



# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for ZYXEL P-660R-D1. You'll find the answers to all your questions on the ZYXEL P-660R-D1 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual ZYXEL P-660R-D1**  
**User guide ZYXEL P-660R-D1**  
**Operating instructions ZYXEL P-660R-D1**  
**Instructions for use ZYXEL P-660R-D1**  
**Instruction manual ZYXEL P-660R-D1**

## *P-660R-D Series*

*ADSL2+ Router*

### ***User's Guide***

Version 3.40  
7/2006  
Edition 1

# **ZyXEL**



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**Manual abstract:**

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However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio/television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: · Reorient or relocate the receiving antenna. · Increase the separation between the equipment and the receiver. · Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. · Consult the dealer or an experienced radio/TV technician for help. Notice 1 Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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com 3 Certifications P-660R-D Series User's Guide 2 Select your product from the drop-down list box on the ZyXEL home page to go to that product's page. 3 Select the certification you wish to view from this page. Certifications 4 P-660R-D Series User's Guide Safety Warnings For your safety, be sure to read and follow all warning notices and instructions. · To reduce the risk of fire, use only No. 26 AWG (American Wire Gauge) or larger telecommunication line cord. · Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information. · Use ONLY the dedicated power supply for your device.

Connect the power cord or power adaptor to the right supply voltage (110V AC in North America or 230V AC in Europe). · Do NOT use the device if the power supply is damaged as it might cause electrocution. · If the power supply is damaged, remove it from the power outlet. · Do NOT attempt to repair the power supply. Contact your local vendor to order a new power supply. · Place connecting cables carefully so that no one will step on them or stumble over them. Do NOT allow anything to rest on the power cord and do NOT locate the product where anyone can walk on the power cord. · If you wall mount your device, make sure that no electrical, gas or water pipes will be damaged. · Do NOT install nor use your device during a thunderstorm. There may be a remote risk of electric shock from lightning.

· Do NOT expose your device to dampness, dust or corrosive liquids. · Do NOT use this product near water, for example, in a wet basement or near a swimming pool. · Make sure to connect the cables to the correct ports. · Do NOT obstruct the device ventilation slots, as insufficient airflow may harm your device. · Do NOT store things on the device.

· Connect ONLY suitable accessories to the device. This product is recyclable. Dispose of it properly. 5 Safety Warnings P-660R-D Series User's Guide ZyXEL Limited Warranty ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to two years from the date of purchase. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition.

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.....  
.....  
.... 10 List of Figures .  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

... 16 List of Tables .....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.... 20 Preface .  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
22 Chapter 1 Getting To Know Your ZyXEL Device .....

.....  
.....  
.....

.....  
.....  
.....



....50 4.1.5.3 IP Assignment with ENET ENCAP Encapsulation ...

.....  
.....  
.....

...51 4.1.6 Nailed-Up Connection (PPP) .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

...51 4.1.7 NAT .....

.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

..51 4.2 Metric .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....

51 4.3 Traffic Shaping ....

.....  
.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....52 4.3.1 ATM Traffic Classes ...

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

.....53 4.  
3.1.1 Constant Bit Rate (CBR) .....

.....  
.....  
.....  
.....  
.....  
.....  
.....

.....53 4.3.1.

2 Variable Bit Rate (VBR) .....

.....  
.....  
.....  
.....  
.....  
.....  
.....

.....53 4.3.1.

3 Unspecified Bit Rate (UBR) .....

.....  
.....  
.....  
.....  
.....  
.....  
.....

.53 4.4 Zero Configuration Internet Access ...

.....  
.....  
.....  
.....  
.....  
.....  
.....

53 4.5 Internet Connection .....

.....  
.....



.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*..54 4.5.1 Configuring Advanced Internet Connection Setup .....*

.....  
.....  
.....

*56 4.6 Configuring More Connections .....*

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*.57 4.6.1 More Connections Edit ..*

.....  
.....  
.....  
.....

.....  
.....  
.....

*....58 4.6.2 Configuring More Connections Advanced Setup ....*

.....  
.....  
.....

.....  
.....  
.....

*...61 4.7 Traffic Redirect .*

.....  
.....  
.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*..62 4.8 Configuring WAN Backup .....*



.....  
.....  
.....

.....  
.....  
.....67 5.

*1.2.1 IP Pool Setup .....*

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....67 5.

*1.3 DNS Server Address ....*

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

*.....67 5.1.4 DNS Server Address Assignment ..*

.....  
.....  
.....

.....  
.....  
.....  
.....

.....68 5.

*2 LAN TCP/IP .....*

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

*.....68 5.2.1 IP Address and Subnet Mask ....*

.....  
.....  
.....

.....  
.....  
.....  
.....  
.....

*...68 5.2.1.1 Private IP Addresses ....*

.....  
.....  
.....  
.....  
.....  
.....

*..69 5.2.2 RIP Setup .*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*.....69 5.2.3 Multicast ..*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*.....70 5.2.  
4 Any IP .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

.....  
.....  
.....  
...70 5.2.4.1 How Any IP Works ....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
71 5.3 Configuring LAN IP ....

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
...72 5.3.  
1 Configuring Advanced LAN Setup .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
72 5.4 DHCP Setup ....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....74 5.

5 LAN Client List .....

.....  
.....  
.....  
.....  
.....

.....  
.....

.....  
.....  
.....

.....75 5.  
*6 LAN IP Alias* .....

.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*.76 Chapter 6 Network Address Translation (NAT) Screens* .....

.....  
.....  
.....

.....  
.....

*80 6.1 NAT Overview* ....

.....  
.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*.....80 6.1.1 NAT Definitions* ...

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*.....80 6.1.2 What NAT Does* ..

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....81 6.1.3 How NAT Works ..

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....81 6.1.4 NAT Application ...

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....82 6.1.5 NAT Mapping Types ...

.....  
.....  
.....

.....  
.....  
.....

.....  
.....

...82 6.2 SUA (Single User Account) Versus NAT .

.....

.....  
.....  
.....

.....

.....  
.....83 6.  
3 NAT General Setup .....

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

.....83 6.4 Port Forwarding .....

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

84 6.4.1 Default Server IP Address .....

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

.....85 6.  
4.2 Port Forwarding: Services and Port Numbers ....

.....  
.....  
.....  
.....  
.....

.....85 6.4.

3 Configuring Servers Behind Port Forwarding (Example) .....

.....  
.....

.....86 6.5 Configuring Port Forwarding ...

.....  
.....  
.....  
.....  
.....  
.....  
.....



.....

.....  
...86 6.

*5.1 Port Forwarding Rule Edit ....*

.....

.....

....

....

.....

.....

....

....

*.....87 6.6 Address Mapping .*

.....

....

....

.....

.....

....

....

.....

.....

....

....

.....

*...88 6.6.1 Address Mapping Rule Edit .....*

....

....

.....

.....

....

....

.....

*....90 Chapter 7 Static Route .*

....

.....

.....

....

....

.....

.....

....

....

.....

.....

....

....

.....

*.. 92 7.1 Static Route .....*

....

....

.....











.....  
.....  
.....  
.....

..110 10.1.1 How do I know if I'm using UPnP? .

.....  
.....

.....  
.....  
.....  
.....

110 10.1.2 NAT Traversal ...

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....110 10.  
1.3 Cautions with UPnP ....

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

..... 111 10.

2 UPnP and ZyXEL .....

.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

. 111 10.2.1 Configuring UPnP .....

.....  
.....  
.....

.....  
.....





.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

..... 122 11.1 General Setup .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

..122 11.1.1 General Setup and System Name .....

.....  
.....  
.....

.....  
.....  
.....  
.....

122 11.1.2 General Setup .....

.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

.....122 11.2 Time Setting .

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....

.....  
.....  
.....

.....124 Chapter 12 Tools ...

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

..... 128 12.1 Firmware Upgrade ....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

....128 12.2 Configuration Screen .....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

130 12.2.1 Backup Configuration .....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....

..130 12.2.2 Restore Configuration .

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*....131 12.2.3 Back to Factory Defaults ....*

.....  
.....  
.....  
.....  
.....  
.....  
.....

*..132 12.3 Restart ..*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*.....132 Chapter 13 Diagnostic ....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*.... 134 13.1 General Diagnostic .....*

.....  
.....  
.....  
.....





*3 Problems with the WAN .*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*137 14.4 Problems Accessing the ZyXEL Device ....*

.....  
.....  
.....  
.....  
.....

*.....138 Appendix A Product Specifications ..*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*..... 140 Appendix B Internal SPTGEN .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*... 142 Internal SPTGEN Overview ..*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... 142 The Configuration Text File Format....

.....  
.....  
.....

.....  
.....  
.....

.....

... 142 Internal SPTGEN FTP Download Example..

.....

.....

.....

.....

.....

.....

... 143 Internal SPTGEN FTP Upload Example ..

.....

.....

.....

.....

.....

.....

.....

.. 144 Example Internal SPTGEN Menus.....

.....

.....

.....

.....

.....

.....

.....

..... 145 Command Examples.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... 159 Appendix C Wall-mounting Instructions.

.....

.....

.....

.....  
.....  
.....

.....  
.....  
.....  
.....

*160 Table of Contents 14 P-660R-D Series User's Guide Appendix D Setting up Your Computer's IP Address.....*

.....  
.....  
.....

.....  
.....  
.....  
.....

*162 Windows 95/98/Me.....*

.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

*..... 162 Windows 2000/NT/XP ...*

.....  
.....  
.....

.....  
.....  
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.....  
.....  
.....  
.....

*..... 165 Macintosh OS 8/9.*

.....  
.....  
.....

.....  
.....  
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.....  
.....

*... 170 Macintosh OS X ..*





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.....  
.....  
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.....  
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.....  
.....  
.....

*. 180 Subnetting .....*

.....  
.....  
.....  
.....

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.....  
.....  
.....

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*. 180 Example: Two Subnets ....*

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....

*. 181 Example: Four Subnets....*

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....

*. 182 Example Eight Subnets ....*

.....  
.....

.....  
.....

.....  
.....

.....  
.....  
.....

*. 183 Subnetting With Class A and Class B Networks. ...*

.....  
.....

.....  
.....  
.....

*... 184 Appendix F Command Interpreter.....*

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*.... 186 Accessing the CLI .....*

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....

*.. 186 Command Syntax...*

.....  
.....

.....  
.....  
.....

.....  
.....  
.....

.....  
.....  
.....

*. 186 Command Usage .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*186 Appendix G NetBIOS Filter Commands .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*.. 188 Introduction .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*188 Display NetBIOS Filter Settings .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

*..... 188 NetBIOS Filter Configuration...*

.....  
.....  
.....  
.....  
.....  
.....

.....  
.....  
.....

.... 189 *Appendix H Splitters and Microfilters* .

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

.... 190 *Connecting a POTS Splitter* .

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... 190 *Telephone Microfilters* ...

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... 190 *ZyXEL Device With ISDN*.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... 192 *Appendix I Pop-up Windows, JavaScripts and Java Permissions* ....

.....  
.....



.... 27 Figure 2 LAN-to-LAN Application Example .....

.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....

.. 27 Figure 3 Front Panel (P-660R-D1) ...

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....

.. 28 Figure 4 Password Screen ...

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....

31 Figure 5 Change Password at Login .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....

... 31 Figure 6 Select a Mode ..

.....  
.....

.....  
.....  
.....  
.....

.....  
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.....  
.....  
.....

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.....  
.....

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.....  
.....  
.....

.. 39 Figure 12 Select a Mode .....

.....  
.....  
.....

.....  
.....  
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.....

.....  
.....  
.....  
.....

... 40 Figure 13 Wizard: Welcome ..

.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.... 41 Figure 14 Auto Detection: No DSL Connection .

.....

.....  
.....  
.....  
.....

.....  
.....  
.....

..... 41 Figure 15 Auto Detection: Failed ....

.....  
.....  
.....  
.....

.....

.....  
.....  
.....

..... 42 Figure 16 Auto-Detection: PPPoE .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.. 42 Figure 17 Internet Access Wizard Setup: ISP Parameters .....

.....  
.....  
.....  
.....

. 43 Figure 18 Internet Connection with PPPoE .....

.....  
.....

.....  
.....  
.....  
.....

.... 44 Figure 19 Internet Connection with RFC 1483 .....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

. 44 Figure 20 Internet Connection with ENET ENCAP .....

.....  
.....  
.....

.....  
.....  
.....  
.....

.. 45 Figure 21 Internet Connection with PPPoA .....

.....  
.....



.....  
.....  
.....  
.....

..... 54 *Figure 27 Advanced Internet Connection Setup ...*

.....  
.....  
.....  
.....  
.....  
.....  
.....

.. 56 *Figure 28 More Connections .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... 58 *Figure 29 More Connections Edit ...*

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... 59 *Figure 30 More Connections Advanced Setup .....*

.....  
.....  
.....  
.....  
.....  
.....  
.....

.. 61 *Figure 31 Traffic Redirect Example ...*

.....  
.....  
.....  
.....  
.....

.....  
.....  
.....  
.....  
.....

..... 62 *Figure 32 Traffic Redirect LAN Setup ...*

.....  
.....  
.....  
.....  
.....

..... 63 *Figure 33 WAN Backup Setup ..*

.....  
.....  
.....  
.....  
.....

63 *Figure 34 LAN and WAN IP Addresses .....*

.....  
.....  
.....  
.....  
.....

... 66 *Figure 35 Any IP Example ..*

.....  
.....  
.....  
.....  
.....

..... 71 *Figure 36 LAN IP ....*

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....

.... 72 *Figure 37 Advanced LAN Setup* .

.....  
.....  
.....  
.....

.....  
.....  
.....  
.....

.....  
.....

.... 73 *Figure 38 DHCP Setup* .

.....  
.....  
.....  
.....

.....  
.....  
.....  
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.. 74 *List of Figures 16 P-660R-D Series User's Guide Figure 39 LAN Client List* .....

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.. 75 Figure 40 Physical Network & Partitioned Logical Networks ...

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..... 77 Figure 41 LAN IP Alias ..

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.. 77 Figure 42 How NAT Works ...

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81 Figure 43 NAT Application With IP Alias .....

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..... 82 Figure 44 NAT General ...

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.... 90 Figure 50 Example of Static Routing Topology .....

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. 92 Figure 51 Static Route .....

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.....  
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. 93 Figure 52 Static Route Edit ....

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.....

... 94 Figure 53 Dynamic DNS .....

.....  
.....  
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.....  
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.... 97 Figure 54 Remote Management: WWW .....

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. 101 Figure 55 Telnet Configuration on a TCP/IP Network .....

.....  
.....  
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... 102 Figure 56 Remote Management: Telnet ..

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..... 102 Figure 57 Remote Management: FTP ....

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..... 103 Figure 58 SNMP Management Model ...

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.....

... 104 Figure 59 Remote Management: SNMP ..

.....

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.....  
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.....  
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. 114 Figure 66 Windows Optional Networking Components Wizard .....

.....  
.....  
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.....  
... 114 Figure 67 Networking Services ..

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.....  
.... 115 Figure 68 Network Connections .

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.....  
.... 116 Figure 69 Internet Connection Properties .

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..... 116 Figure 70 Internet Connection Properties: Advanced Settings ..

.....  
.....  
.....

.....  
. 117 Figure 71 Internet Connection Properties: Advanced Settings: Add ....

.....  
.....

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. 117 Figure 72 System Tray Icon ....

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.. 117 Figure 73 Internet Connection Status .....

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.... 118 Figure 74 Network Connections .

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.... 119 Figure 75 Network Connections: My Network Places .

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. 120 Figure 76 Network Connections: My Network Places: Properties: Example ....

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.... 120 Figure 77 System General Setup .....

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*.. 123 Figure 78 System Time Setting .....*

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*... 124 Figure 79 Firmware Upgrade .....*

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*..... 128 Figure 80 Firmware Upload In Progress ...*

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*.... 129 Figure 81 Network Temporarily Disconnected .....*

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*.. 129 17 List of Figures P-660R-D Series User's Guide Figure 82 Error Message .....*

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.. 130 Figure 83 Configuration ...

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..... 130 Figure 84 Configuration Restore Successful .....

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..... 131 Figure 85 Temporarily Disconnected ....

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..... 131 Figure 86 Configuration Restore Error .

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.... 132 Figure 87 Restart Screen .

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..... 132 *Figure 88 Diagnostic: General* .

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. 134 *Figure 89 Diagnostic: DSL Line* .....

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. 135 *Figure 90 Configuration Text File Format: Column Descriptions* .....

.....  
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.. 142 *Figure 91 Invalid Parameter Entered: Command Line Example* ...

.....  
.....

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... 143 *Figure 92 Valid Parameter Entered: Command Line Example* .....

.....  
.....  
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.....

..... 143 *Figure 93 Internal SPTGEN FTP Download Example* ....



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*. 144 Figure 94 Internal SPTGEN FTP Upload Example .....*

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*.. 144 Figure 95 Wall-mounting Example .....*

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*..... 160 Figure 96 WIndows 95/98/Me: Network: Configuration ..*

.....  
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*... 163 Figure 97 Windows 95/98/Me: TCP/IP Properties: IP Address .....*

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*..... 164 Figure 98 Windows 95/98/Me: TCP/IP Properties: DNS Configuration ....*

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*..... 165 Figure 99 Windows XP: Start Menu ....*

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166 Figure 100 Windows XP: Control Panel .....

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... 166 Figure 101 Windows XP: Control Panel: Network Connections: Properties ..

.....

.....  
. 167 Figure 102 Windows XP: Local Area Connection Properties ....

.....  
.....

.....  
.....  
.....

..... 167 Figure 103 Windows XP: Internet Protocol (TCP/IP) Properties ...

.....  
.....  
.....  
.....

..... 168 Figure 104 Windows XP: Advanced TCP/IP Properties ..

.....  
.....  
.....

.....  
.....  
.....  
.....

.. 169 Figure 105 Windows XP: Internet Protocol (TCP/IP) Properties .....

.....  
.....  
.....

.....  
... 170 Figure 106 Macintosh OS 8/9: Apple Menu ..

.....  
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..... 171 Figure 107 Macintosh OS 8/9: TCP/IP .....

.....  
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171 Figure 108 Macintosh OS X: Apple Menu .....

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172 Figure 109 Macintosh OS X: Network .....

.....  
.....  
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. 173 Figure 110 Red Hat 9.0: KDE: Network Configuration: Devices .....

.....  
.....  
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.. 174 Figure 111 Red Hat 9.0: KDE: Ethernet Device: General .....

.....  
.....  
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... 174 Figure 112 Red Hat 9.0: KDE: Network Configuration: DNS .....

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..... 175 Figure 113 Red Hat 9.  
0: KDE: Network Configuration: Activate .....

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191 Figure 122 ZyXEL Device with ISDN .....

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.. 192 Figure 123 Pop-up Blocker .....

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..... 194 Figure 124 Internet Options .



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.... 195 List of Figures 18 P-660R-D Series User's Guide Figure 125 Internet Options .....

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196 Figure 126 Pop-up Blocker Settings .....

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.....  
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... 197 Figure 127 Internet Options .....

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..... 198 Figure 128 Security Settings - Java Scripting .

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.... 28 Table 3 Web Configurator Screens Summary .

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.. 33 Table 4 Status Screen .....

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..... 35 Table 5 Status: Any IP Table ....

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37 Table 6 Status: Packet Statistics .....

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..... 38 Table 7 Internet Access Wizard Setup: ISP Parameters ..

.....  
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*43 Table 8 Internet Connection with PPPoE .....*

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*.... 44 Table 9 Internet Connection with RFC 1483 .*

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*.... 45 Table 10 Internet Connection with ENET ENCAP .....*

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*..... 45 Table 11 Internet Connection with PPPoA ....*

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*..... 46 Table 12 Internet Connection .*

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*.. 54 Table 13 Advanced Internet Connection Setup ...*

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... 56 Table 14 More Connections ..

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... 58 Table 15 More Connections Edit .....

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. 59 Table 16 More Connections Advanced Setup .....

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..... 61 Table 17 WAN Backup Setup .

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84 Table 26 Services and Port Numbers .....

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. 85 Table 27 NAT Port Forwarding .....

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.. 87 Table 28 Port Forwarding Rule Setup .....

.....  
.....  
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.. 88 Table 29 Address Mapping Rules ...

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..... 89 Table 30 Edit Address Mapping Rule ..

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..... 90 Table 31 Static Route .

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..... 93 Table 32 Static Route Edit .

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..... 94 Table 33 Dynamic DNS .....

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..... 97 Table 34 Remote Management: WWW .....

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.. 101 Table 35 Remote Management: Telnet .....

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103 Table 36 Remote Management: FTP .....

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. 104 Table 37 SNMP Traps .....

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105 Table 38 Remote Management: SNMP .....

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... 106 List of Tables 20 P-660R-D Series User's Guide Table 39 Remote Management: DNS .....

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... 107 Table 40 Remote Management: ICMP .....

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.. 108 Table 41 Configuring UPnP ...

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... 112 Table 42 System General Setup ..

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. 123 Table 43 System Time Setting ....

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... 125 Table 44 Firmware Upgrade ..

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... 128 Table 45 Maintenance Restore Configuration .....

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. 131 Table 46 Diagnostic: General .....

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.... 134 Table 47 Diagnostic: DSL Line .....

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..... 135 Table 48 Troubleshooting Starting Up Your ZyXEL Device .....

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... 136 Table 49 Troubleshooting the LAN .....

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... 136 Table 50 Troubleshooting the WAN ..

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.. 137 Table 51 Troubleshooting Accessing the ZyXEL Device ...

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.... 138 Table 52 Device .....

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..... 140 Table 53 Firmware ..

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.. 152 Table 59 Menu 15 SUA Server Setup .....

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.. 153 Table 60 Menu 21.1 Filter Set #1 .....

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154 Table 61 Menu 21.1 Filter Set #2, .....

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... 156 Table 62 Menu 23 System Menus ..

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.... 157 Table 63 Menu 24.  
11 Remote Management Control .....

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.....  
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.....  
... 158 Table 64 Command Examples ..

.....  
.....

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.....  
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.....  
.... 159 Table 65 Classes of IP Addresses .

.....  
.....

.....  
.....  
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..... 179 Table 66 Allowed IP Address Range By Class .

.....  
.....  
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. 179 Table 67 "Natural" Masks ....

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.... 180 Table 68 Alternative Subnet Mask Notation .....

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..... 180 Table 69 Two Subnets Example .....

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.... 181 Table 70 Subnet 1 .....

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.... 181 Table 71 Subnet 2 .....

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.... 182 Table 72 Subnet 1 .

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.... 182 Table 73 Subnet 2 .....

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.... 183 Table 74 Subnet 3 .....

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.... 183 Table 75 Subnet 4 .

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.... 183 Table 76 Eight Subnets .....

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. 184 Table 77 Class C Subnet Planning ....

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. 184 Table 78 Class B Subnet Planning ....

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..... 185 Table 79 NetBIOS Filter Default Settings ....

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. 189 21 List of Tables P-660R-D Series User's Guide Preface Congratulations on your purchase of the P-660R-D series ADSL 2+ Gateway. The P-660R-D is ideal for connecting your home or business to the Internet. Note: Register your product online to receive e-mail notices of firmware upgrades and information at [www.zyxel.com](http://www.zyxel.com) for global products, or at [www.us.zyxel.com](http://www.us.zyxel.com) for North American products. About This User's Guide This manual is designed to guide you through the configuration of your ZyXEL Device for its various applications.

The web configurator parts of this guide contain background information on features configurable by web configurator. Note: Use the web configurator or command interpreter interface to configure your ZyXEL Device. Not all features can be configured through all interfaces. Syntax Conventions · "Enter" means for you to type one or more characters. "Select" or "Choose" means for you to use one predefined choice. · Mouse action sequences are denoted using a right angle bracket ( > ). For example, "In Windows, click Start > Settings > Control Panel" means first click the Start button, then point your mouse pointer to Settings and then click Control Panel. · "e.g.," is a shorthand for "for instance", and "i.

e.," means "that is" or "in other words". · The ZyXEL Device series may be referred to as the "ZyXEL Device" in this User's Guide. Related Documentation · Supporting Disk Refer to the included CD for support documents. · Quick Start Guide The Quick Start Guide is designed to help you get up and running right away.

It contains connection information and instructions on getting started. · Web Configurator Online Help Embedded web help for descriptions of individual screens and supplementary information. · ZyXEL Web Site Please go to <http://www.zyxel.com> for product news, firmware, updated documents, and other



support materials.

Preface 22 P-660R-D Series User's Guide User Guide Feedback Help us help you. E-mail all User Guide-related comments, questions or suggestions for improvement to [techwriters@zyxel.com.tw](mailto:techwriters@zyxel.com.tw) or send regular mail to The Technical Writing Team, ZyXEL Communications Corp., 6 Innovation Road II, Science-Based Industrial Park, Hsinchu, 300, Taiwan. Thank you. Graphics Icons Key ZyXEL Device Computer Notebook computer Server DSLAM Firewall Telephone Switch Router 23 Preface P-660R-D Series User's Guide CHAPTER 1 Getting To Know Your ZYXEL DEVICE This chapter describes the key features and applications of your ZyXEL Device. 1.1 Introducing the ZyXEL Device The ZyXEL Device is an ADSL2+ gateway that allows super-fast Internet access over analog (POTS) or digital (ISDN) telephone lines (depending on your model). In the ZyXEL Device product name, "R" denotes an integrated router and "D" denotes a chip set standard.

Your ZyXEL Device product name ends with a number. Models ending in "1", for example P660R-D1, denote a device that works over the analog telephone system, POTS (Plain Old Telephone Service). Models ending in "3" denote a device that works over ISDN (Integrated Services Digital Network). Models ending in "7" denote a device that works over T-ISDN (UR-2). Note: Only use firmware for your ZyXEL Device's specific model. Refer to the label on the bottom of your ZyXEL Device. Chapter 1 Getting To Know Your ZyXEL Device 24 P-660R-D Series User's Guide 1.2 Features High Speed Internet Access The DSL RJ-11 (ADSL over POTS models) or RJ-45 (ADSL over ISDN models) connects to your ADSL-enabled telephone line.



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The ZyXEL Device is compatible with the ADSL/ADSL2/ADSL2+ standards. Maximum data rates attainable for each standard are shown in the next table.  
Table 1 ADSL Standards DATA RATE STANDARD ADSL ADSL2 ADSL2+ UPSTREAM 832 kbps 3.5Mbps 3.5Mbps DOWNSTREAM 8Mbps 12Mbps 24Mbps  
Note: If your ZyXEL Device does not support Annex M, the maximum ADSL2/2+ upstream data rate is 1.2 Mbps. ZyXEL Devices which work over ISDN do not support Annex M.

The standard your ISP supports determines the maximum upstream and downstream speeds attainable. Actual speeds attained also depend on the distance from your ISP, line quality, etc. Zero Configuration Internet Access Once you connect and turn on the ZyXEL Device, it automatically detects the Internet connection settings (such as the VCI/VPI numbers and the encapsulation method) from the ISP and makes the necessary configuration changes. In cases where additional account information (such as an Internet account user name and password) is required or the ZyXEL Device cannot connect to the ISP, you will be redirected to web screen(s) for information input or troubleshooting. Any IP The Any IP feature allows a computer to access the Internet and the ZyXEL Device without changing the network settings (such as IP address and subnet mask) of the computer, when the IP addresses of the computer and the ZyXEL Device are not in the same subnet.

Traffic Redirect Traffic redirect forwards WAN traffic to a backup gateway when the ZyXEL Device cannot connect to the Internet, thus acting as an auxiliary if your regular WAN connection fails. 25 Chapter 1 Getting To Know Your ZyXEL Device P-660R-D Series User's Guide Universal Plug and Play (UPnP) Using the standard TCP/IP protocol, the ZyXEL Device and other UPnP enabled devices can dynamically join a network, obtain an IP address and convey its capabilities to other devices on the network. PPPoE (RFC2516) PPPoE (Point-to-Point Protocol over Ethernet) emulates a dial-up connection. It allows your ISP to use their existing network configuration with newer broadband technologies such as ADSL. The PPPoE driver on the ZyXEL Device is transparent to the computers on the LAN, which see only Ethernet and are not aware of PPPoE thus saving you from having to manage PPPoE clients on individual computers. The ZyXEL Device also includes PPPoE idle time-out (the PPPoE connection terminates after a period of no traffic that you configure) and PPPoE Dial-on-Demand (the PPPoE connection is brought up only when an Internet access request is made). Network Address Translation (NAT) Network Address Translation (NAT) allows the translation of an Internet protocol address used within one network (for example a private IP address used in a local network) to a different IP address known within another network (for example a public IP address used on the Internet). Dynamic DNS Support With Dynamic DNS support, you can have a static hostname alias for a dynamic IP address, allowing the host to be more easily accessible from various locations on the Internet. You must register for this service with a Dynamic DNS service provider. DHCP DHCP (Dynamic Host Configuration Protocol) allows the individual clients (computers) to obtain the TCP/IP configuration at start-up from a centralized DHCP server.

The ZyXEL Device has built-in DHCP server capability enabled by default. It can assign IP addresses, an IP default gateway and DNS servers to DHCP clients. The ZyXEL Device can now also act as a surrogate DHCP server (DHCP Relay) where it relays IP address assignment from the actual real DHCP server to the clients. IP Alias IP Alias allows you to partition a physical network into logical networks over the same Ethernet interface. The ZyXEL Device supports three logical LAN interfaces via its single physical Ethernet interface with the ZyXEL Device itself as the gateway for each LAN network. Chapter 1 Getting To Know Your ZyXEL Device 26 P-660R-D Series User's Guide Housing Your ZyXEL Device's compact and ventilated housing minimizes space requirements making it easy to position anywhere in your busy office. 1.3 Applications for the ZyXEL Device Here are some example uses for which the ZyXEL Device is well suited. 1.3.

1 Internet Access The ZyXEL Device is the ideal high-speed Internet access solution. It is compatible with all major ADSL DSLAM (Digital Subscriber Line Access Multiplexer) providers and supports the ADSL standards as shown in Table 1 on page 25. Figure 1 Internet Access Applications 1.3.2 LAN to LAN Application You can use the ZyXEL Device to connect two geographically dispersed networks over the ADSL line.

A typical LAN-to-LAN application example is shown as follows. Figure 2 LAN-to-LAN Application Example 1.4 Front Panel Lights The following figure shows the front panel lights. 27 Chapter 1 Getting To Know Your ZyXEL Device P-660R-D Series User's Guide Figure 3 Front Panel (P-660R-D1) The following table describes the lights. Table 2 Front Panel Lights LIGHT POWER COLOR Green STATUS On Blinking Red On Off ETHERNET Green On Blinking Amber On Blinking Off DSL Green On Blinking Off INTERNET Green On Blinking Off DESCRIPTION The ZyXEL Device is receiving power and functioning properly.

The ZyXEL Device is rebooting or performing diagnostics. Power to the ZyXEL Device is too low. The ZyXEL Device is turned off. The system is not receiving power. The ZyXEL Device has a successful 10Mbps Ethernet connection. The ZyXEL Device is receiving or sending data. The ZyXEL Device has a successful 100Mbps Ethernet connection. The ZyXEL Device is receiving or sending data. The ZyXEL Device is not connected to the LAN. The DSL line is up.

The ZyXEL Device is initializing the DSL line. The DSL line is down. The Internet connection is up. The ZyXEL Device is sending/receiving data. The Internet connection is down. 1.5 Hardware Connection Refer to the Quick Start Guide for information on hardware connection. Chapter 1 Getting To Know Your ZyXEL Device 28 P-660R-D Series User's Guide 29 Chapter 1 Getting To Know Your ZyXEL Device P-660R-D Series User's Guide CHAPTER 2 Introducing the Web Configurator This chapter describes how to access and navigate the web configurator. 2.1 Web Configurator Overview The web configurator is an HTML-based management interface that allows easy ZyXEL Device setup and management via Internet browser.

Use Internet Explorer 6.0 and later or Netscape Navigator 7.0 and later versions. The recommended screen resolution is 1024 by 768 pixels. In order to use the web configurator you need to allow: · Web browser pop-up windows from your device.

Web pop-up blocking is enabled by default in Windows XP SP (Service Pack) 2. · JavaScripts (enabled by default). · Java permissions (enabled by default). See the chapter on troubleshooting if you need to make sure these functions are allowed in Internet Explorer. 2.

2 Accessing the Web Configurator 1 Make sure your ZyXEL Device hardware is properly connected (refer to the Quick Start Guide).



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2 Prepare your computer/computer network to connect to the ZyXEL Device (refer to the Quick Start Guide). 3 Launch your web browser. 4 Type "192.168.1.1" as the URL. 5 A window displays as shown. Enter the default admin password 1234 to configure the wizards and the advanced features or enter the default user password user to view the status only. Click Login to proceed to a screen asking you to change your password or click Cancel to revert to the default password.

Chapter 2 Introducing the Web Configurator 30 P-660R-D Series User's Guide Figure 4 Password Screen 6 If you entered the user password, skip the next two steps and refer to Section 2.4.2 on page 34 for more information about the Status screen. If you entered the admin password, it is highly recommended you change the default admin password! Enter a new password between 1 and 30 characters, retype it to confirm and click Apply; alternatively click Ignore to proceed to the main menu if you do not want to change the password now. Note: If you do not change the password at least once, the following screen appears every time you log in with the admin password. Figure 5 Change Password at Login 7 Select Go to Wizard setup and click Apply to display the wizard main screen. Otherwise, select Go to Advanced setup and click Apply to display the Status screen. 31 Chapter 2 Introducing the Web Configurator P-660R-D Series User's Guide Figure 6 Select a Mode Note: The management session automatically times out when the time period set in the Administrator Inactivity Timer field expires (default five minutes). Simply log back into the ZyXEL Device if this happens to you. 2.

3 Resetting the ZyXEL Device If you forget your password or cannot access the web configurator, you will need to use the RESET button at the back of the ZyXEL Device to reload the factory-default configuration file. This means that you will lose all configurations that you had previously and the password will be reset to "1234". 2.3.1 Using the Reset Button 1 Make sure the POWER light is on (not blinking).

2 Press the RESET button for ten seconds or until the POWER light begins to blink and then release it. When the POWER light begins to blink, the defaults have been restored and the ZyXEL Device restarts. 2.4 Navigating the Web Configurator We use the P-660R-D1 web screens in this guide as an example. Screens vary slightly for different ZyXEL Device models.

2.4.1 Navigation Panel After you enter the admin password, use the sub-menus on the navigation panel to configure ZyXEL Device features. The following table describes the sub-menus. Chapter 2 Introducing the Web Configurator 32 P-660R-D Series User's Guide Figure 7 Web Configurator: Main Screen Click the Logout icon at any time to exit the web configurator. Use submenus to configure ZyXEL Device features. Note: Click the icon (located in the top right corner of most screens) to view embedded help. Table 3 Web Configurator Screens Summary LINK/ICON Wizard SUB-LINK INTERNET SETUP FUNCTION Use these screens for initial configuration including general setup, ISP parameters for Internet Access and WAN IP/DNS Server/MAC address assignment. Click this icon to exit the web configurator. This screen shows the ZyXEL Device's general device, system and interface status information.

Use this screen to access the summary statistics tables. Internet Connection This screen allows you to configure ISP parameters, WAN IP address assignment, DNS servers and other advanced properties. Logout Status Network WAN More Connections Use this screen to view and configure other connections for placing calls to another remote gateway. WAN Backup Setup LAN IP DHCP Setup Client List Use this screen to configure your traffic redirect properties and WAN backup settings. Use this screen to configure LAN TCP/IP settings, enable Any IP and other advanced properties. Use this screen to configure LAN DHCP settings. Use this screen to view current DHCP client information and to always assign an IP address to a MAC address (and host name). Use this screen to partition your LAN interface into subnets. IP Alias 33 Chapter 2 Introducing the Web Configurator P-660R-D Series User's Guide Table 3 Web Configurator Screens Summary (continued) LINK/ICON NAT Advanced Static Route Dynamic DNS Remote MGMT WWW Use this screen to configure IP static routes. Use this screen to set up dynamic DNS.

Use this screen to configure through which interface(s) and from which IP address(es) users can use HTTPS or HTTP to manage the ZyXEL Device. Use this screen to configure through which interface(s) and from which IP address(es) users can use Telnet to manage the ZyXEL Device. Use this screen to configure through which interface(s) and from which IP address(es) users can use FTP to access the ZyXEL Device. Use this screen to configure your ZyXEL Device's settings for Simple Network Management Protocol management. Use this screen to configure through which interface(s) and from which IP address(es) users can send DNS queries to the ZyXEL Device.

Use this screen to change your anti-probing settings. Use this screen to enable UPnP on the ZyXEL Device. General Time Setting Tools Firmware Configuration Restart Diagnostic General DSL Line This screen contains administrative and system-related information and also allows you to change your password. Use this screen to change your ZyXEL Device's time and date. Use this screen to upload firmware to your ZyXEL Device.

Use this screen to backup and restore the configuration or reset the factory defaults to your ZyXEL Device. This screen allows you to reboot the ZyXEL Device without turning the power off. These screens display information to help you identify problems with the ZyXEL Device general connection. These screens display information to help you identify problems with the DSL line. SUB-LINK General Port Forwarding FUNCTION Use this screen to enable NAT. Use this screen to configure servers behind the ZyXEL Device. Telnet FTP SNMP DNS ICMP UPnP Maintenance System 2.4.2 Status Screen The following summarizes how to navigate the web configurator from the Status screen. Some fields or links are not available if you entered the user password in the login password screen (see Figure 4 on page 31).

Not all fields are available on all models. Chapter 2 Introducing the Web Configurator 34 P-660R-D Series User's Guide Figure 8 Status Screen The following table describes the labels shown in the Status screen. Table 4 Status Screen LABEL Refresh Interval DESCRIPTION Select a number of seconds or None from the drop-down list box to refresh all screen statistics automatically at the end of every time interval or to not refresh the screen statistics. Click this button to refresh the status screen statistics. This is the System Name you enter in the Maintenance > System > General screen. It is for identification purposes.



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This is your ZyXEL Device's model name. This is the MAC (Media Access Control) or Ethernet address unique to your ZyXEL Device. This is the ZyNOS Firmware version and the date created. ZyNOS is ZyXEL's proprietary Network Operating System design.

This is the standard that your ZyXEL Device is using. This is the DSL port IP address. This is the DSL port IP subnet mask. This is the IP address of the default gateway, if applicable. This is the Virtual Path Identifier and Virtual Channel Identifier that you entered in the wizard or WAN screen.

This is the ETHERNET port IP address. This is the ETHERNET port IP subnet mask. Apply Device Information Host Name Model Number MAC Address ZyNOS Firmware Version WAN Information DSL Mode IP Address IP Subnet Mask Default Gateway VPI/VCI LAN Information IP Address IP Subnet Mask 35 Chapter 2 Introducing the Web Configurator P-660R-D Series User's Guide Table 4 Status Screen LABEL DHCP System Status System Uptime System Mode CPU Usage This is the total time the ZyXEL Device has been on. This displays whether the ZyXEL Device is functioning as a router or a bridge. This number shows how many kilobytes of the heap memory the ZyXEL Device is using.

Heap memory refers to the memory that is not used by ZyNOS (ZyXEL Network Operating System) and is thus available for running processes like NAT, VPN and the firewall. The bar displays what percent of the ZyXEL Device's heap memory is in use. The bar turns from green to red when the maximum is being approached. This number shows the ZyXEL Device's total heap memory (in kilobytes). The bar displays what percent of the ZyXEL Device's heap memory is in use. The bar turns from green to red when the maximum is being approached. This displays the ZyXEL Device port types. This field displays Down (line is down), Up (line is up or connected) if you're using Ethernet encapsulation and Down (line is down), Up (line is up or connected), Idle (line (ppp) idle), Dial (starting to trigger a call) and Drop (dropping a call) if you're using PPPoE encapsulation. For the LAN ports, this displays the port speed and duplex setting. For the DSL port, it displays the downstream and upstream transmission rate.

Use this screen to view a list of IP addresses and MAC addresses of computers, which are not in the same subnet as the ZyXEL Device. Use this screen to view port status and packet specific statistics. Current Date/Time This field displays your ZyXEL Device's present date and time. DESCRIPTION This is the ETHERNET port DHCP role - Server, Relay or None. Memory Usage Interface Status Interface Status Rate Summary Any IP Table Packet Statistics 2.4.3 Status: Any IP Table Click the Any IP Table hyperlink in the Status screen. The Any IP table shows current readonly information (including the IP address and the MAC address) of all network devices that use the Any IP feature to communicate with the ZyXEL Device. Figure 9 Status: Any IP Table Chapter 2 Introducing the Web Configurator 36 P-660R-D Series User's Guide The following table describes the labels in this screen. Table 5 Status: Any IP Table LABEL # IP Address MAC Address DESCRIPTION This is the index number of the host computer.

This field displays the IP address of the network device. This field displays the MAC (Media Access Control) address of the computer with the displayed IP address. Every Ethernet device has a unique MAC address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:A0:C5:00:00:02. Click Refresh to update this screen.

Refresh 2.4.4 Status: Packet Statistics Click the Packet Statistics hyperlink in the Status screen. Read-only information here includes port status and packet specific statistics. Also provided are "system up time" and "poll interval(s)".

The Poll Interval(s) field is configurable. Not all fields are available on all models Figure 10 Status: Packet Statistics 37 Chapter 2 Introducing the Web Configurator P-660R-D Series User's Guide The following table describes the fields in this screen. Table 6 Status: Packet Statistics LABEL System Monitor System up Time Current Date/Time CPU Usage Memory Usage LAN or WAN Port Statistics Link Status Upstream Speed Node-Link Interface Status This is the elapsed time the system has been up. This field displays your ZyXEL Device's present date and time. This field specifies the percentage of CPU utilization. This field specifies the percentage of memory utilization. This is the WAN or LAN port. This is the status of your WAN link. This is the upstream speed of your ZyXEL Device. This field displays the remote node index number and link type.

Link types are PPPoA, ENET, RFC 1483 and PPPoE. This field displays the type of port. This field displays Down (line is down), Up (line is up or connected) if you're using Ethernet encapsulation and Down (line is down), Up (line is up or connected), Idle (line (ppp) idle), Dial (starting to trigger a call) and Drop (dropping a call) if you're using PPPoE encapsulation. For the WLAN port, it displays the transmission rate when WLAN is enabled or N/A when WLAN is disabled. This field displays the number of packets transmitted on this port. This field displays the number of packets received on this port. This field displays the number of error packets on this port. This field displays the number of bytes transmitted in the last second. This field displays the number of bytes received in the last second. This field displays the elapsed time this port has been up.

This is the number of collisions on this port. Click this button to bring the help screen. Type the time interval for the browser to refresh system statistics. Click this button to apply the new poll interval you entered in the Poll Interval field above. Click this button to halt the refreshing of the system statistics.

DESCRIPTION Downstream Speed This is the downstream speed of your ZyXEL Device. TxPkts RxPkts Errors Tx B/s Rx B/s Up Time Collisions Help Poll Interval(s) Set Interval Stop 2.4.5 Changing Login Password It is highly recommended that you periodically change the password for accessing the ZyXEL Device. If you didn't change the default one after you logged in or you want to change to a new password again, then click Maintenance > System to display the screen as shown next.

See Table 42 on page 123 for detailed field descriptions. Chapter 2 Introducing the Web Configurator 38 P-660R-D Series User's Guide Figure 11 System General 39 Chapter 2 Introducing the Web Configurator P-660R-D Series User's Guide CHAPTER 3 Wizard Setup for Internet Access This chapter provides information on the Wizard Setup screens for Internet access in the web configurator. 3.1 Introduction Use the wizard setup screens to configure your system for Internet access with the information given to you by your ISP. Note: See the advanced menu chapters for background information on these fields.



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3.2 Internet Access Wizard Setup 1 After you enter the admin password to access the web configurator, select Go to Wizard setup and click Apply. Otherwise, click the wizard icon ( ) in the top right corner of the web configurator to display the wizard main screen. Figure 12 Select a Mode 2 Click INTERNET SETUP to configure the system for Internet access. Chapter 3 Wizard Setup for Internet Access 40 P-660R-D Series User's Guide Figure 13 Wizard: Welcome 3 The wizard attempts to detect which WAN connection type you are using.

If the wizard detects your connection type and your ISP uses PPPoE or PPPoA, go to Section 3.2.1 on page 42. The screen varies depending on the connection type you use. If the wizard does not detect a connection type and the following screen appears (see Figure 14 on page 41), check your hardware connections and click Restart the Internet Setup Wizard to have the ZyXEL Device detect your connection again. Figure 14 Auto Detection: No DSL Connection If the wizard still cannot detect a connection type and the following screen appears (see Figure 15 on page 42), click Next and refer to Section 3.2.2 on page 42 on how to configure the ZyXEL Device for Internet access manually. 41 Chapter 3 Wizard Setup for Internet Access P-660R-D Series User's Guide Figure 15 Auto Detection: Failed 3.2.

1 Automatic Detection 1 If you have a PPPoE or PPPoA connection, a screen displays prompting you to enter your Internet account information. Enter the username, password and/or service name exactly as provided. 2 Click Next to confirm your settings and test your connection. Figure 16 Auto-Detection: PPPoE 3.2.

2 Manual Configuration 1 If the ZyXEL Device fails to detect your DSL connection type, enter the Internet access information given to you by your ISP exactly in the wizard screen. If not given, leave the fields set to the default. Chapter 3 Wizard Setup for Internet Access 42 P-660R-D Series User's Guide Figure 17 Internet Access Wizard Setup: ISP Parameters The following table describes the fields in this screen. Table 7 Internet Access Wizard Setup: ISP Parameters LABEL Mode Encapsulation DESCRIPTION From the Mode drop-down list box, select Routing (default) if your ISP allows multiple computers to share an Internet account. Otherwise select Bridge.

Select the encapsulation type your ISP uses from the Encapsulation drop-down list box. Choices vary depending on what you select in the Mode field. If you select Bridge in the Mode field, select either PPPoA or RFC 1483. If you select Routing in the Mode field, select PPPoA, RFC 1483, ENET ENCAP or PPPoE. Select the multiplexing method used by your ISP from the Multiplex drop-down list box either VC-based or LLC-based. VPI (Virtual Path Identifier) and VCI (Virtual Channel Identifier) define a virtual circuit. Refer to the appendix for more information. Enter the VPI assigned to you. This field may already be configured. Enter the VCI assigned to you.

This field may already be configured. Click Back to go back to the previous screen. Click Next to continue to the next wizard screen. The next wizard screen you see depends on what protocol you chose above. Click Exit to close the wizard screen without saving your changes. Multiplexing Virtual Circuit ID VPI VCI Back Next Exit 2 The next wizard screen varies depending on what mode and encapsulation type you use. All screens shown are with routing mode.

Configure the fields and click Next to continue. 43 Chapter 3 Wizard Setup for Internet Access P-660R-D Series User's Guide Figure 18 Internet Connection with PPPoE The following table describes the fields in this screen. Table 8 LABEL User Name Internet Connection with PPPoE DESCRIPTION Enter the user name exactly as your ISP assigned.

If assigned a name in the form user@domain where domain identifies a service name, then enter both components exactly as given. Enter the password associated with the user name above. Type the name of your PPPoE service here. Click Back to go back to the previous wizard screen. Click Apply to save your changes back to the ZyXEL Device.

Click Exit to close the wizard screen without saving your changes. Password Service Name Back Apply Exit Figure 19 Internet Connection with RFC 1483 Chapter 3 Wizard Setup for Internet Access 44 P-660R-D Series User's Guide The following table describes the fields in this screen. Table 9 Internet Connection with RFC 1483 LABEL IP Address Back Next Exit DESCRIPTION This field is available if you select Routing in the Mode field. Type your ISP assigned IP address in this field. Click Back to go back to the previous wizard screen.

Click Next to continue to the next wizard screen. Click Exit to close the wizard screen without saving your changes. Figure 20 Internet Connection with ENET ENCAP The following table describes the fields in this screen. Table 10 Internet Connection with ENET ENCAP LABEL Obtain an IP Address Automatically Static IP Address IP Address Subnet Mask Gateway IP address First DNS Server DESCRIPTION A static IP address is a fixed IP that your ISP gives you. A dynamic IP address is not fixed; the ISP assigns you a different one each time you connect to the Internet. Select Obtain an IP Address Automatically if you have a dynamic IP address. Select Static IP Address if your ISP gives you a fixed IP address. Enter your ISP assigned IP address. Enter a subnet mask in dotted decimal notation. Refer to the appendices to calculate a subnet mask If you are implementing subnetting.

You must specify a gateway IP address (supplied by your ISP) when you use ENET ENCAP in the Encapsulation field in the previous screen. Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask. 45 Chapter 3 Wizard Setup for Internet Access P-660R-D Series User's Guide Table 10 Internet Connection with ENET ENCAP (continued) LABEL Second DNS Server Back Apply Exit DESCRIPTION As above. Click Back to go back to the previous wizard screen. Click Apply to save your changes back to the ZyXEL Device. Click Exit to close the wizard screen without saving your changes. Figure 21 Internet Connection with PPPoA The following table describes the fields in this screen. Table 11 Internet Connection with PPPoA LABEL User Name Password Back Apply Exit DESCRIPTION Enter the login name that your ISP gives you. Enter the password associated with the user name above.

Click Back to go back to the previous wizard screen. Click Apply to save your changes back to the ZyXEL Device. Click Exit to close the wizard screen without saving your changes. · If the user name and/or password you entered for PPPoE or PPPoA connection are not correct, the screen displays as shown next. Click Back to Username and Password setup to go back to the screen where you can modify them.

Chapter 3 Wizard Setup for Internet Access 46 P-660R-D Series User's Guide Figure 22 Connection Test Failed-1 · If the following screen displays, check if your account is activated or click Restart the Internet Setup Wizard to verify your Internet access settings.



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Figure 23 Connection Test Failed-2. When you are finished with the Internet Setup Wizard the following screen displays your configuration details. Click Finish to exit the wizard. Figure 24 Internet Setup Wizard Finished 47 Chapter 3 Wizard Setup for Internet Access P-660R-D Series User's Guide CHAPTER 4 WAN Setup This chapter describes how to configure WAN settings.

4.1 WAN Overview A WAN (Wide Area Network) is an outside connection to another network or the Internet. 4.1.1 Encapsulation Be sure to use the encapsulation method required by your ISP. The ZyXEL Device supports the following methods. 4.1.1.1 ENET ENCAP The MAC Encapsulated Routing Link Protocol (ENET ENCAP) is only implemented with the IP network protocol.

IP packets are routed between the Ethernet interface and the WAN interface and then formatted so that they can be understood in a bridged environment. For instance, it encapsulates routed Ethernet frames into bridged ATM cells. ENET ENCAP requires that you specify a gateway IP address in the ENET ENCAP Gateway field in the second wizard screen. You can get this information from your ISP. 4.1.1.2 PPP over Ethernet PPPoE (Point-to-Point Protocol over Ethernet) provides access control and billing functionality in a manner similar to dial-up services using PPP. PPPoE is an IETF standard (RFC 2516) specifying how a personal computer (PC) interacts with a broadband modem (DSL, cable, wireless, etc.) connection.

For the service provider, PPPoE offers an access and authentication method that works with existing access control systems (for example RADIUS). One of the benefits of PPPoE is the ability to let you access one of multiple network services, a function known as dynamic service selection. This enables the service provider to easily create and offer new IP services for individuals. Operationally, PPPoE saves significant effort for both you and the ISP or carrier, as it requires no specific configuration of the broadband modem at the customer site. Chapter 4 WAN Setup 48 P-660R-D Series User's Guide By implementing PPPoE directly on the ZyXEL Device (rather than individual computers), the computers on the LAN do not need PPPoE software installed, since the ZyXEL Device does that part of the task.

Furthermore, with NAT, all of the LANs' computers will have access. 4.1.1.3 PPPoA PPPoA stands for Point to Point Protocol over ATM Adaptation Layer 5 (AAL5).

A PPPoA connection functions like a dial-up Internet connection. The ZyXEL Device encapsulates the PPP session based on RFC1483 and sends it through an ATM PVC (Permanent Virtual Circuit) to the Internet Service Provider's (ISP) DSLAM (digital access multiplexer). Please refer to RFC 2364 for more information on PPPoA. Refer to RFC 1661 for more information on PPP. 4.1.1.4 RFC 1483 RFC 1483 describes two methods for Multiprotocol Encapsulation over ATM Adaptation Layer 5 (AAL5). The first method allows multiplexing of multiple protocols over a single ATM virtual circuit (LLC-based multiplexing) and the second method assumes that each protocol is carried over a separate ATM virtual circuit (VC-based multiplexing). Please refer to the RFC for more detailed information.

4.1.2 Multiplexing There are two conventions to identify what protocols the virtual circuit (VC) is carrying. Be sure to use the multiplexing method required by your ISP. 4.1.2.1 VC-based Multiplexing In this case, by prior mutual agreement, each protocol is assigned to a specific virtual circuit; for example, VCI carries IP, etc. VC-based multiplexing may be dominant in environments where dynamic creation of large numbers of ATM VCs is fast and economical. 4.1.2.2 LLC-based Multiplexing In this case one VC carries multiple protocols with protocol identifying information being contained in each packet header. Despite the extra bandwidth and processing overhead, this method may be advantageous if it is not practical to have a separate VC for each carried protocol, for example, if charging heavily depends on the number of simultaneous VCs. 4.

1.3 Encapsulation and Multiplexing Scenarios For Internet access you should use the encapsulation and multiplexing methods used by your ISP. Consult your telephone company for information on encapsulation and multiplexing methods for LAN-to-LAN applications, for example between a branch office and corporate headquarters. There must be prior agreement on encapsulation and multiplexing methods 49 Chapter 4 WAN Setup P-660R-D Series User's Guide because they cannot be automatically determined. What method(s) you use also depends on how many VCs you have and how many different network protocols you need.

The extra overhead that ENET ENCAP encapsulation entails makes it a poor choice in a LAN-to-LAN application. Here are some examples of more suitable combinations in such an application. 4.1.3.1 Scenario 1: One VC, Multiple Protocols PPPoA (RFC-2364) encapsulation with VC-based multiplexing is the best combination because no extra protocol identifying headers are needed. The PPP protocol already contains this information. 4.1.3.

2 Scenario 2: One VC, One Protocol (IP) Selecting RFC-1483 encapsulation with VC-based multiplexing requires the least amount of overhead (0 octets). However, if there is a potential need for multiple protocol support in the future, it may be safer to select PPPoA encapsulation instead of RFC-1483, so you do not need to reconfigure either computer later. 4.1.3.3 Scenario 3: Multiple VCs If you have an equal number (or more) of VCs than the number of protocols, then select RFC1483 encapsulation and VC-based multiplexing. 4.1.4 VPI and VCI Be sure to use the correct Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers assigned to you. The valid range for the VPI is 0 to 255 and for the VCI is 32 to 65535 (0 to 31 is reserved for local management of ATM traffic).

Please see the appendix for more information. 4.1.5 IP Address Assignment A static IP is a fixed IP that your ISP gives you. A dynamic IP is not fixed; the ISP assigns you a different one each time.

The Single User Account feature can be enabled or disabled if you have either a dynamic or static IP. However the encapsulation method assigned influences your choices for IP address and ENET ENCAP gateway. 4.1.5.

1 IP Assignment with PPPoA or PPPoE Encapsulation If you have a dynamic IP, then the IP Address and ENET ENCAP Gateway fields are not applicable (N/A). If you have a static IP, then you only need to fill in the IP Address field and not the ENET ENCAP Gateway field. 4.1.5.2 IP Assignment with RFC 1483 Encapsulation In this case the IP Address Assignment must be static with the same requirements for the IP Address and ENET ENCAP Gateway fields as stated above. Chapter 4 WAN Setup 50 P-660R-D Series User's Guide 4.1.5.3 IP Assignment with ENET ENCAP Encapsulation In this case you can have either a static or dynamic IP.

For a static IP you must fill in all the IP Address and ENET ENCAP Gateway fields as supplied by your ISP.



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