ZyXEL ZyNOS 2.42(O.01)

Release Note /Manual Supplement

Date: Oct 18, 2000

BETA Version:

ZyNOS F/W Version: V2.42(O.01)
BootBase: V1.11

To Upgrade Prestige:

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

1. Through RS232:

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 in Boot Module Mode.
ATUM: Upload Firmware file via XMODEM in Boot Module Extension Mode to main block.
ATUB: Upload Firmware file via XMODEM in Boot Module Extension Mode to backup block.

So, if main block and backup block are different firmware file, they can be switched using ATSW.

Romfile:
 ATUR3:   Upload romfile via XMODEM in Boot Module Extension
 ATUX1,3: Upload romfile via XMODEM in any mode.

2. Through TFTP:

Telnet to P1100 and logon as root. Go to Menu 24.7.1 for firmware update or Menu 24.7.2 for default configuration file upload. Please stay at the menu screen during the update process.
Run TFTP, do not change the default value of Port and block size, otherwise TFTP will not work.
Upload Firmware file: Set TFTP screen as followings:
Host: IP address of the Prestige.
Local: ras480.bin (type the file location here)
Remote: ras-m or ras-b
Note: here "ras-m" refers to upload to main block, "ras-b" refers to upload to backup block.
Upload Romfile: Set TFTP screen as followings:
Host: IP address of the Prestige.
Local: romfile0 (type the file location here)
Remote: rom-0

3. Through FTP:

Launch the FTP client on your workstation.
Type "open" and the IP address of your Prestige. Then type "root" and SMT password as requested.
Upload Firmware file: Set FTP screen as followings:

Host: IP address of the Prestige.
Local: ras480.bin (type the file location here)
Remote: ras-m or ras-b
Note: here "ras-m" refers to upload to main block, "ras-b" refers to upload to backup block.
Upload Romfile: Set FTP screen as followings:
Host: IP address of the Prestige.
Local: romfile0 (type the file location here)
Remote: rom-0

Modification

ZyNOS V2.42(O.01)
1. Modify Routing table Lan_Lan and Lan_ISP will disturb. All packet will route to LAN_ISP.

Date: Jan 20, 2000

This document describes the enhancements in ZyXEL Prestige product line since the last manual printing.

The **New Features** section lists the new features added to this release.

Supported Platforms

ZyNOS 2.42(O.00) supports Prestige models: P480.
RVS-COM Lite Version: V1.63

New Features:

Mega-Bundle
> Some ISP does not support multilink bundle of more than 2 links (it's inefficient any way), therefore, it is currently impossible for a user to dedicate all 4 channels available in a P-480 to Internet access. To differentiate P-480 from other similarly equipped products, it is desirable to be able to support bundle of 4 links where P-480 calls a second ISP when the traffic exceeds a certain threshold and split the traffic between the two connections. We'll call this bundling of ISPs "Mega-Bundle".

NetCAPI: RVS-COM ISDN-DCP support.
> Supprot RVS-COM NetCAPI protocol.

IP Alias
> In this release, Lan port can assign more than one IP address.

IP Policy Routing
> This feature allows you to choose the gateway for certain IP packets.

IPX Routing
> This feature allows you to route IPX packets.

Bridge
> This feature allows you to bridge different network.

Upgrade Firmware via FTP
> User can upgrade ZyNOS F/W by FTP.

Restore Configuration File via FTP

    Users can restore configuration by FTP.

Enhancement Details:

Mega-Bundle Setup

In order to setup more than one ISP account, there is a little change in Remote mode setup procedure in Menu 11.2 when you want to setup a remote node as a "supplementary remote node".

In previous ZyNOS v2.4, there is only ISP account. I call the remote node as "ISP remote node". Now in ZyNOS v2.42, you can setup other ISP accounts and I call these accounts as "supplementary remote node". **If you enable SUA in ISP, you MUST enable SUA in all "supplementary remote node".**

You can have several "Supplementary remote node", but you still have only one "ISP remote node". These remote nodes can work at the same time. "Supplementary remote" is node" is almost the same as "ISP remote node" except "supplementary remote node" will not appear in the routing table as default route.

Mega-Bundle Setup without SUA enable

In menu 11.2, I add a selection "Mega Bundle=". The value of "Mega Bundle" can be select as {"Supplementary", "None"}. "None" means this remote node does not participate in "Mega-Bundle." "Supplementary" means this remote node serves as a "supplementary remote node" and joint "Mega-Bundle".

```
                  Menu 11.2 – Remote Node PPP Options

         Encapsulation= Standard PPP
         Compression= No
         BACP= Enable
         Mega Bundle= supplementary

         Multiple Link Options:
           BOD Calculation= Transmit or Receive
          Min. Channels= 1
          Max. Channels= 2
          Target Utility for 2nd Channel(Kbps)= 32-48
           Bandwidth increment for Additional Channels(Kbps)= 64
          Add Persist(sec)= 5
          Subtract Persist(sec)= 5




                  Press ENTER to Confirm or ESC to Cancel:

Press Space Bar to Toggle.
```

The setup procedure of "Mega-Bundle"
    First an ISP remote node must be configured.
    1. Setup ISP in menu 4.
    2. Set "Multilink= BOD" or "Multilink= "Always" in menu 4
    3. In menu 11, edit the ISP remote node.
    4. Set "Edit PPP Options= Yes" and then press Enter. You will enter menu 11.2
    5. In menu 11.2, set "Max. Channels= 3" or "Max. Channels= 4"
    6. Save the configuration.

3

Second a supplementary remote node must be configured.
1. Setup a remote node in menu 11.
2. Set "Edit PPP Options= Yes" and then press Enter. You will enter menu 11.2
3. Set "Mega Bundle= Supplementary". Return menu 11.1.
4. Set "Rem IP Addr= 1.2.3.4". The value can be arbitrary IP address except "0.0.0.0" and "1.1.1.1".
5. Set "Edit IP/IPX/Bridge= Yes" and then press Enter. You will enter menu 11.3.
6. Set "Rem Subnet Mask= 0.0.0.0"
7. Save the configuration.

Check the configuration in menu 11. If the supplementary remote node is configured, you can see it in menu 11. The following is a reference screen. Node 2 is a supplementary remote node.

```
              Menu 11 - Remote Node Setup

          1. SeedNet (ISP)
          2. HiNet (SUP)
          3. _____
          4. _____
          5. _____
          6. _____
          7. _____
          8. _____
          9. _____
         10. _____
         11. _____
         12. _____




                 Enter Node # to Edit:


Please enter a number
```

Mega-Bundle Setup with SUA enable

In menu 11.2, I add a selection "Mega Bundle=". The value of "Mega Bundle" can be select as {"Supplementary", "None"}. "None" means this remote node does not participate in "Mega-Bundle." "Supplementary" means this remote node serves as a "supplementary remote node" and joint "Mega-Bundle".

```
            Menu 11.2 – Remote Node PPP Options

     Encapsulation= Standard PPP
     Compression= No
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       BOD Calculation= Transmit or Receive
      Min. Channels= 1
      Max. Channels= 2
      Target Utility for 2nd Channel(Kbps)= 32-48
       Bandwidth increment for Additional Channels(Kbps)= 64
      Add Persist(sec)= 5
      Subtract Persist(sec)= 5



```

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

Press Space Bar to Toggle.
```

The setup procedure of "Mega-Bundle"

First an ISP remote node must be configured.
1.Setup ISP in menu 4.
2.Set "Multilink= BOD" or "Multilink= "Always" in menu 4
3.Set "Single User Account= Yes"
4.In menu 11, edit the ISP remote node.
5.Set "Edit PPP Options= Yes" and then press Enter. You will enter menu 11.2
6.In menu 11.2, set "Max. Channels= 3" or "Max. Channels= 4"
7.Save the configuration.

Second a supplementary remote node must be configured.
1.Setup a remote node in menu 11.
2.Set "Edit PPP Options= Yes" and then press Enter. You will enter menu 11.2
3.Set "Mega Bundle= Supplementary". Return menu 11.1.
4.Set "Rem IP Addr= 1.2.3.4". The value can be arbitrary IP address except "0.0.0.0" and "1.1.1.1".
5.Set "Edit IP/IPX/Bridge= Yes" and then press Enter. You will enter menu 11.3.
6. 3.Set "Single User Account= Yes"
7.Set "Rem Subnet Mask= 0.0.0.0"
8.Save the configuration.

Check the configuration in menu 11. If the supplementary remote node is configured, you can see it in menu 11. The following is a reference screen. Node 2 is a supplementary remote node.

```
                  Menu 11 - Remote Node Setup

         1.  SeedNet (ISP,SUA)
         2.  HiNet (SUP,SUA)
         3.  _____
         4.  _____
         5.  _____
         6.  _____
         7.  _____
         8.  _____
         9.  _____
        10.  _____
        11.  _____
        12.  _____




                  Enter Node # to Edit:


Please enter a number
```

Setup Policy Routing with Remote Node support

1. In menu 25.1, set "Gateway type= Gateway node".
2. Set "Gateway node   = 1", the value can be from 0 to 12. 0 means no change. 1 means remote node 1 in menu 11, and so on.

If you want to assign the gateway ip address by yourself, just set "Gateway type= Gateway addr" and set "Gateway addr   = x.x.x.x" as you want.

The following is a reference screen. Node 2 is a supplementary remote node.

```
                    Menu 25.1 - IP Routing Policy

        Policy Set Name= test
        Active= Yes
        Criteria:
          IP Protocol    = 1
          Type of Service= Don't Care          Packet length= 0
          Precedence     = Don't Care           Len Comp= N/A
          Source:
            Addr start= 0.0.0.0                 end= N/A
            Port start= N/A                     end= N/A
          Destination:
            Addr start= 0.0.0.0                 end= N/A
            Port start= N/A                     end= N/A
        Action= Matched
            Gateway type    = Gateway node       Gateway addr    = 1.2.3.4
            Type of Service= No Change          Gateway node     = 2
            Precedence     = No Change           Log= No

                 Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

3. In menu 3 set "IP Policies=   1". You can use several set of policies. The usage of policies is the similar with filter.

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

             DHCP Setup
               DHCP= Server
               Client IP Pool Starting Address= 192.168.63.10
               Size of Client IP Pool= 6
               Primary DNS Server= 0.0.0.0
               Secondary DNS Server= 0.0.0.0
               Remote DHCP Server= N/A

             TCP/IP Setup:
               IP Address= 192.168.63.1
               IP Subnet Mask= 255.255.255.0
               RIP Direction= None
                 Version= RIP-1
               IP Policies= 1
               Edit IP Alias= No

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

Upgrade Firmware via LAN with FTP

You can use ftp client to update the firmwares. Be careful the upload filenames you use. Take the ftp client build in Window95/98/NT for example:

C:> ftp 192.168.32.1
Connected to 192.168.32.1.
220 p480_A FTP version 1.0 ready at Thu Nov 11 11:45:47 1999
User (192.168.32.1:(none)):ftp

331 Enter Pass Command
Passwd:1234
Login in
ftp>bin
ftp>hash
ftp> put rasp480.bin ras
ftp> by

Now the firmware is update by ftp.

NetCAPI: RVS-COM ISDN-DCP support.
1. Setup

Go to Edit NetCAPI Setup in Menu 2

```
                        Menu 2 - ISDN Setup

                   1.  ISDN Line 1 Setup
                   2.  ISDN Line 2 Setup
                   3.  NetCapi Setup

















                     Enter Menu Selection Number:
```

Select Yes then enter Menu2.3

Set the fields in this menu according to the following description.

```
spGetBriCnt:2
                        Menu 2.3 - NetCAPI Setup

     Active= Yes
     Max Allocated B Channels= 1
     Max Number of Registered Users= 1
     Incoming Data Call Number Matching= NetCAPI

     Access List:
      Start IP        End IP           Operation
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      0.0.0.0         0.0.0.0          None
      default                          None

                Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```
Active: Enable NetCAPI

[Yes] means we enable NetCAPI.
[No] means we disable NetCAPI.

Max Number of Registered Users:
When you want to use NetCAPI to place outgoing calls or to listen incoming calls, you must start RVSCOM in your PC, and RVSCOM will register itself to the Prestige. This option is the limit of the maximum number of PC that can run RVSCOM at the same time.

Incoming Data Call Matching:
[MSN]   means directing this call to the Prestige only when the incoming phone number
matches the ISDN DATA number in menu 2.
[Subaddress] means directing this to our router only when the incoming called subaddress
matches the subaddress of ISDN DATA in menu 2.
[NetCAPI] means all incoming data calls directed to NetCAPI

Access List:
This list specifies users that can use NetCAPI. When you want to use NetCAPI to place outgoing calls or to listen incoming calls, this access list is checked. The request from PC is rejected when
1. The IP of PC is not between Start IP and End IP. Or
2. The request from PC is without the permission (specified in Operation field)

Operation:
[Incoming] means accepting incoming calls
[Outgoing] means placing outgoing calls.
[Both] means both incoming and outgoing calls
[None] means no calls are allowed

2. New C/I commands:

>dcp fsm disp - display NetCAPI state machine log
>dcp fsm clear - clear NetCAPI state machine log.
>dcp fsm sw [on/off] - enable/disable state machine log.
>dcp trcp disp - display NetCAPI packet log.
>dcp trcp clear - clear NetCAPI packet log.
>dcp trcp sw [on/off] - enable/disable NetCAPI packet log.
>dcp status disp - display NetCAPI status.
>dcp object [object_id] -display netcapi objects

Mega-Bundle Test Case:

If the ISP do not support MPPP, you can use Mega-Bundle to reduce the packet round-trip time. Look at Figure 1. The red packets are sent by PC. After the packets forwarded by P480, I used green packet to present the packets. The configuration of P480 is assumed that SUA is disable when you dial to ISP. You will find that the upload packet round-trip time becomes shorter, but the download packet round-trip time is still the same.

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Figure 1.Upload files from PCs to ISP
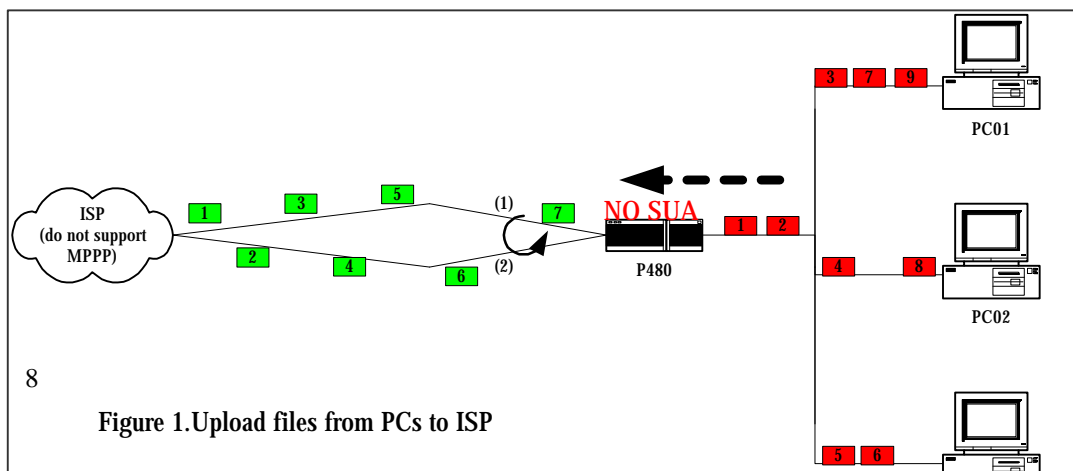
Look at Figure 2. The red packets are sent by PC. After the packets forwarded by P480, I used green packet to present the packets. The configuration of P480 is assumed that SUA is enable when you dial to ISP. The build-in packet scheduler of P480 will try to separate data flow into different connections. The packets sent by PC01 and PC02 are forwarded by connection (1) and those sent by PC03 are forwarded by connection (2). You will find that the upload packet round-trip time becomes shorter, but the download packet round-trip time is still the same.
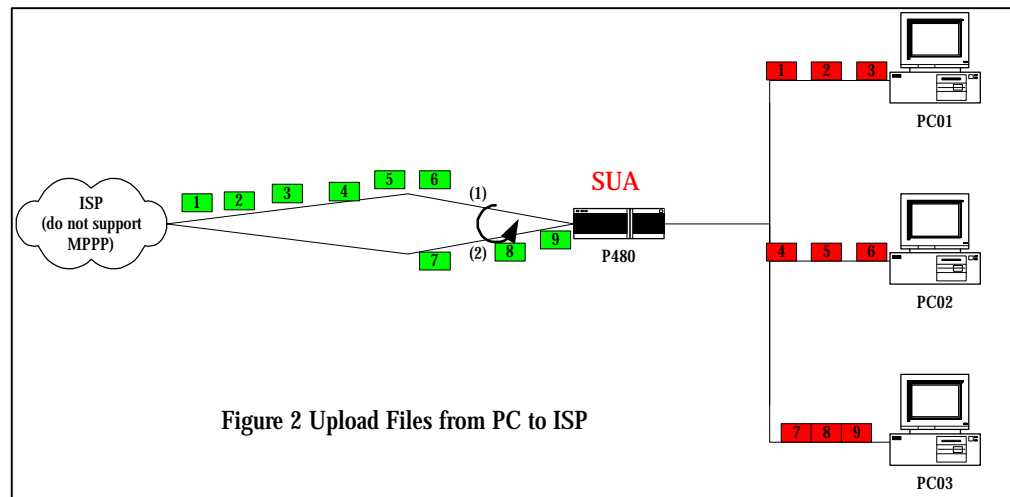

Figure 2 Upload Files from PC to ISP

FAQ:

Q: If we understand it correctly the solution you describe is for 2 accounts with MPPP for 2 channels for each account. What when the ISP does not support MPPP at all?

A: Mega-Bundle will try MPPP first. If MPPP is not support. Mega-Bundle can still work. Mega-Bundle in P480 can support at most dialing to 4-ISP accounts at the same time.

Q: We did not fully understand the point with the Gateway nodes. Can I configure 4 ISP accounts? What does it mean if I choose Gateway node 1 or 2 in the menu 25.1?

A: Here is only one ISP account. This account must be set in menu 4. If you want configure more than one ISP account, you can configure "supplementary remote node" in menu 11, and you can have more than four "supplementary remote node", too. If you have 4 ISP accounts, and you want to use this account simultaneously, you can set 1 ISP account in menu 4, and others 3 in menu 11. Mega-Bundle will automatically use these accounts according the BOD conditions you set.
The Gateway node is not concerned with Mega-Bundle. Mega-Bundle will do everything except configuring "supplementary remote node". The Gateway node is used when policy routing   is running. For example, if you have 2 ISP accounts (I called them A and B). A and B are set as remote node 1 and 2 in menu 11. You want certain IP packets only forwarding to A, and some packet only forwarding to B. If you choose Gateway node 1, then all the packets match the conditions in menu 25.1 will be forwarded to ISP A. If you choose Gateway node 2, then all the packets match the conditions in menu 25.1 will be forwarded to ISP B.

Q: How to set the maximum and minimum channels that Mega-Bundle uses?

A: The maximum and minimum channels that Mega-Bundle uses are dominated by the ISP remote note you set in menu 4. You can use Menu 11.2 to change the values.

Known Bugs:

1. When PC is using NetCapi service of P480, each PC can only activate one Capi aplication at the same time.
2. In order to use NetCapi, users must edit the file "autoexec.net" to change some system parameters.
   The old values are as following:
   ip tcp limit 2
   ip tcp window 2
   The new values are as
   ip tcp limit 4
   ip tcp window 16

   You can use CI command to change the value or use the new default rom file to replace the old one.