ZyXEL Prestige 1600

ZyNOS v3.21(X.00) | 12/20/2000

Release Notes & Manual Supplement

Date: December 20, 2000

Congratulations on your purchase of P1600 Access Concentrator. The Prestige 1600 is a scalable DSL, delivering networking services at multiple selectable speeds from 64Kbps and 6Mbps. It can be deployed at high rise buildings, Telcos, ISPs and System Integrators with various configurations.

Equipped with one 10/100M Ethernet port, three Network Module Slots, and one optional WAN interface and one four-ports 10M/100M LAN switch card, the architecture of the Prestige 1600 allows network modules of different generations to co-exist in the same chassis and to inter-operate with the same system module.

IDSL and SDSL solution is available now.

This version first support SDSL Network Module. Each Prestige 1600 provides up to 24 SDSL ports, and is equipped with 10/100M Ethernet as a daisy chain for connecting up to five units (thus a maximum of 120 SDSL ports).

Previous Release version 2.50 and 3.20 can only support IDSL Network Module, please update your FW to 3.21(X.00) to support SDSL Network Module.

ADSL NM will be available in the future.

This document describes the features in the ZyXEL Prestige 1600 product for its 3.21(X.00) release. The known problem list section describes problems currently under investigation and enhancement during our internal test.

Support Platforms:

ZyXEL Prestige firmware V3.21(X.00) supports both P1600 Master and Slave hardware platforms. It's also compatible with IDSL Network Module at previous 3.20(X.00) release.

Version:

ZyNOS F/W Version: V3.21(X.00) | 12/20/2000 14:13:08
BootBase: V1.07 | 9/7/2000 8:59:14

New Features:

1. Support SDSL network module.
2. Frame Relay is supported at WAN port, 3 PVCs are allowed to connect to Network Frame Relay switch.

Features Details:

SDSL (Symmetric DSL)

SDSL operates on a single copper pair. SDSL allows applications that require symmetric data rates. Because only one pair is needed in this arrangement, the capacity of the entire local loop infrastructure is greatly magnified. With this capability, local providers can extract the maximum value from their existing plant, or deploy new capacities both more quickly and at a lower capital expenditure.

SDSL allows for rapid and cost effective deployment of intermediate data rate services. Potential uses for this technology include fractional T1 with a particular advantage in 768 Kbps systems, Work-at-home LAN access, Distance Learning, Internet Access, and Campus or Large Facility LAN to LAN connectivity. Since SDSL can be configured at multiple data rates, it can have different capacity and reach limitations.

This also allows for easy, cost-effective implementation of such services as remote cell site support of PCs, remote LAN access, distance education and training, digital imaging, or any other service, which requires a larger amount of bandwidth.

How to use P1600 SDSL Network Module for your connections:

1. P1600 3.21(X.00) b03 supports both IDSL and SDSL Network Module. And it detects different type of Network Module automatically. After boot up, enter menu 6, Slot Selection will show the Network Module detected. Remember previous Firmware Version 2.50 and 3.20 can not recognize SDSL Network Module. Please update your Firmware Version to 3.21(X.00)b03.

```
            Menu 6 - Slot Selection

      1. Slot 1 Configuration(IDSL NM)
      2. Slot 2 Configuration(None)
      3. Slot 3 Configuration(SDSL NM)
```

2. Menu 6.1 Port Usage show Device Type is SDSL, please select your Speed and set the same Speed to your CPE device (Prestige 681)

```
                Menu 6.1 - Port Usage

            Active= Yes
            Device Type= SDSL
            Speed= 384K

            Encapsulation= PPP


            Authent Method= Local
               Protocol= CHAP/PAP
               User Name=
               Password= ********
            IP Address Assigned to Client= 192.168.255.1
               Start of Public IP Address= 0.0.0.0
               IP Count= 0
            Multicast= N/A
            IP Policies= N/A


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

There are two sets of Symmetrical multi-rate data transmission speed are supported.

1. 144K to 2320Kbps (compatible with Ascend/Lucent Device)
    144K/272K/400K/528K/784K/1168K/1552K/2320K

2. Step by multiple 64K (nx64K)
    From 192K to 2304K.

If your CPE is Prestige 681, please update Firmware to support nx64K.

Performance:

Max Reach
The maximum Reach Performance of P1600 SDSL Network Module and Prestige 681 is listed.

Data Rate	26 AWG No Noise
144Kbps	18,000
272Kbps	15,500
400Kbps	14,500
528Kbps	14,000
784Kbps	12,500
1168Kbps	11,000
1552Kbps	10,000
2320Kbps	7,500

How To Configure A P1600 WAN Port For Frame Relay

Step 1.   Go to menu 2 (shown next) and select Yes at Edit Frame Relay Options. This brings you to Menu 2.1.

```
              Menu 2.1.2 - Frame Relay Setup

        Line Type= User
        Link Management= ANSI(T1.618)




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

Menu 2 – WAN Setup

Step 2.   Choose User as Link Type.

Menu 2.1 – Frame Relay Setup

```
                      Menu 2 -  Wan Setup

    Clock Source= External
    Port Speed= N/A

    Edit Frame Relay Options= Yes




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

Table 1   Menu 2.1.2 – Frame Relay Setup

Field	Description	Options
Link Type	Choose **User** if the Prestige is on the user side of the UNI (User Network Interface: defines the connection between user equipment and the Frame Relay network) If your Prestige is connected to a service provider choose **User**. Choose **None** to disable Frame Relay and run PPP over HDLC on the leased-sync line.	**None** (default) **User**
Link Management	Press the [SPACEBAR] and then [ENTER] to select which standard is compatible with your Prestige. Both the Prestige and the peer must use the same standard. The standard defines functions that are responsible for monitoring the up/down status and error performance of an	**ITU-T(Q.933A)** **ANSI(T1.617D)**

Field	Description	Options
Link Management	Press the [SPACEBAR] and then [ENTER] to select which standard is compatible with your Prestige. Both the Prestige and the peer must use the same standard. The standard defines functions that are responsible for monitoring the up/down status and error performance of an individual link. If failure occurs, recovery actions are initiated for the restoration of the failed link.	**ITU-T(Q.933A)** **ANSI(T1.617D)**

How To Configure Frame Relay for Internet Access

Encapsulation

Be sure to use the encapsulation method required by your ISP. The Prestige supports the following methods.

RFC 1973 (PPP over FR)

RFC 1973 describes the use of Frame Relay for framing PPP encapsulated packets. Please refer to RFC 1973 for more information.

RFC 1490

RFC 1490 describes Multiprotocol over Frame Relay encapsulation which is an encapsulation method for carrying network interconnect traffic (both bridging and routing) over a frame relay backbone. It also describes a simple fragmentation procedure for carrying large frames over a frame relay network with a smaller MTU (Maximum Transmission Unit).

DLCI

The carrier gives you a specific DLCI (data link connection identifier) for each PVC which is a path number of a portion of the PVC (the DLCI changes for each hop through the network), not the address of the destination. It is a logical identifier with local significance. Identifiers can range from 1 to 991 with restrictions as shown in the following table. The default DLCI for the Prestige is 16 for the first PVC.

Table 2   Data Link Connection Identifiers

DLCI	Usage
0	Channel Signaling
1-15	Reserved
16 – 991	Frame Relay

CIR (Committed Information Rate)

The carrier programs virtual circuits into the network between your sites and charges you for a specific level of service called the committed information rate (CIR). The CIR is a negotiated rate and is basically a guarantee that the carrier will always have that bandwidth available. The CIR limit for the Prestige is 8000Kbps. The sum of CIRs from all channels in a line cannot exceed 8000Kbps due to the processing limit of the P1600 CPU.

EIR (Excess Information Rate)

This is the burst capability of the connection, i.e., the maximum allowable data transfer rate. EIR must be greater than or equal to the CIR.

Step 1.   Go to **Menu 4 – Internet Access Setup**, Next, move the cursor to the **Edit Frame Relay Options=** field, press the [SPACEBAR] once to display **Yes** and then press [ENTER]. This takes you to **Menu 4.2 – Internet Setup Frame Relay Options** shown next.

```
                     Menu 4 - Internet Access Setup

              ISP's Name= node1
              My Login= 1
              My Password= ********

              Network Address Translation= SUA Only
                 My WAN Addr= 0.0.0.0
              Address Mapping Set= N/A

              Edit Frame Relay Options= Yes



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

```
         Menu 4.2 – Internet Setup Frame Relay Options
                Encapsulation= RFC 1490

                DLCI = 16
                CIR (kbps)= 64
                EIR (kbps)= 80
             Enter here to CONFIRM or ESC to CANCEL:
```

Menu 4.2 – Internet Setup Frame Relay Options

Table 3   Menu 4.2 – Internet Setup Frame Relay Options

Field	Description	Options/Examples
Encapsulation	Be sure to use the encapsulation method required by your ISP. The Prestige supports the following methods.	**RFC 1973 (PPP over FR)** **RFC 1490**
DLCI	Enter the DLCI number required by your ISP. This is a path number of a portion of the PVC (the DLCI changes for each hop through the network), not the address of the destination. The default DLCI for the Prestige is 16 for the first PVC.	**16**
CIR (kbps)	Enter the CIR as negotiated with your ISP.	**64**
EIR (kbps)	Enter the EIR as negotiated with your ISP.	**80**

How To Configure Frame Relay For A Remote Node

Configuring Frame Relay for a remote node is similar to configuring Frame Relay for Internet Access.

Step 1.   Go to **Menu 11.1 – Remote Node Profile**, Next, move the cursor to the **Edit Frame Relay Options=** field, press the [SPACEBAR] once to display **Yes** and then press [ENTER]. This takes you to **Menu 11.4 – Remote Node Frame Relay Options** shown next.

```
                    Menu 11.1 - Remote Node Profile

Rem Node Name= node2              Edit PPP Options= No
Active= Yes                       Rem IP Addr= 192.168.11.10
                                  Edit IP= No
Outgoing:
  My Login=                       Telco Option:
  My Password= ********             Edit Frame Relay Options= Yes
  Authen= CHAP/PAP
                                  Input Filter Sets:
                                    protocol filters=
                                    device filters=
                                  Output Filter Sets:
                                    protocol filters=
                                    device filters=


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

```
           Menu 11.5 - Remote Node Frame Relay Options
                    Encapsulation= RFC 1490
                    DLCI = 16
                    CIR (kbps)= 64
                    EIR (kbps)= 80


           Enter here to CONFIRM or ESC to CANCEL:
```

Status Display For Frame Relay

Menu 24.1 - System Maintenance – Status has been modified to incorporate Frame Relay information. Port and DLCI numbers are shown for each PVC. the WAN IP address for each PVC is displayed in turn in the corresponding **WAN Port IP Addr**.

```
            Menu 24.1.1 - System Maintenance - Status

 DLCI     Status      TXPkts      RXPkts   Errs   Tx(Byte/s)  Rx(Byte/s)    Up Time
  16       node1         6           6       0         0           0       0:02:23
  17       node2         6           6       0         0           0       0:02:23
  18       node3         6           6       0         0           0       0:02:23

   PVC 1 IP Addr: 182.168.10.1        System Up Time:            0:39:29
   PVC 2 IP Addr: 192.168.11.1        Current Time: 01:07:01
   PVC 3 IP Addr: 192.168.12.1        Current Date: Thu. Jan. 01, 1970

  Ethernet:
      Status: Down
     TX Pkts: 0
     RX Pkts: 0
  Collisions: 0


  COMMANDS: b-Drop PVC1  c-Drop PVC2  d-Drop PVC3  a-Reset Counters  ESC-Exit
```

Menu 24.1 - System Maintenance – Status

Know Problem List:

1. IP multicast is not supported at this release.
2. **Due to Hardware limitation, C2-2 sample can only support 8M bytes flash memory. For C2-2 user, please use b03 Firmware version only. This release can not be applied to C2-2 sample.**
3. The default menu 3.2 TCP/IP IP Address setting are 192.168.1.1 at P1600 and other Prestige series products. It may happen you can not ping successfully to the P100L/P128L /P681 at P1600 CI command mode if they have same IP address at menu 3.2. Change IP address at one of them will solve the problem.
4. At menu 24.6 Restore Configuration do not have a timeout design at Xmodem protocol.
5. ICMP Packet length exceed 1500 bytes can not pass through NAT. P1600 will adjust TCP MSS to let TCP packets not exceed 1500 bytes. SUA has no problem for all kinds of protocol.
6. Login to P1600 by telnet, the password can not exceed 22 characters.
7. The interface identifiers of P1600 :
   Slot 1 is mapped from xdsl00 to xdsl07 for SDSL, xdsl00 to xdsl15 for IDSL.
   Slot 2 is mapped from xdsl16 to xdsl23 for SDSL, xdsl16 to xdsl31 for IDSL.
   Slot 3 is mapped from xdsl32 to xdsl39 for SDSL, no IDSL supported at this Slot.
   Due to reserve Interfaces for IDSL Slot, the interface identifiers are not numbered continuously for SDSL Network Module.
8. Menu 4 default configuration is removed since it will create default route automatically, and maybe conflict the Menu 12 Static Route setting. User need configure it by yourself if you need create a WAN connection at Menu 4.

Bugs Fixed:

1. With IDSL module, 3.21(X.00)b03 version will automatically reboot due to memory access timing too critical problem is fixed at this version.

To Update P1600

P1600

Versions:
ZyNOS F/W Version: V3.21(X.00) | 11/29/2000 14:13:08
BootBase: V1.07 | 9/7/2000 8:59:14

Boot Extension Commands:
ATBAx: Where x = baud rate
options available are:
1= 38.4K
2= 19.2K
3= 9.6K
4= 57.6K
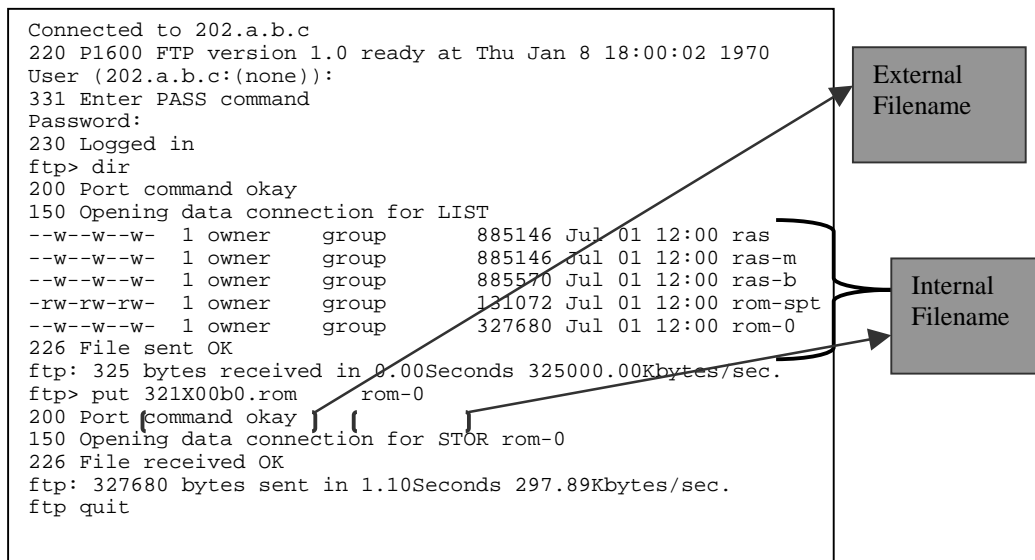5= 115.2K
ATUR: Upload Firmware file via XMODEM
File Name : 321X00C0.bin

Romfile: 321X00C0.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.

FTP Upgrade

There are two set of filenames: internal (in P1600) and external (in PC, MAC, or UNIX). Each set contains ZyNOS firmware and the configuration file. Firmware file contains the firmware and the configuration file contains the SMT menu settings, defaults etc. The internal names are ras-m and ras-b (firmware files) and rom-spt and rom-0 (configuration files).

```
Connected to 202.a.b.c
220 P1600 FTP version 1.0 ready at Thu Jan 8 18:00:02 1970
User (202.a.b.c:(none)):
331 Enter PASS command
Password:
230 Logged in
ftp> dir
200 Port command okay
150 Opening data connection for LIST
--w--w--w-  1 owner     group      885146 Jul 01 12:00 ras
--w--w--w-  1 owner     group      885146 Jul 01 12:00 ras-m
--w--w--w-  1 owner     group      885570 Jul 01 12:00 ras-b
-rw-rw-rw-  1 owner     group      131072 Jul 01 12:00 rom-spt
--w--w--w-  1 owner     group      327680 Jul 01 12:00 rom-0
226 File sent OK
ftp: 325 bytes received in 0.00Seconds 325000.00Kbytes/sec.
ftp> put 321X00b0.rom      rom-0
200 Port command okay
150 Opening data connection for STOR rom-0
226 File received OK
ftp: 327680 bytes sent in 1.10Seconds 297.89Kbytes/sec.
ftp quit
```

External Filename

Internal Filename

FTP Example

Usually, the external firmware filename is the router model name with a bin extension, e.g., p1600mas.bin. Rename it as "ras-m" or "ras-b" when uploading to the Prestige main block and backup block respectively using TFTP or FTP. You don't have to rename the file when using XMODEM protocol.

The external configuration filename is usually the router model name with a *.rom extension, e.g.1600mas.rom. Rename it as rom-spt and rom-0 when transferring files to the Prestige. Renaming is not necessary if you transfer files using XMODEM protocol.

Table Filenames

Internal Filename	Description	External Filename	FTP Command Example
rom-spt	The rom-spt file is the user configuration file. It contains your Prestige configurations such as IP addresses, Remote Node settings etc. as well as your password.	*.rom	get rom-spt (backup) put rom-spt (restore)

rom-0	The rom-0 configuration file is the entire factory configuration file. It includes rom-spt, default settings, file system, log, etc. Uploading the rom-0 file replaces the entire ROM file system, including your Prestige configurations, system-related data (including the baud rate and default password), the error log and the trace log.	*.rom	put p1600mas.rom rom-0 (upload)
ras	This is the firmware filename for all Prestige models. This is ras-m when you upload the firmware to the main block and ras-b when you save the current firmware to the backup block.	*.bin	
ras-m	This is the router firmware filename on the Prestige 1600 when you are transferring files to the main block.	*.bin	put p1600.bin ras-m (upload)
ras-b	This is the router firmware filename on the Prestige 1600 when you are transferring files to the backup block.	*.bin	put p1600.bin ras-b (upload)