ZyXEL Prestige P128IMH

2.21 Release Note

Date: January 18, 1999

Congratulations on your purchase of a ZyXEL Prestige 128IMH Remote Access Router. In a modem-sized box, the Prestige 128IMH offers inexpensive yet complete telecommunications and internetworking solutions for your home or branch office. The Prestige 128IMH is ideal for everything from surfing the Internet to receiving calls from Remote Dial-in Users to making LAN-to-LAN connections to Remote Nodes.

Distinguishing features of the Prestige 128IMH include Remote Dial-in User support, an Internet Single User Account (Network Address Translation), POTS line support (Plain Old Telephone Service; also called A/B Adapter in Europe), extensive Network Management, built-in 4-port Ethernet hub, and the latest security features.

Features

The Prestige 128IMH is packed with a number of features that give it the flexibility to provide a complete networking solution for almost any user.

ISDN Basic Rate Interface (BRI)

Using either a standard BRI S/T Interface or U Interface the Prestige supports a full range of switch types. The switch type depends on the Central Office switch your ISDN line is connected to. The two B-channels can be used independently for two destinations, or they can be bundled for a single connection with PPP/MP.

Built-in V.90 Client site Modem

The Prestige has a built-in V.90 client site modem. This enables it to communicate to remote routers or users at speeds up to 56 Kbps through the ISDN connection.

Multiple Networking Protocol Support

The Prestige is a multi-protocol router. It supports TCP/IP, Novell IPX, and Transparent Bridging.

Analog Phone Ports

The Prestige is equipped with two standard phone jacks to connect to telephones, FAX machines, or modems. This allows the ISDN line to be used for voice calls as well as data calls.

Caller Display Services on Analog PSTN lines

Prestige support to send out CLID information on both POST ports. To use
Caller Display you need a special telephone or display unit which show, and
then store, the numbers of incoming callers.

Supplementary Voice Features

The Prestige supports the following Supplementary Voice Features on both of its Analog (POTS) Phone Ports:

Call Waiting

Three Way Calling (conference)

Call Transfer

Call Forwarding

Reminder Ring

Remote Dial-in Users

The Prestige has a built-in V.90 client site modem. This allows users that have workstations with remote access capabilities to dial-in to the Prestige to access network resources not only through ISDN network but also PSTN network.

Built-in 4-Port Ethernet Hub

The Prestige 128IMH is equipped with a built-in 4-port Ethernet hub. The built-in hub eliminates the need to purchase a separate hub when building a one to four-port network. For a larger number of workstations, an additional hub may be connected using a crossover cable.

Dial-on-Demand

The Dial-on-Demand feature allows the Prestige to automatically place a call to a Remote Node whenever there is traffic coming from any workstation on the LAN to that remote site.

Bandwidth-on-Demand

The Prestige supports bandwidth up to 128Kbps over a single ISDN BRI line. It incorporates PPP/MP (Point-to-Point Protocol/Multilink Protocol) to bundle two B channels over a BRI line. In addition, the Prestige dynamically allocates bandwidth between the two B channels, increasing or decreasing speeds as needed to allow for greater efficiency in data transfer. It supports BAP (Bandwidth Allocation Protocol) and BACP (Bandwidth Allocation Control Protocol) to manage the number of links in multilink bundle.

Network Management

The Prestige supports two methods of system management: The SMT interface and the Prestige Web Configurator.

SMT Interface

The SMT interface is a menu driven network management interface which can be accessed via an RS-232 interface or a Telnet connection.

Prestige Web Configurator

The Prestige Web Configurator is a JAVA based utility designed to allow users to access the Prestige's management settings via a Worldwide Web browser.

Backup and Restore Configuration File via LAN or WAN

PCT (Prestige Configuration Transfer), the stand-alone Java-based utility, allows backup and restoration of the configuration file via LAN or WAN.

Upgrade P128IMH Firmware via LAN

PCT can upgrade the Prestige128IMH firmware over the local LAN.

DHCP Support (Dynamic Host Configuration Protocol)

DHCP (Dynamic Host Configuration Protocol) allows you to automatically assign IP address settings to workstations on your network.

Security

The Prestige supports PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol).

RADIUS (Remote Authentication Dial In User Service)

The RADIUS feature allows you to use an external, central, Unix based server to support thousands of users.

Call Control

The Prestige provides budget management for outgoing calls and maintains a blacklist for unreachable phone numbers in order to save you the expense of unnecessary charges.

Data Compression

The Prestige incorporates Stac data compression and CCP (Compression Control Protocol).

Networking Compatibility

The Prestige is compatible with remote access products from other companies such as Ascend, Cisco, and 3Com. Furthermore, it supports Microsoft Windows 95 and Windows NT remote access capability.

Applications For Your Prestige

Some applications for the Prestige include:

Internet Access

The Prestige supports the TCP/IP protocol, which is the language used for the Internet. It is also compatible with access servers manufactured by major vendors such as Cisco and Ascend.

Internet Single User Account (SUA)

For a small office environment, the Prestige offers a Single User Internet Account from an ISP (Internet Service Provider). This allows for unlimited users on the LAN (Local Area Network) to access the Internet concurrently for the cost of a single user.

Single User Account address mapping can also be used for LAN to LAN connection.

Multiprotocol LAN-to-LAN Connection

The Prestige can dial to or answer calls from another remote access router connected to a different network. The Prestige supports TCP/IP, Novell IPX, and has the capability to bridge any Ethernet protocol.

Telecommuting Server

The Prestige allows Remote Dial-in Users to dial-in and gain access to your LAN. This feature enables users that have workstations with remote access capabilities, e.g., Windows 95, to dial in using an ISDN terminal adapter (TA) to access the network resources without physically being in the office.

Nailed-up Connection

This new feature allows a dial-up line to emulate a leased line.

Features Details

How to make and answer a modem call by Prestige 128IMH Internal Modem

To make a modem call by Prestige P128IMH Internal Modem

At menu 4 and menu 11, select the Telco Option Transfer Type = Modem, the call to these ISP or remote nodes wil be made through internal modem.

```
                    Menu 4 - Internet Access Setup

              ISP's Name= ChangeMe
              Pri Phone #= 1234
              Sec Phone #=
              My Login= ChangeMe
              My Password= ********
              Single User Account= Yes
                IP Addr= 0.0.0.0

              Telco Options:
                Transfer Type= Modem

              Multilink= N/A
              Idle Timeout= 300

              Press ENTER to Confirm or ESC to Cancel:
```

```
                    Menu 11.1 - Remote Node Profile

     Rem Node Name= ChangeMe              Route= IP
     Active= Yes                          Bridge= No

     Call Direction= Outgoing             Edit PPP Options= No
     Incoming:                            Rem IP Addr= 0.0.0.0
       Rem Login= N/A                       Edit IP/IPX/Bridge= No
       Rem Password= N/A                  Telco Option:
       Rem CLID= N/A                        Allocated Budget(min)= 0
       Call Back= N/A                       Period(hr)= 0
     Outgoing:                              Transfer Type= Modem
       My Login= ChangeMe                   Nailed-Up Connection= No
       My Password= ********              Session Options:
       Authen= CHAP/PAP                     Edit Filter Sets= No
       Pri Phone #= 1234                    Idle Timeout(sec)= 300
       Sec Phone #=

                 Press ENTER to Confirm or ESC to Cancel:
```

To answer a modem call by Prestige P128IMH Internal Modem

At menu 2, select Enable to accept modem call. For DSS1 switch type, select MSN will help you match the modem call phone number at A/B adapter 2. If you do not apply MSN, you can select Don't Care option, and enable A/B Adapter 2 accept modem call. This setting can let you answer the modem call by A/B Adapter 2, however it also routes your voice call to internal modem. Since there is no way to distinguish the incoming call is modem or voice call. It will be a little inconvenient to you if you do not apply the MSN services
.

And when you use the internal modem for out call or answering a call, the A/B Adapter 2 can not be used for voice call. The same reason, when you use A/B Adapter 2 for voice call, you can not make a modem call or answer a modem call. That is, A/B Adapter 2 and internal modem share the same HW resource, so you can't use both two at the same time.

```
                         Menu 2 - ISDN Setup
         Switch Type: DSS-1(Taiwan)
         B Channel Usage= Switch/Switch

         ISDN Data    =   10000              Subaddress=
         A/B Adapter 1 =  10001              Subaddress=
         A/B Adapter 2 =  10002              Subaddress=
         A/B Adapter 2 Accepts Modem Call= Enable

         Dial Prefix to Access Outside Line=
         PABX Number (Include S/T Bus Number)=
         Incoming Phone Number Matching= Multiple Subscriber Number
(MSN)
            Analog Call Routing= N/A
            Global Analog Call= N/A

      Advance Setup = No
                    Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

```
                         Menu 2 - ISDN Setup
         Switch Type: DSS-1(Taiwan)
         B Channel Usage= Switch/Switch

         ISDN Data    =                     Subaddress=
         A/B Adapter 1 =                     Subaddress=
         A/B Adapter 2 =                     Subaddress=
         A/B Adapter 2 Accepts Modem Call= Enable

         Dial Prefix to Access Outside Line=
         PABX Number (Include S/T Bus Number)=
         Incoming Phone Number Matching= Don't Care
           Analog Call Routing= N/A
           Global Analog Call= Accept

         Advance Setup = No
                    Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

DHCP Server

By default, Prestige is now configured as a DHCP server. The range of IP address pool is from 192.168.1.33 to 192.168.1.64. The DNS Proxy feature is enabled. Please refer to the DNS Proxy sub-section for details.

Menu 3.2:

```
     Menu 3.2 - TCP/IP and DHCP Ethernet Setup

            DHCP Setup:
              DHCP= Server
              Client IP Pool Starting Address= 192.168.1.33
              Size of Client IP Pool= 32
              Primary DNS Server= 0.0.0.0
              Secondary DNS Server= 0.0.0.0

            TCP/IP Setup:
              IP Address= 192.168.1.1
              IP Subnet Mask= 255.255.255.0
              RIP Direction= Both
                Version= RIP-1
```

SUA and Dynamic IP Address

By default, both SUA and dynamic IP address are enabled. By utilizing the factory default configuration, it will be easy to most of new customers to start to browse the Internet in minutes.

Menu 4:

```
            Menu 4 - Internet Access Setup

                ISP's Name= ChangeMe
                Pri Phone #= 1234
                Sec Phone #=
                My Login= ChangeMe
                My Password= ********
                Single User Account= Yes
                  IP Addr= 0.0.0.0

                Telco Options:
                  Transfer Type= 64K

                Multilink= Off
                Idle Timeout= 300
```

DNS Proxy

If enabled, DNS Proxy will allow the Prestige to act as the DNS server for the local network. The Prestige will get the IP address of the actual DNS server from the remote site via IPCP negotiation. Note this feature only works if the remote site supports RFC 1877.

Configuring the DNS Proxy

DNS Proxy is enabled only if the selection of the *DHCP* field under *DHCP Setup* in Menu 3.2 is *Server* and the *Primary DNS Server* field in Menu 3.2 is set to *0.0.0.0*. (This is factory default). If DNS Proxy is enabled , the Prestige will assign its IP address as the Primary DNS in the responses to DHCP requests on the local network. SMT enforces the consistency between the *Primary DNS server* and *Secondary DNS server* fields in Menu 3.2 by skipping *Secondary DNS Server* field if the IP address of the *Primary DNS Server* field is 0.0.0.0.

If the selection of the **DHCP** field under **DHCP Setup** in Menu 3.2 is **None**, both of DHCP Server and DNS Proxy functions are disabled. Prestige will assign the values entered in **Primary DNS server** and **Secondary DNS server** fields in Menu 3.2 to the responses to the DHCP requests on the local network if DHCP Server function is enabled.

DNS Proxy Functional Flows
If DNS Proxy is enabled, Prestige will perform the following functions after receiving a DNS request from local network:

1. If there is no ISP configuration (default remote node), this DNS request packet will be discarded. Otherwise, continue.
2. Save this DNS request in an internal table.
3. If the connection to ISP is not up, Prestige will attempt to bring up the connection and negotiate with the remote site for the DNS server. Otherwise, continue.
4. If there is no DNS server negotiated on the connection to ISP, Prestige will discard this DNS request from the internal table. Otherwise, continue.
5. Replace the source IP address of the DNS request with the Prestige's own WAN IP address and forward this new DNS request to the ISP DNS server.

6. Match the DNS response from the ISP DNS server to the original DNS request in the internal table. Replace the destination IP address of the DNS response with the original client's IP address and forward this new DNS response to the original client.

Nailed-up Connection

When enabled in a remote node configuration, this node will emulate a leased line connection, even though the physical line is a dial-up connection. The Prestige will dial and hold up a connection, without any traffic requesting it. A new option marked in **black** on the following menus, enables/disables this feature

Menu 11.1:

```
                    Menu 11.1 - Remote Node Profile
    Rem Node Name= abc
    Active= Yes                                  Route= IP
    Call Direction= Outgoing           Bridge= No
    Tunneling Mode= None
      Endpoint Index= N/A                   Edit PPP Options= No
                                                    Rem IP Addr= 0.0.0.0
    Incoming:                               Edit IP/IPX/Bridge= No
      Rem Login= N/A                   Telco Option:
      Rem Password= N/A                Allocated Budget(min)= 0
      Rem CLID= N/A                       Period(hr)= 0
      Call Back= N/A                      Transfer Type= 64K
    Outgoing:                           Nailed-Up Connection= No
      My Login= scci                     Session Options:
      My Password= ********              Edit Filter Sets= No
      Authen= CHAP/PAP                   Idle Timeout(sec)= 300
      Pri Phone #= 140812345678
      Sec Phone #= 140822345678
                    Press ENTER to Confirm or ESC to Cancel:
```

Nailed-up Function Notes:

Because only two B-channels are available for the 8/12 remote nodes, the Prestige **always** starts to dial the first two remote nodes with the nailed-up connection requirement.

If it fails to establish a nailed-up connection (i.e. the call does not complete, or the session does not authenticate), the Prestige will keep attempting to connect to the same remote node, until the connection succeeds or exceeds the value set in *Retry Counter* field in Menu 24.9.1. This remote node is still under the budget control set in *Allocated Budget* and *Period* fields under *Telco Option* in Menu 11.1.

A remote node set as a nailed-up connection has no priority over any other remote nodes, except it keeps attempting until the connection succeeds. In other words, it is possible that other remote node connections may be established before the nailed-up connections. (i. e. -- First come, first serve.)

If a nailed-up connection is manually dropped, or lost from a line interruption, it will redial to reestablish the connection. But as above, it may fail if another other connection has already occupied the channel(s).

No idle timeout applies to nailed-up connections.

MP configuration is allowed to a nailed-up remote node. Each link of the MP will compete for the B-channel resources with other nailed-up or non-nailed-up remote node -- again first come, first serve.

Backup and Restore Configuration File via LAN or WAN

With the stand-alone Java based utility, PCT (Prestige Configuration Transfer), you can backup and restore your configuration file via LAN or WAN. Please refer to the PCT release notes for more information.

Upgrade P128IMH Firmware via LAN

With PCT, you can upgrade P128IMH firmware over the local LAN. (Attempting to upgrade a remote Prestige via the ISDN WAN is **not** recommended, even though it may succeed.). Please refer to PCT release notes for more information.

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CI Commands

Here is the brief description about the most frequently used CI commands. The sequence of the following table is based on the commands' alphabetic order.

CI Command	brief description
bridge stat disp	statistics on Bridge packets
bridge blt disp	Bridge LAN table
bridge brt disp	Bridge WAN table
dev channel disp [bri0 | bri1]	show channel information on bri0 or bri1
dev channel drop [bri0 | bri1]	drop channel bri0 or bri1
dev dial x	manually dial to remote node x; x is the remote node number here
ether config	show the current Ethernet configuration
ether driver cnt disp	statistics on the Ethernet driver
Exit	exit from CI mode
ip address	LAN IP address
ip ping {IP address}	Ping {IP address}
ip route stat	IP routing table
ip status	statistics on IP packets
ip sua iface [wanif0 | wanif1] disp	display the SUA table for iface wanif0 or wanif1
ipx route stat	IPX routing table
ipx sap stat	IPX SAP table
isdn atring clear [bri0 | bri1]	clear the ISDN ring buffer of bri0 or bri1
isdn atring disp [bri0 | bri1]	display the ISDN ring buffer of bri0 or bri1
isdn config	show the current ISDN configuration
isdn fw ana dump	display ISDN trace messages on screen
isdn fw ana [on | off]	enable/disable ISDN trace mechanism
Isdn fw cnt disp	display ISDN transmission counters
isdn initstring clear	clear ISDN init string
isdn initstring set {at commands}	set ISDN init string to {at commands}
isdn reset	initialize the ISDN line
ppp lcp acfc [on | off]	enable/disable PPP LCP ACFC negotiation
ppp lcp bacp [on | off]	enable/disable PPP LCP BACP negotiation
ppp lcp callback [on | off]	enable/disable PPP LCP Microsoft callback negotiation
ppp lcp pfc [on | off]	enable/disable PPP LCP PFC negotiation
sys countrycode x	set country code
sys trcl call	show call trace on the screen
sys log disp	display the

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	error/warning/information messages in the system log
sys log clear	clear the existing contents in system log
sys mbuf pool	display the pool of mbuf; mbuf is the buffer pre-allocated for data transmission
sys mbuf status	display mbuf status
sys memutil mqueue	statistics on pre-allocated system memory cell
sys memutil usage	statistics on the memory utilization
sys stdio 0	set SMT session timeout value to 0 –> never timeout
sys trcd	display the packet trace on screen
sys trcl clear	clear the existing contents in logic trace log
sys trcl disp	display the contents in both of logic and packet trace logs
sys trcl switch [on|off]	enable/disable logic trace log mechanism
sys trcp chann [in|out|both|enet0]	Enable the packet trace mechanism on incoming, outgoing, or both from WAN; or from Ethernet.
sys trcp disp	display the contents in packet trace log
sys trcp switch [on|off]	enable/disable packet trace log mechanism

Known Problem List

1. If Prestige connects to the switch that does not support in-band tone, the tone will generated by Prestige instead. In this case, Prestige will send the same tone to both POTS ports. For example, when telephone 1(telephone connects to POTS port 1) is ringing, off-hooking telephone 2 (telephone connects to POTS port 2) will cause telephone 1's sound changing from ring to dial tone. It is because Prestige generates dial tone for POTS port 2 now.
2. For DSS-1 version, a global digital call will still ring and can be answered even if **MSN** is selected in Menu 2 as the *incoming call matching* method.
3. The POTS port (A/B adapter) dial tone may disappear if call bumping is attempted twice in rapid succession on a switch that does not support in-band tone.
4. For DSS-1 version, the ISDN *Link* status still shows **Idle** in Menu 24.1 even if the cable is unplugged.
5. For DSS-1 version, Prestige may stop placing outgoing data calls after Call Waiting/Call Hold/ Call Retrieve scenario if both of POTS ports are assigned the identical phone number. When it happens, the B-channel status shown on Menu 24.1 is wrong.
6. Prestige performance will be degraded if there exists a telnet session in Menu 24.1 via LAN at the same time.
7. Select Nail-up Connection to Yes, and save it, next select Nail-up Connection to No, the Idle timeout will be change to 0, not the default value 300.
8. Make two seperated data connection, offhook A/B adapter will get busy tone and noise.

9. Make a modem connection, then change menu 2 B channel usage and save it, Prestige will hang about 20 seconds.
10. The feature of modem login script will be enhanced at next incremental release.
11. The CLID display service is not available for UK.
12. The modem firmware upgrade will take 10 minutes, a enhance will make it shorter.

To Get Prestige 128IMH

Get the files from ZyXEL anonymous FTP server (ftp.zyxel.com). Upgrade your Prestige by following the instructions for your model:

P128IMH

Versions:
RAS S/W Version -   V2.21 | 18/01/99
ISDN F/W Version -   DSS1: V 09a

RAS and ISDN firmware files:
p128imhe.bin (for DSS1)

Commands:
ATBAx: Where x = baud rate
options available are:
1= 38.4K
2= 19.2K
3= 9.6K
4= 57.6K
5= 115.2K
ATUR: Upload Firmware file via XMODEM

Romfile: romfile.zip (p128imh.rom)
ATUR3: Upload Romfile and clear all settings, the setting will change to manufactory setting, baud rate sets to 9.6K, please change to 9.6K for further configuration.