

# **ZyXEL Prestige P100IH plus DSS1**

**ZyNOS v2.21(G.02) | 01/07/2000**

## **Release Note/Manual Supplement**

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**Date:** January 07, 2000

First time release.

### ***Supported Platforms***

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V2.21(G.02) F/W supports Prestige model: P100IH Plus/P100IH U, S/T.

Note that on the back label, if there is mark "ZyIH01", it indicates the hardware has caller ID support.

### ***Features:***

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#### **More Remote Nodes and IP Static Routes**

Offers 8 IP Static Routes and 8 Remote Nodes in Prestige 100IH.

#### **Easy Installation**

Most new Prestige owners now need only enter the ISDN phone numbers (supplied by the ISDN provider) in Menu 2, and the phone number, user ID, and password (supplied by the ISP) in Menu 4.

#### **Nailed-up Connection**

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

#### **Backup and Restore Configuration File via LAN or WAN**

PNC (Prestige Network Commander), the stand-alone Java-based utility, allows backup and restoration of the configuration file via LAN or WAN.

#### **Upgrade P100IH Firmware via LAN**

PNC can upgrade the Prestige 100IH firmware over the local LAN.

#### **CI Commands**

ZyNOS keeps the familiar user interface (SMT, System Management Terminal) although the internal architecture is vastly different. The syntax and semantics of the CI commands remain the same even though some of them are changed.

Here is the brief description about the most frequently used CI commands. The sequence of the following table is based on the v2.20 commands' alphabetic order.

|                                       |                                     |  |
|---------------------------------------|-------------------------------------|--|
| pre-ZyNOS                             | V2.21                               | 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   |
| isdn drop [1   2]                     | dev channel drop [bri0   bri1]      | drop channel bri0 or bri1  |
| isdn dial x                           | dev dial x                          | manually dial to remote node x; x is the remote node number here                 |
|                                       | ether config                        | show the current Ethernet configuration  |
| lan cnt disp                          | 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 [wan0ppp   wan1ppp] disp | 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 drv ring [1   2]                 | isdn atring disp [bri0   bri1]      | display the ISDN ring buffer of bri0 or bri1                                     |
|                                       | isdn config                         | show the current ISDN configuration  |
| sys epa                               | isdn fw ana dump                    | display ISDN trace messages on screen  |
| isdn ana [on   off]                   | isdn fw ana [on   off]              | enable/disable ISDN trace mechanism  |
| Isdn p128 cnt disp                    | Isdn fw cnt disp                    | display ISDN transmission counters   |
|                                       | isdn initstring clear               | clear ISDN init string   |
| isdn set initstring {at commands}     | isdn initstring set {at commands}   | set ISDN init string to {at commands}  |
| isdn init                             | 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                       | sys countrycode x                   | set country code   |
| sys event                             | sys trcl call                       | show call trace on the screen  |
| sys log disp                          | *                                   | display the 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  |

Notes:

- blank – no corresponding CI command
- \* - no change from the previous versions.

See Support Tool Manual for detailed information on ZyNOS commands.

### Messages to syslogd

Prestige sends two types of messages to **syslogd** if **Syslog IP Address** field is configured. One type is the filter message if the **Log** field in Menu 21.x.y is enabled. In pre-ZyNOS versions, a message will be generated to send to syslogd for each filter rule the incoming/outgoing packet passes. In ZyNOS, there is only one message will be sent to syslogd. The message includes the header of the incoming/outgoing packet and the information about the filter rules it passes.

Another type is the call related information. In ZyNOS, the board information is added to the beginning of pre-ZyNOS messages. Otherwise, there are no other major changes.

### Filter Rules

Conceptually, there are two categories of filter rules: *device* and *protocol*. The Generic filter rules belong to the *device* category; they act on the raw data from/to LAN and WAN. The IP and IPX filter rules belong to *protocol* category; they act on the IP and IPX packets.

In pre-ZyNOS versions, device and protocol (IP or IPX) filter rules could be intermixed in a filter set. This is no longer permitted in this release. This design change was provoked by the following dilemma in applying the TCP/IP filtering to SUA (Single User Account) connections:

In pre-ZyNOS versions, Prestige applied the input filter rules to the incoming packets immediately after receiving them from the ISDN line; and applied the call and output filter rules to the outgoing packets immediately prior to sending them out the ISDN port. With this approach, the call and output filter rules were applied to the output IP packets whose source IP address and port number had already been converted into different values by SUA. Thus, the call and output TCP/IP filter rules did not work for a SUA connection if the filter rules were based on the local network IP address and port number. This same limitation also applied to the input filter rules as well.

2Figure 1 shows the pre-ZyNOS logic flow for a packet from LAN to WAN (->), and a packet from WAN to LAN (->). Suppose that the packet from LAN to WAN with source IP address 192.168.1.33 and port number 1023; and the WAN IP address is 203.205.115.6 that could be dynamic or static. But the port number (4034 in this example) generated by SUA is always dynamic and unpredictable. The sequence of the logic flow for the packet from LAN to WAN is:

1. LAN input filter sets.
2. SUA converts the source IP address from 192.168.1.33 to 203.205.115.6 and port number from 1023 to 4034.
3. WAN call and output filter sets. It does not work if the filter rules are based on IP address 192.168.1.33 and port number 1023.

The sequence of the logic flow for the packet from WAN to LAN is:

4. WAN input filter sets. It does not work if the filter rules are based on IP address 192.168.1.33 and port number 1023.
5. SUA converts the destination IP address from 203.205.115.6 to 192.168.1.33 and port number from 4034 to 1023.
6. LAN output filter sets.

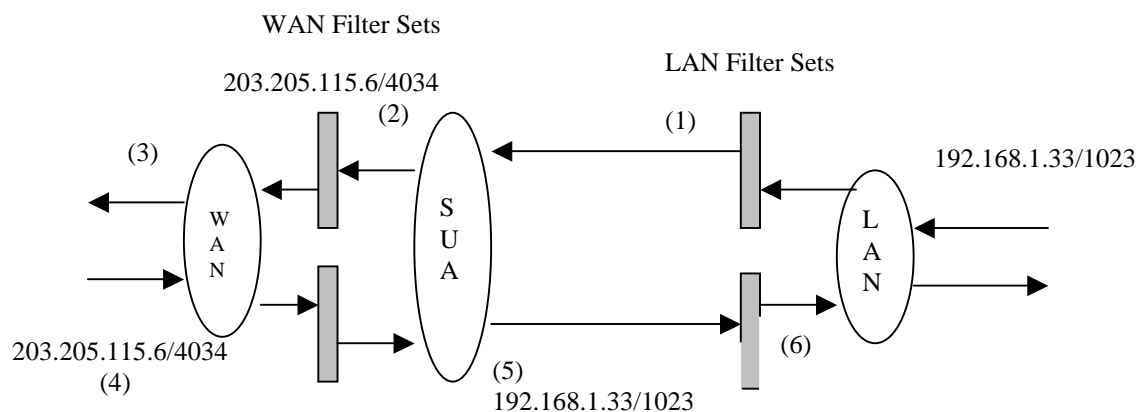


Figure 1. Packet Flow in pre-ZyNOS versions

In order to allowing users to specify the local network IP address and port number in the filter rules with SUA connections, the TCP/IP filter function has to be executed **before** SUA for WAN outgoing packets and **after** the SUA for WAN incoming IP packets. But at the same time, the Generic filter rules must be applied at the point when Prestige is receiving and sending the packets; i.e. the ISDN interface. So, the execution sequence has to be changed. The v2.20 logic flow is shown in Figure 2 and the sequence of the logic flow for the packet from LAN to WAN is:

1. LAN device and protocol input filter sets.
2. WAN protocol call and output filter sets. It works now because SUA does not convert the local IP address and port number to WAN IP address and port number yet.
3. SUA converts the source IP address from 192.168.1.33 to 203.205.115.6 and port number from 1023 to 4034.
4. WAN device output and call filter sets.

The sequence of the logic flow for the packet from WAN to LAN is:

5. WAN device input filter sets.
6. SUA converts the destination IP address from 203.205.115.6 to 192.168.1.33 and port number from 4034 to 1023.
7. WAN protocol input filter sets. It works now because SUA has converted the destination IP address and port number to local IP address and port number.
8. LAN device and protocol output filter sets.

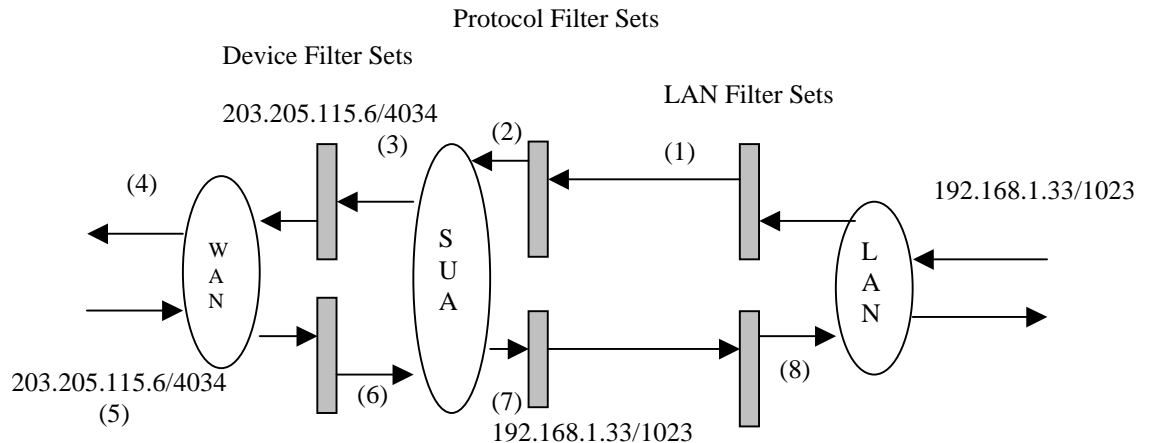


Figure 2. Packet Logic Flow in v2.21

To accommodate the above change, Generic and TCP/IP filter rules must now be in different filter sets. The v2.20 SMT will detect and prevent the mixing of different category rules within any filter set in Menu 21. In the following example, you will receive an error message “**Protocol and device filter rules cannot be active together**” if you try to activate a TCP/IP filter rule in a filter set that has already had one or more active Generic filter rules. You will receive the same error if you try to activate a Generic filter rule in a filter set that has already had one or more active TCP/IP filter rules.

#### Menu 21.1.1:

##### Menu 21.1.1 - Generic Filter Rule

Filter #: 1,1  
Filter Type= Generic Filter Rule  
Active= Yes

Offset= 0  
Length= 0  
Mask= N/A  
Value= N/A  
More= No                      Log= None  
Action Matched= Check Next Rule  
Action Not Matched= Check Next Rule

#### Menu 21.1.2:

##### Menu 21.1.2 - TCP/IP Filter Rule

Filter #: 1,2  
Filter Type= TCP/IP Filter Rule  
Active= Yes  
IP Protocol= 0                      IP Source Route= No  
Destination: IP Addr= 0.0.0.0  
                  IP Mask= 0.0.0.0  
                  Port #= 0  
                  Port # Comp= None  
Source: IP Addr= 0.0.0.0  
                  IP Mask= 0.0.0.0  
                  Port #= 0  
                  Port # Comp= None  
TCP Estab= N/A  
More= No                      Log= None  
Action Matched= Check Next Rule  
Action Not Matched= Check Next Rule

Press ENTER to Confirm or ESC to Cancel:  
Saving to ROM. Please wait...

**Protocol and device rule cannot be active together**

To separate the device and protocol filter categories; two new menus, Menu 11.5 and Menu 13.1, have been added, as well as some changes made to the Menu 3.1, Menu 11.1, and Menu 13. The changed fields are marked **black** in the following menus:

#### Menu 3.1:

##### Menu 3.1 - General Ethernet Setup

Input Filter Sets:  
**protocol filters= 2**  
**device filters=**  
Output Filter Sets:

**protocol filters=  
device filters=**

**Menu 11.1:**

**Menu 11.1 - Remote Node Profile**

|                           |                             |
|---------------------------|-----------------------------|
| Rem Node Name= abc        | Edit PPP Options= No        |
| Active= Yes               | Rem IP Addr=                |
| Call Direction= Outgoing  | Edit IP= No                 |
| Incoming:                 | Telco Option:               |
| Rem Login= N/A            | Transfer Type= 64K          |
| Rem Password= N/A         | Allocated Budget(min)= 0    |
| Rem CLID= N/A             | Period(hr)= 0               |
| Call Back= N/A            | Nailed-Up Connection= No    |
| Outgoing:                 | Session Options:            |
| My Login= xyxw            | <b>Edit Filter Sets= No</b> |
| My Password= *****        | Idle Timeout(sec)= 300      |
| Authen= CHAP/PAP          |                             |
| Pri Phone #= 140812345678 |                             |
| Sec Phone #= 140822345678 |                             |

Press ENTER to Confirm or ESC to Cancel:

**Menu 11.5:**

**Menu 11.5 - Remote Node Filter**

**Input Filter Sets:**  
**protocol filters=**  
**device filters=**  
**Output Filter Sets:**  
**protocol filters=**  
**device filters=**  
**Call Filter Sets:**  
**protocol filters=1**  
**device filters=**

### **Menu 13:**

#### Menu 13 - Default Dial-in Setup

|                             |                                |
|-----------------------------|--------------------------------|
| Telco Options:              | IP Address Supplied By:        |
| CLID Authen= None           | Dial-in User= Yes              |
|                             | IP Pool= Yes                   |
| PPP Options:                | IP Start Addr= 123.234.111.163 |
| Recv Authen= CHAP/PAP       | IP Count(1,2)= 2               |
| Compression= Yes            |                                |
| Mutual Authen= No           | Session Options:               |
| PAP Login= N/A              | <b>Edit Filter Sets= No</b>    |
| PAP Password= N/A           |                                |
| Multiple Link Options:      |                                |
| Max Trans Rate(Kbps)= 128   |                                |
| Callback Budget Management: |                                |
| Allocated Budget(min)=      |                                |
| Period(hr)=                 |                                |

### **Menu 13.1:**

#### Menu 13.1 - Default Dial-in Filter

**Input Filter Sets:**  
**protocol filters=**  
**device filters=**  
**Output Filter Sets:**  
**protocol filters=**  
**device filters=**

SMT will also prevent you entering a protocol filter set configured in Menu 21 to the **device filters** field in Menu 3.1, 11.5, or 13.1, or entering a device filter set to the **protocol filters** field. Even though SMT will prevent the inconsistency from being entered in v2.21, it is unable to resolve the intermixing problems existing in the filter sets that were configured before. Instead, when v2.21 translates the old configuration into the new format, it will verify the filter rules and log the inconsistencies. Please check the system log (Menu 24.3.1) before putting your device into production.

Running the Prestige with wrong filter rules may cause it to keep the ISDN line perpetually active, and/or allow undesired traffic to pass to the outside world, and receive unwanted outside traffic. The first case may incur an enormous ISDN bill; the second may be a data security hazard.

**In order to avoid operational problems later, the Prestige will disable its routing/bridging functions if there is an inconsistency among its filter rules.**

Proofread your filter rules even if there is no warning message in system log, and observe the router's behavior carefully after upgrading/installation.



### P100/P100IH ISDN EPA Mechanism is Moved to PC

The CI (Command Interpreter, menu 24.8) command, "isdn ana display", is disabled in this release. A new CI command "isdn fw ana dump" is added for displaying the ISDN raw trace data. "isdn ana display" could not work with Telnet before, but "isdn fw ana dump" works fine with Telnet. So you do not have to rely on terminal emulator via serial port to capture the ISDN trace any more.

A new DOS tool - **epapc**, will be used to decode the ISDN raw trace data into meaningful Q.921 and Q.931 fields. **epapc** is part of this release. If you have difficulties to run **epapc**, please send the raw ISDN trace to ZyXEL support for decoding. The proper steps to take the raw ISDN trace are:

1. issue "isdn fw ana on" to enable ISDN trace function
2. perform the tests for capturing the interested ISDN information
3. issue "isdn fw ana off" to disable ISDN trace function
4. issue "isdn fw ana dump" to dump the ISDN trace information on screen
  - press <Enter> to display all of the ISDN trace information on screen
  - press <space bar> to display the ISDN trace information on screen page by page

### Enhancement Details

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#### More Remote Nodes and IP Static Routes

In this release, the number of remote nodes and numbers of IP static routes have been increased as following:

| Model  | Number of remote nodes | IP static routes |
|--------|------------------------|------------------|
| P100IH | 8                      | 8                |

### Easy Installation

#### Factory Default Values

Factory default values are stored in ROMFILE provided by ZyXEL. The factory default values in them have been optimized for Windows Internet connection. Two sets of filter rules have been configured in Menu 21 to prevent NetBIOS traffic from triggering calls. The default filters are shown below:

#### Menu 21:

| Menu 21 - Filter Set Configuration |             |              |          |  |
|------------------------------------|-------------|--------------|----------|--|
| Filter Set #                       | Comments    | Filter Set # | Comments |  |
| 1                                  | NetBIOS_WAN | 7            |          |  |
| 2                                  | NetBIOS_LAN | 8            |          |  |
| 3                                  |             | 9            |          |  |
| 4                                  |             | 10           |          |  |
| 5                                  |             | 11           |          |  |
| 6                                  |             | 12           |          |  |

#### Menu 21.1 (NetBIOS WAN):

#### Menu 21.1 - Filter Rules Summary

| #     | A | Type | Filter Rules                          | M | m | n   |
|-------|---|------|---------------------------------------|---|---|-----|
| ----- |   |      |                                       |   |   |     |
| 1     | Y | IP   | Pr=6, SA=0.0.0.0, DA=0.0.0.0, DP=137  |   | N | D N |
| 2     | Y | IP   | Pr=6, SA=0.0.0.0, DA=0.0.0.0, DP=138  |   | N | D N |
| 3     | Y | IP   | Pr=6, SA=0.0.0.0, DA=0.0.0.0, DP=139  |   | N | D N |
| 4     | Y | IP   | Pr=17, SA=0.0.0.0, DA=0.0.0.0, DP=137 |   | N | D N |
| 5     | Y | IP   | Pr=17, SA=0.0.0.0, DA=0.0.0.0, DP=138 |   | N | D N |
| 6     | Y | IP   | Pr=17, SA=0.0.0.0, DA=0.0.0.0, DP=139 |   | N | D F |

#### Menu 21.2 (NetBIOS\_LAN):

#### Menu 21.2 - Filter Rules Summary

| #     | A | Type | Filter Rules                                 | M | m | n   |
|-------|---|------|--|---|---|-----|
| ----- |   |      |  |   |   |     |
| 1     | Y | IP   | Pr=17, SA=0.0.0.0, SP=137, DA=0.0.0.0, DP=53 |   | N | D F |
| 2     | N |      |  |   |   |     |
| 3     | N |      |  |   |   |     |
| 4     | N |      |  |   |   |     |
| 5     | N |      |  |   |   |     |
| 6     | N |      |  |   |   |     |

The filter set, NetBIOS\_LAN, is inserted in **protocol filters** field under **Input Filter Sets** in Menu 3.1 in order to prevent local NetBIOS messages from triggering calls to the DNS server.

#### Menu 3.1:

#### Menu 3.1 - General Ethernet Setup

Input Filter Sets:  
 protocol filters= 2  
 device filters=  
 Output Filter Sets:  
 protocol filters=  
 device filters=

The filter set, NetBIOS\_WAN, is inserted in **protocol filters** field under **Call Filter Sets** in Menu 11.5 to block local NetBIOS traffic from triggering calls to ISP.

#### Menu 11.5 of ISP remote node:

#### Menu 11.5 - Remote Node Filter

Input Filter Sets:  
protocol filters=  
device filters=  
Output Filter Sets:  
protocol filters=  
device filters=  
Call Filter Sets:  
protocol filters= 1  
device filters=

#### **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.

#### **I. 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.

#### **II. 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.

#### **Menu 11.1:**

##### Menu 11.1 - Remote Node Profile

|  |                                 |
|--|---------------------------------|
| Rem Node Name= abc                       | Edit PPP Options= No            |
| Active= Yes                              | Rem IP Addr= 0.0.0.0            |
| Call Direction= Outgoing                 | Edit IP= No                     |
| Incoming:                                | Telco Option:                   |
| Rem Login= N/A                           | Transfer Type= 64K              |
| Rem Password= N/A                        | Allocated Budget(min)= 0        |
| Rem CLID= N/A                            | Period(hr)= 0                   |
| Call Back= N/A                           | <b>Nailed-Up Connection= No</b> |
| Outgoing:                                | Session Options:                |
| My Login= scci                           | Edit Filter Sets= No            |
| My Password= *****                       | Idle Timeout(sec)= 300          |
| Authen= CHAP/PAP                         |                                 |
| 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, PNC (Prestige Network Commander), you can backup and restore your configuration file via LAN or WAN. Please refer to the PNC release notes for more information.

### Upgrade P100IH Firmware via LAN

With PNC, you can upgrade P100IH firmware over the local LAN. (Attempting to upgrade a remote Prestige via the ISDN WAN is **not** recommended, even though it may succeed.) In this release, this feature only applies to P100IH model. Please refer to PNC release notes for more information.

## DSS-1 ISDN Supplemental Services

### Background

Advanced ISDN Features are supported by Prestige. The relationship among the advanced ISDN features and switch types is:

Table 1. Advanced ISDN features vs. ISDN variances:

| Feature:                                     | US | DSS-1 |
|--|----|-------|
| Incoming Call Bumping (MP)*                  | y  | y     |
| Outgoing Call Bumping (MP)*                  | y  | y     |
| Call Waiting/Call Hold/Call Retrieve         | y+ | y+    |
| Three Way Calling (Conference/Transfer/Drop) | y+ | y     |
| Call Forwarding                              | y+ | y     |
| Reminder Ring                                | y+ | n     |

Notes:

\* - feature supported since v1.3

y+ - feature supported since v1.5

y - feature supported in this release

n - feature not supported

### Before You Begin

ISDN Supplemental Services refers to Call Waiting/Call Hold/Call Retrieve, Three Way Calling (Conference/Transfer/ Drop), Call Forwarding, and Reminder Ring on the Prestige POTS ports. There are services on the serving Central Office switch that works in cooperation with the Prestige software must first be enabled. These services usually cost you extra charges in addition to your monthly payment.

Additional Call Offering (ACO) (in Europe the same service is better known as Call Waiting is required to be subscribed on your ISDN line in order to utilizing the Call Waiting/Call Hold/Call Retrieve feature. Flexible Calling is required on your ISDN line in order to using the Three Way Calling (Conference/Transfer/ Drop) feature. You may want to check with your PTT to confirm if these services are available to you.

### Call Waiting/Call Hold/ Call Retrieve

ISDN Call Waiting/Call Hold/ Call Retrieve allows user to place an active voice call on hold, switch to another call, and retrieve the original call.

Menu 2.1 -- ISDN Advanced Setup

Phone 1 Call Waiting= Enable/Disable

Phone 2 Call Waiting= Enable/Disable

|  |
|--|
| Calling Line Indication = Enable/Disable |
|--|

By toggling the **Phone 1 Call Waiting** and **Phone 2 Call Waiting** fields, user can enable and disable the Call Waiting/Call Hold/ Call Retrieve feature on the POTS ports. The default value is enable to this feature.

The **Calling Line Indication**, or Caller ID, governs whether the other party can see your number when you call. If set to **Enable**, the Prestige sends the caller ID and the party you call can see your number. If it is set to **Disable**, the caller ID is blocked ID and the party you call can not see your number.

#### **How to use Call Waiting/Call Hold/ Call Retrieve feature:**

Put your current call on hold and answer the incoming call - after hearing the call waiting indicator tone, press and immediately release the flash hook button on your telephone.

Put your current call on hold and switch to another call - press and immediately release the flash hook button on your telephone.

Hang up your current call before answering the incoming call hang up the phone and wait for the phone to ring. Then answer the incoming call.

Hang up on the current active call and switch back to the other call hang up the phone and wait for the phone to ring. Then pick up the phone to return to the other call.

#### **Why Call Waiting does not work as expected:**

1. An incoming caller will receive a busy signal if:
  - you have two calls (one active and one on hold; or both actives by using Three Way Calling) on the Directory (Phone) number the incoming caller is attempting to reach.
  - you are dialing out by using the Directory (Phone) number the incoming caller is attempting to reach, but have not yet established a connection.
2. If no action is taken (call waiting indicator tone is ignored) to pickup the call, the call waiting tones will disappear after about 20 seconds.

#### **Three Way Calling (Conference/Transfer/Drop)**

The Three Way Calling feature allows you to add the third party to an existing call. This service must be subscribed from your PTT.

#### **How to Add the Third Party to the Existing Call**

If you wish to add the third party to an existing call, the steps are:

1. Press the flash hook button and immediately release it to put the existing call on hold and receive a dial tone.
2. Dial the third party.
3. Inform the third party about the conference.
4. When you are ready to conference the call, press the flash hook button and immediately release it to establish a Three Way Conference Call.

If you wish to cancel your attempt for some reason (the third part line is busy, or no one answer), just hang up the phone and pick it back up after the phone ringing.

#### **How to Remove a Party from the Three Way Calling**

If you wish to drop the last one added to the Three way calling call, just press the flash key. The last call that was added to the conference will be dropped.

If you wish to drop yourself from the conference call, but allow the other two callers to remain connected. Just hang up your phone. If the other two remain on the line, your drop will not impact their connection.

#### **Call Transfer**

Call Transfer is a variance of Three Way and allows you to transfer an active call to a third party. If you wish to transfer an active call to a third party and inform him about the transferred call, the steps are:

1. Press flash to immediately put the existing call on hold and receive a dial tone.
2. Dial the third party.
3. Inform the third party about the transfer call.
4. Press the flash hook button and immediately release it to establish a Three Way Conference Call.
5. Hang up the phone to complete the transfer.

If you wish to do a blind transfer to the third party, the steps are:

1. Press flash to immediately put the existing call on hold and receive a dial tone.
2. Dial the third party.
3. Before the third party picks up the call, you can transfer the call by pressing the flash and hanging up. The call will be automatically transferred.

### **Call Forwarding**

The Call Forwarding feature is supported by ISDN switch directly. The Call Forwarding feature of the POTS port can be activated and deactivated by using the phone set. The Call Forwarding is a telephone feature and will not impact incoming data call. Please request your PTT for the instruction activate or deactivate the Call Forwarding feature. This document describes the enhancements in the ZyXEL Prestige product line since the last manual printing.

### **Bug fixes**

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This list describes the bug fixed since version 2.21(G.01) version.

1. The second phone number assigned is always phone 1 # when BAP start negotiation.
2. Get the wrong CLID. If the CLID authentication is required, the call will be rejected.
3. The idle timeout field of SMT menu 4 should be not available if nailed-up connection is enabled.
4. Fix only CLID number can be displayed problem.
5. Change timeout waiting for layer 1 activation from 20 seconds to 40 seconds.
6. There could be no busy tone after silent timer timeout for answering machine. User may define the silent time by adding initial string in CI command "isdn ini set S78.5=nS78.6=m", then reboot system to function, which n=0, m=0 is default, n=1, m=0 is 5 seconds, n=0, m=1 is 10 seconds, and n=1, m=1 is 15 seconds.
7. Enable nailed-up connection in SMT menu 11, the idle timeout field should be not available.
8. The prompt size '>' in CI mode will disappear if there are dots trail of system name.
9. Dial a null phone number will cause router crash.
10. MS CHAP login fail to Windows NT server.
11. The CLID support depends on country code, but in some countries the CLID formats are unknown, the user could choose the CLID format by AT command "ATYn", please add in initial string by CI command "isdn ini set Yn", where  
n=0-6 \*0 Caller ID signaling option ( for CLID hardware)

|    |                             |
|----|-----------------------------|
| Y0 | by country default          |
| Y1 | DTMF, prior to ring         |
| Y2 | ETSI FSK, during ring       |
| Y3 | ETSI FSK, prior to ring.    |
| Y4 | Bellcore FSK, during ring   |
| Y5 | Bellcore FSK, prior to ring |
| Y6 | DTMF, during ring           |

Note caller ID is only supported on P100IH plus. Please reboot system to enable after setting

commands. Issuing CI command "isdn ini clear" may clear the added initial settings. There's 2 output patterns could be selected for FSK format, one bit could be used :  
For MDMF format, it's the default and not necessary to change.  
For SDMF format, add further setting in initial command "isdn ini set YnS122.6=1".



### ***Known Problem List***

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1. For Northern American version, the Prestige may drop both data channels if both of the POTS port telephones are off hook simultaneously while an MP call is in progress.
2. 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.
3. For the Northern American version, it may have problems to place voice call to far-end (hear busy tone) via second POTS ports even though it works by using the first POTS port.
4. Prestige performance will be degraded if there exists a telnet session in Menu 24.1 via LAN at the same time.
5. For old P100IH models with 0.5M DRAM, you may have difficulties to backup configuration due to system unable to allocate enough memory to perform the function. The workaround is to use PNC to perform backup function in this case.
6. Incompatible DHCP leased time with Linux machine.
7. The supplemental service blind transfer feature may have problem to work.

### ***To Upgrade Prestige***

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

#### **P100IH**

Versions:

RAS S/W Version - V2.21(G.02) | 01/07/2000  
ISDN F/W Version - DSS1: V 09D

RAS and ISDN firmware files:

p100ihpe.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: p100ihpe.rom ( for DSS1 )

Commands:

ATUR3: Upload Romfile and reset configuration to factory default