | interface ... | ip ... | memory | system }

Description:

Show commands.

Example:

show system

## A.4.1.9 config

Syntax:

config {interface ... | ip ... | save | system ... }

### Description:

Configure commands.

### Example:

config interface hdlc1 encap ppp

## A.4.2 Interface Commands

## A.4.2.1 show interface

#### Syntax:

show interface {summary | <if name>}

#### Description:

Display interface information. <if name>=eth1: Ethernet port information. <if name>=hdlc1 WAN port information.

#### Example:

show interface summary show interface eth1 show interface hdlc1

## A.4.2.2 config interface

Syntax:

config interface <if name> <on | off>

### Description:

Enable or disable interface.

### Example:

config interface hdlc1 off

## A.4.2.3 config interface <if name> ip <#>

#### Syntax:

config interface <if\_name> ip <#>
{[addr <ip address>] [netmask <netmask address>] [mode static] | mode dhcp }

#### Description:

Setup interface IP address and netmask. If the mode is dhcp, this interface will perform in DHCP client mode; if the mode is static or ignore, it is static IP mode.

### Example:

config interface eth1 ip 0 addr 192.168.100.1 netmask 255.255.255.0 config interface hdlc1 ip 0 addr 192.168.200.1 netmask 255.255.255.0 config interface eth1 ip 0 mode dhcp

## A.4.2.4 config interface hdlc1 encap

Syntax:

config interface hdlc1 encap {hdlc | ppp | cisco}

Description:

Configure WAN port encapsulation protocol. hdlc: Encapsulate raw HDLC protocol. ppp: Encapsulate PPP protocol. cisco: Encapsulate Cisco HDLC protocol.

#### Example:

config interface hdlc1 encap hdlc config interface hdlc1 encap ppp config interface hdlc1 encap cisco

## A.4.3 IP Routing Commands

#### A.4.3.1 show ip

Syntax:

show ip {dhcp | dns | nat | rip | route }

#### Description:

dhcp: Display DHCP related information. dns: Display DNS related information. nat: Display NAT related information. rip: Display RIP related information. route: Display routing table related information.

#### Example:

See 'show ip dhcp', 'show ip dns', 'show ip nat', 'show ip rip', and 'show ip route' sections for details.

### A.4.3.2 show ip dhcp

#### Syntax:

show ip dhcp

Description:

Display DHCP summary information.

Example:

show ip dhcp

### A.4.3.3 show ip dhcp table

#### Syntax:

show ip dhcp table

Description:

Display client IP assignment information of DHCP server.

Example:

show ip dhcp table

## A.4.3.4 show ip dhcp pool

Syntax:

show ip dhcp pool <pool id>

### Description:

Display specified DHCP pool detailed information.

## Example:

show ip dhcp pool 0

## A.4.3.5 show ip dns

### Syntax:

show ip dns

Description: Display DNS related information.

Example:

show ip dns

## A.4.3.6 show ip nat

#### Syntax:

show ip nat

Description:

Display NAT related information.

## Example:

show ip nat

## A.4.3.7 show ip nat table

### Syntax:

show ip nat table

### Description:

Display NAT table information.

### Example:

show ip nat table

## A.4.3.8 show ip rip

### Syntax:

show ip rip

Description: Display RIP related information.

Example:

show ip rip

## A.4.3.9 show ip route

#### Syntax:

show ip route

### Description:

Display routing table related information.

### Example:

show ip route

## A.4.3.10 config ip

### Syntax:

config ip {dhcp ... | dns ... | nat ... | rip ... | route ... }

### Description:

dhcp: Configure DHCP server related operations.dns: Configure DNS related operations.nat: Configure NAT related operations.rip: Configure RIP related operations.route: Configure routing table related operations.

### Example:

See 'config ip dhcp', 'config ip dns', 'config ip nat', 'config ip rip', and 'config ip route' sections for details.

## A.4.3.11 config ip dhcp

### Syntax:

config ip dhcp <on | off>

Description:

Turn on or off DHCP server global switch.

### Example:

config ip dhcp on config ip dhcp off

## A.4.3.12 config ip dhcp pool

### Syntax:

Config ip dhcp pool <pool id>  $\{< on | off> |$ 

[net <net address>]
[netmask <netmask address>]
[range\_start <ip address>]
[range\_end <ip address>]
[dns <ip address>]
[wins <ip address>]
[gateway <ip address>]
[lease\_time <time in seconds>]}

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Description:

<pool id>: It ranges from 0 to 4. <on | off>: The on/off switch of the specified DHCP pool. net <net address>: The network address of the specified DHCP pool. netmask <netmask address>: The network mask address of the specified DHCP

# Example:

pool.

config ip dhep pool 0 off config ip dhep pool 1 net 10.60.0.0 netmask 255.255.0.0 config ip dhep pool on

## A.4.3.13 config ip dns

#### Syntax:

config ip dns {primary < ip address> | secondary <ip address>}

#### Description:

Configure the primary and secondary DNS server.

#### Example:

config ip dns primary 206.13.28.12 config ip dns secondary 206.13.29.12

## A.4.3.14 config ip nat

#### Syntax:

Description:

Setup the NAT environment. The Source NAT is typical NAT application. The Destination NAT is virtual server application..

Example:

config ip nat max\_table\_size 8192 config ip nat add type snat nat\_ip 66.100.1.20 config ip nat add type snat src\_net 192.168.1.0 src\_netmask 255.255.255.0 nat\_ip 66.100.1.20 config ip nat add type dnat dst\_port 80 nat\_ip 192.168.1.1 config ip nat del type dnat nat\_ip 192.168.1.1 config ip nat on
# A.4.3.15 config ip rip

Syntax:

config ip rip {<on | off> |
 version <1 | 2> |
 update\_timer <time in second> |
 timeout\_timer <time in second> |
 garbage\_collection\_timer < time in second> ||
 {ifadd | ifdel } <if name>
 }
}

Description:

Configure RIP related operations.

#### Example:

config ip rip on config ip rip ifadd eth1 config ip rip ifadl hdlc1 config ip rip version 2 config ip rip update\_timer 30 config ip rip timeout\_timer 180 config ip rip garbage\_collection\_timer 60

# A.4.3.16 config ip route add

Syntax:

config ip route add

{net <net address> netmask <netmask address> [gw <ip address>] if <if name> | net 0.0.0.0 netmask 0.0.0.0 [gw <ip address>] if <if name> }

Description:

add: Add a route entry in the routing table. net <net address>: The network address of the specified route will apply. netmask <netmask address>: The network mask address of the specified route will apply net 0.0.0.0 netmask 0.0.0.0: Default gateway. gw <ip address>: The gateway ip address of the specified route will apply. if <if name>: The interface of the specified route will apply.

#### Example:

config ip route add net 10.60.0.0 netmask 255.255.0.0 if eth1 config ip route add net 0.0.0.0 netmask 0.0.0.0 gw 67.100.23.68 if eth1

# A.4.3.17config ip route del

Syntax:

config ip route del
{net <net address> netmask <netmask address> [gw <ip address>] [if <if name>]
| net 0.0.0 netmask 0.0.0 [gw <ip address>] [if <if name>] }

Description:

del: Delete a route entry in the routing table.

net <net address>: The network address of the specified route will apply.

netmask <netmask address>: The network mask address of the specified route will apply net 0.0.0.0 netmask 0.0.0.0: Default gateway.

gw <ip address>: The gateway ip address of the specified route will apply.

if <if name>: The interface of the specified route will apply.

Example:

config ip route del net 10.60.0.0 netmask 255.255.0.0

# A.4.4 Management Commands

# A.4.4.1 SNMP

Syntax:

Description:

Set SNMP MIB-II feature on or off. Modify SNMP community string.

Example:

config snmp on config snmp read\_write\_community public

#### A.4.4.2 web

Syntax:

config web <on | off>

Description:

Set web management feature on or off.

#### Example:

config web on

# A.4.5 Net Utility Commands

# A.4.5.1 ping

Syntax: ping <host> Description: Ping function.

Example: ping 100.100.100.1

#### A.4.5.2 traceroute

Syntax:

traceroute <host>

Description:

Show the route packets take to network host..

Example:

traceroute 168.95.1.1

# A.4.6 System Support Commands

# A.4.6.1 show config

#### Syntax:

show config

### Description:

Show the running configuration file.

Example:

show config

# A.4.6.2 config save

#### Syntax:

config save

#### Description:

Save the whole system configuration into non-volatile memory.

Example:

config save

# A.4.6.3 show system

#### Syntax:

show system

#### Description:

Show the system information.

#### Example:

>show system

Model: ET100R Serial Number : none Firmware Version: 1.00.b76 Firmware Build Time: Sat Jun 10 02:34:14 PDT 2006 TxClk invert: off

System Name: ET100R Login Name: admin Session Timeout: 10 min System Time: Thu Jan 01 12:00:45 AM 1970 System Up Time: 00:00:45 up 0 min, load average: 1.12, 0.30, 0.10

# A.4.6.4 config system

Syntax:

config system

{[name <string>] | [password <string>] | [enable\_password <string>] | [mac <mac address>]}

## Description:

name <string>: Change router system name. password <string>: Change basic mode password. enable\_password <string>: Change privileged mode password.

Example:

config system name ET100R config system password admin config system enable\_password 0000

# A.4.6.5 upgrade

Syntax:

upgrade tftp server <host> file <file name>

Description:

User may upgrade new firmware by TFTP.

<host>: TFTP server

<file name>: the filename of new firmware.

Please make sure the LAN IP is configured properly first.

Example:

upgrade ftp server 10.10.10.123 file firmware09012004.bin

# A.4.7 Miscellaneous Commands

# A.4.7.1 show arp

Syntax:

show arp

Description:

Display arp table information.

Example:

show arp

# A.4.7.2 config arp

config arp {

Syntax:

add <ip address> hwaddr <mac address> | del <ip address> }

Description:

Configure arp table.

Example:

config arp add 1.1.1.1 hwaddr 00:11:22:aa:bb:cc config arp del 1.1.1.1

# A.4.7.3 show memory

Syntax:

show memory

Description:

Display system memory usage information.

Example:

show memory

# A.4.7.4 config sntp

Syntax:

```
config sntp { <on | off> |
server ... |
offset ...
}
```

#### Description:

Setup the Simple Network Time Protocol feature. User may assign SNTP server IP and time offset.

Example:

config sntp on config sntp server 198.82.1.202 config sntp offset 1 This page left blank intentionally.

# **Ethernet Series**

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