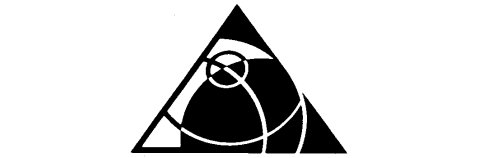
POWERLINK

QUICK START MANUAL V2.8



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This equipment has been tested and found to comply with the limits for class B digital device, suitable for home or office use, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in an industrial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning 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 receiver.
- ? Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ? Consult a dealer or an experienced radio / TV technician for help.

CAUTION: The user that makes changes or modifications to this product without the approval of Astrocom Corporation that cause this product to not meet part 15 of the FCC rules could void the user's authority to operate this product.

Repair service or warranty information may be obtained by contacting Astrocom Corporation at:

3500 Holly Lane North
Suite 60
Minneapolis, MN 55447

(763) 694-9949 or (800) 669-6242

World Wide Web Internet: www.astrocorp.com

No user serviceable parts are contained in the PowerLink. Please contact Astrocom for repair or warranty information.

Operating Characteristics

Input Power:	120 VAC, 50-60 Hz.,	
	PowerLink I	0.1 Amps
	PowerLink IV	0.15 Amps
Operating Temperature:	PowerLink I	0 to +40^{o} C
	PowerLink IV	0 to +35^{o} C
Storage Temperature:	-20 to +70^{o} C	
Humidity:	20 to 90%, non-condensing	

Warranty and Customer Support

Standard Warranty

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(763) 694-9949 or 1-800-669-6242

send e-mail to: support@astrocorp.com

or visit our website at: http://www.astrocorp.com

INTRODUCTION

This quick start manual is intended as a guide to setting up the PowerLink for users who are familiar with networks and do not require detailed instructions. For more comprehensive directions, see the help screens incorporated on the PowerLink web pages.

ESTABLISHING COMMUNICATIONS WITH THE POWERLINK.

WAYS TO CONNECT TO THE POWERLINK

Communication with the PowerLink can be established through the Control port or the Ethernet port as described below.

Control Port Connection
The control port is an RS-232 female DB9 connector configured as a DCE (data communications equipment) device. Connect a terminal to the control port using a standard 9-pin serial cable wired straight through. If using a PC as the terminal, the recommended terminal emulation is a VT100 terminal emulator running at 57,600 baud, 8 data bits, 1 stop bit, no parity, and no flow control. The control port menu is plain ASCII text.

Ethernet Port Connection
The PowerLink is shipped from the factory with an IP address of 10.218.217.202 and a subnet mask of 255.255.255.252. (Valid IP addresses in this network are 10.218.217.202 and 201). Alternatively, you may connect to the serial port and change the LAN IP address by selecting menu item 2 and entering an IP address and subnet mask.

Local connection to the PowerLink Ethernet port can be accomplished over the LAN using a hub or switch, or you may connect the PowerLink directly to a PC from the PC's Ethernet port to the PowerLink Ethernet port. For a direct connection, you must use a **crossover cable** for the PowerLink I and a standard cable for the PowerLink IV.

The PC being used and the PowerLink must be in the same IP network, (i.e. their IP address and subnet mask must be set to be in the same network).

If you choose to initially connect to the PowerLink using the factory default IP settings, you must change the settings of your PC so that it is in the same IP network as the PowerLink (required PC settings are 10.218.217.201 and 255.255.255.252).

Alternatively, you may change the PowerLink's IP address to your LAN's IP network, using the control port, menu item 2, and then access the PowerLink over the Ethernet port.

Configuration of the PowerLink over the Ethernet port can be accomplished through telnet or a web browser.

BASIC POWERLINK CONFIGURATION

It is suggested that you review the network examples and their accompanying worksheets, shown in the back of this manual, prior to configuring your PowerLink. Using the example that most closely resembles your network you should then complete the worksheet provided.

Once you have completed the worksheet for your network and established communication with the PowerLink, you are ready to configure the PowerLink.

Factory Default Settings

Default configuration settings from the factory are:

Supervisor Login name	**root** (Note, this is permanent and may not be changed)
Supervisor Password	**PWRLNK**
User Login name	**user**
User Password	**astro**
IP Address	10.218.217.202
Subnet Mask	255.255.255.252
Serial port	57,600 baud, 8 data bits, one stop bit, no parity, no flow ctrl
Recovery	Disabled
Load Balancing	Disabled

Login

Once communications is established with the PowerLink (see "Establishing Communications with the PowerLink" pg.6), you must login using the correct ID and password. There are 2 levels of login, "user" and "supervisor". You must be supervisor in order to make any configuration changes. The PowerLink is shipped with a default supervisor login name of "**root"** and a password of "**PWRLNK"**.

To login, enter "**root**" at the login prompt and enter "**PWRLNK"** at the password prompt. Note: name and password are case sensitive.

Required inputs

PowerLink must be configured with a number of parameters. Minimally, these are:

- Ethernet LAN port IP Address with subnet mask (this will be the gateway address for all devices on the LAN or for a firewall behind the PowerLink)
- WAN interface configuration information:
  1. IP address of each router going to the WAN
  2. IP address for the PowerLink port corresponding to each router.
  3. Subnet mask for each router IP network.
  4. Bandwidth of each line going to the WAN
- IP addresses to test each WAN line should be provided
- Port forwarding information for any servers on the LAN.
- Recovery feature should be enabled.
- Session Load Balancing feature should be enabled

Setup Wizard Using the Control Port or Telnet

Once you have established communications with the PowerLink via the Control Port or telnet, use the Setup Wizard for basic setup of the PowerLink.
Note that when using Telnet to configure the PowerLink, the configuration file is maintained locally and must be sent to the PowerLink using the Activate Changes function ("A") in the Main Menu. For local serial port operation, changes are activated in real time as you make them. In both cases you must execute the "Save Current Configuration" function in the System Utilities Menu to permanently save changes. The PowerLink will revert back to its previous configuration file on reset or power cycling if the changes are not saved.

From the Login menu:

Basic Control Port or Telnet Setup

1 Type default user name "***root***" press enter.
2 Type default password "***PWRLNK***" press enter. You should get the PowerLink Main Menu.
3 Type "**S**". Setup PowerLink.
4 Continue with setup – enter "***y***".
5 Insert IP address for the Ethernet card (PowerLink LAN IP) – enter address in www.xxx.yyy.zzz format. (This will be the gateway address for your firewall or LAN devices)
6 Insert network subnet mask for the Ethernet card – enter mask in www.xxx.yyy.zzz format.
7 Insert number of routers – enter "***1 – 16***".
8 Enter PowerLink WAN IP address for WAN 1. This must be in the same network as router 1.
9 Enter network mask for channel 1.
10 Enter bandwidth (in kilobits per second) for WAN 1.
11 Enter IP address of router 1. (Note: If your WAN connection is via a bridge and not a router, enter the gateway IP address of the ISP.)
12 Enter IP addresses for testing line 1.
13 Enter "y" or "n" to use pings to test line
14 Enter "y" or "n" to use TCP to test line.
15 Enter a port number for TCP, if selected.
16 Repeat steps 8 through 15 for all routers being configured.
17 Select "y" or "n" to activate Session Load Balancing.
18 The message *"Current Configuration will be saved and used at boot time. Continue to save this configuration?"* will be displayed. If you select "y", the permanent configuration file will be modified to the new settings. If you select "n", the new configuration will be active but the PowerLink will revert back to the previous settings when power is cycled or the PowerLink is reset. You may permanently save the configuration later using the "Save Current Configuration" in the Utilities Menu.
19 Done will be displayed.

PowerLink Control Port / Telnet Description:

```
****************************************
*  PowerLink Plus Main Menu        *
****************************************

S     Setup PowerLink
0     Select Operating Mode Menu
1     Reports Menu
2     Configure LAN Ethernet Card
3     Configure WAN Lines Menu
4     Configure NAT Menu
5     Configure Port Forwarding
6     Configure Static Routes
7     Hardware Failover
8     Configure DNS
9     Configure Login Menu
U     System Utilities Menu
A*    Activate Changes
Q*    Quit Telnet
K     Set Software Key
R     Reset System

ESC  Go to the previous menu
```

* Note: These functions are only available in Telnet

S Setup PowerLink — Takes you quickly to the configuration portion of (2) "Configure LAN Ethernet Card" and (3) "Configure WAN lines".

0 Select Operating Mode Menu — Select Intelligent or Round Robin Load Balancing
Enable or Disable Session Load Balancing
Enable or Disable Fail-Over Redundancy
Enable or Disable Web Traffic Bonding
Enable or Disable FTP Traffic Bonding

1 Reports Menu — Displays current configuration
Displays network statistics

2 Configure LAN Ethernet Card — Setup LAN side IP address and netmask.

3 Configure WAN Lines — Setup WAN Line Configurations

4 Configure NAT Menu

TCP, TCP/IP, UDP, IPSEC, PPTP - Allows for changing session time-outs to better accommodate unusual sessions (such as instant messaging) that may be expiring prematurely.

5 Configure Port Forwarding and VPN

(See Advance Feature Configuration for a more detailed explanation)

VPN - If you forward ports 500 or 1723, either as an individual port or in a range of ports, you will be asked if you want to forward IPSEC or PPTP respectively.

Basic - Forwards all incoming traffic received on the PowerLink's base WAN IP addresses (those inserted as WAN lines) with a specified port to a specified LAN IP. (For example, all port 80 traffic to a web server)

Advanced Single - Forwards incoming traffic for a single specified WAN IP and range of ports to a specified LAN IP. The WAN IP can be one of the PowerLink™'s existing WAN lines or a new valid IP within one of the WAN networks. A port range can be a single port number or a range of ports.
(e.g. ###:####).
Allows for multiple servers of the same type on the LAN by forwarding single or multiple ports from a specific IP address to a single server. (For example, port 80 traffic received on IP A to web server 1 and port 80 traffic received on IP B to web server 2.)

Advanced Multiple - Forwards incoming traffic for a specified WAN IP in each of the WAN networks and range of ports to a specified LAN IP. The WAN IPs can be existing PowerLink™ WAN lines or new valid IPs within the WAN networks. A port range can be a single port number or a range of ports (e.g. ####:####).

6 Configure Static Routes Allows for the setup of static routes that will bypass the load balancing function of PowerLink to control the route of the traffic.

Basic Static Routes - will send all traffic destined for a specified IP address or network of addresses over the specified WAN link. The source IP address will be the PowerLink's base WAN IP address. Fixed static routes are not redundant (they will not failover if the link goes down). Non fixed routes will failover to the next available link if the first one goes down.

Advanced Static Routes - allows you to specify the LAN IP address or network of addresses of traffic that is to be sent over the selected WAN link. You can specify any WAN IP address that is in the network of the WAN gateway (it doesn't have to be the PowerLink's base address). Additionally, you can specify a hostname for the WAN link. The PowerLink will look in its DNS table to resolve the WAN IP address. If a link fails, the PowerLink will take the next available WAN link for that hostname. If FAILBACK is selected, the PowerLink will revert back to the first line if it comes back up.

8 Configure DNS Allows PowerLink to be the Authoritative DNS Server. For complete setup and modification of the DNS Server, you must use the WEB Page setup. For a white paper on DNS, go to www.astrocorp.com/whitepapers.html

9 Configure Login Menu Allows for setting/changing User ID, Password and Supervisor Password.

U System Utilities Menu

- **Load Configuration File** – Replaces the current configuration with the saved file.
- **Save Current Configuration** – Saves current configuration to be used at boot time.
- **Download Configuration File** – Downloads a configuration file via ftp server.
- **Upload Configuration File** – Saves the current configuration file to the ftp server.
- **Restore system defaults** – Resets the configuration to the default factory settings.
- **Update Software** – Used to download a new software image of the PowerLink.
- **Network Services** – Allows for:
  1. Setup of email alerts/notification
  2. Web Interface access enable/disable
  3. Telnet Interface access enable/disable
  4. Display current network services state
- **Ping Utility** – Easy access to a ping test.

R Reset System Performs a software reset of the PowerLink.

Basic Setup Using the Web Page

Note that the Basic Setup and Advanced Setup pages have context relevant help screens available by simply clicking on the "Help" link associated with the feature.

Once you have established communications with the PowerLink over the Ethernet port (see "Establishing Communications with the PowerLink" pg.6), you can configure the PowerLink using your web browser as follows:

Basic Web Page Setup
Note that if you change the IP address of the port you are using for Web access, you will have to re-establish your connection to the PowerLink after you activate changes.

1. On the login page, enter the Username and Password (default is "root" and "PWRLNK").
2. In the Basic Setup box, click on "LAN Port".
3. Enter the IP address and Network mask for the LAN port of the PowerLink. This will be the gateway address for your LAN devices or firewall.
4. Enable or disable "Save Changes" and click on "Activate".
5. In the Basic Setup box, click on "WAN Lines"
6. Enter the information requested for each WAN line.
7. Enable or disable "Save Changes" and click on "Activate".
8. In the Basic Setup box, click on "Services".
9. Select and configure the desired services and enter the required information.
10. Enable or disable "Save Changes" and click on "Activate".

Advanced feature setup is accomplished by clicking on the desired feature in the Advanced Setup box and following the directions on the setup page.

ADVANCED FEATURE DESCRIPTIONS

PORT FORWARDING

Incoming traffic that is destined for a server (i.e. mail server, web server, ftp server etc.) will be directed to one of the PowerLink's WAN IP addresses and will contain a specific port number that designates the server type. For example, web server traffic will have port 80 in the packet. It is necessary that you configure the PowerLink to forward any server traffic by designating the port number and the server's LAN IP address. The PowerLink will then forward all traffic to the appropriate destination. It is necessary that you configure all servers on your network with static IP addresses since they must not change. In the following examples, where a single server is shown, it is possible to have multiple servers each performing different functions. i.e. A web server, a mail server and an FTP server.

If you have multiple servers of the same type, i.e. multiple web servers, you must use advanced port forwarding to select specific PowerLink WAN IP to server LAN IP combinations.

Note that the PowerLink by default uses ports 23 for telnet, 80 for web server access. If these ports are forwarded, you must change PowerLink's settings for these services or you will not be able to access the PowerLink via telnet or web. Also note that PowerLink uses ports 56801 through 65555 for mail, ftp, ns lookups and masquerading. ***These ports must not be forwarded.***

STANDARD PORT FORWARDING

Standard port forwarding is configured by designating the port number to be forwarded and the LAN IP address of the server that the traffic is to be forwarded to. This results in all WAN traffic addressed to the PowerLink's base WAN IP address with the designated port number, being forwarded to that server. You must use Advanced Port Forwarding if you have multiple servers for a given function on your LAN since the traffic from all WAN lines for the particular function, i.e. web traffic on port 80, will be directed to only one server.

Note: Since Standard Port Forwarding only forwards traffic addressed to the base PowerLink WAN address, if you have multiple WAN IP addresses for a given line, you must use Advanced Port Forwarding to designate IPs in the network other than PowerLink's base address. Also, if you wish to forward a range of ports you should use Advanced Port Forwarding.

ADVANCED SINGLE PORT FORWARDING

Advanced single port forwarding allows you to designate WAN IP, LAN server IP address and port number ranges to forward traffic between. For example, all port 80 traffic received on a given IP address could be forwarded to web server number one and all port 80 traffic received on a different IP address could be forwarded to web server number two. Note that the WAN IP can be any valid IP in the subnet of the WAN lines.

ADVANCED MULTIPLE PORT FORWARDING

Advanced multiple port forwarding allows you to designate multiple WAN IP addresses and a range of ports to be forwarded to a LAN IP.

VPN

If you have VPN servers, you must forward the port (500 for IPSEC and 1723 for PPTP) and enable the protocol forwarding also. If you forward one of these ports you will be asked if you want to enable the protocol forwarding.

If you wish to establish a tunnel from the LAN side of the PowerLink you must set up a static route to ensure that outbound tunnel traffic is not load balanced. If you use an IP address for the static route, the tunnel will not fail over and loss of the link will cause the tunnel to be lost. To get tunnel failover you must use a hostname for the route (vpn.astrocorp.com). This will allow the VPN server to re-establish the tunnel, on line failure, using the next available line. You must check the "Redundant only" box for the load balanced host record in the DNS configuration so that only one IP address is advertised for that host name. On link failure the PowerLink will advertise the next available address.

If the tunnels are to be established from remote servers or clients, you must select "Failback" in the advanced static route entry and "Redundant only" in the load balanced

host record. The Failback will cause the outbound traffic to return to the first available address for the host name. The Redundant only will cause the DNS to advertise only the first available address for the host name. This will result in both ends of the tunnel to be targeting the same IP address.

NAT

NAT menu is used to set the expiration timeout for inactive sessions. If a given session has no incoming or outgoing traffic for the length of the timeout, the session is dropped.

STATIC ROUTES

Basic Static Routes

Static routes are used to ensure that outbound traffic destined for the specified IP address is not load balanced but sent over a single route with the source address always the same. One use is to accommodate cases where the destination includes the source IP address in its validation algorithm (i.e. off site mail server). Static Routes may be fixed or non-fixed. A fixed static route will result in all traffic destined for the defined IP address being sent over the specified router and will not be redirected if that link goes down (no redundancy). A non-fixed static route will result in the PowerLink designating which router to send all traffic destined for the designated IP address. If the selected link fails, the PowerLink will change the route designation and after a revalidation process the session will take place over the new route (redundancy).

Note that Basic Static routes can only designate PowerLink's base WAN IP address as the source address.

Advanced Static Routes

An advanced static route gives you more control over the source LAN and WAN IP address pairs selected. With an advanced static route you can select any WAN IP in the selected network for outgoing traffic with a specified destination IP address or network of IP addresses. This varies from a basic static route where you can only select PowerLink's base IP address. You can also specify the LAN source of the traffic (an IP address or a network of IP addresses on the LAN). In addition to using the WAN IP in the network of the gateway as the source address, you can use a hostname. The PowerLink™ will then lookup the IP address in its DNS tables. If a specific WAN IP address is used, the traffic will not failover if that line goes down. If a hostname is used, the next WAN IP address in the PowerLink™'s DNS table for that host will be used. When the first line comes back up, new sessions will be started on the first entry. This is useful if you want to specify a certain link to carry most of the traffic but want additional lines as backup if the main line goes down. If "Failback" is selected in the static route for the hostname entry, all sessions, including current ones, will return to the first entry. This is useful for VPN tunnels, where both ends are using a hostname to establish the tunnel and the IP address must be forced to a known state. In this case the DNS load balanced host record (i.e. vpn.myco.com) must have "Redundant only" selected so that it will only advertise the first address available in the table of addresses for that name and will also fail back when a line returns to service. This ensures that both ends of the tunnel are targeting the same IP address.

EMAIL ALERTS

The PowerLink can be configured to send an email notification to a designated recipient if a WAN links status changes. The alert will be sent when a link goes down and again when the link is restored to service. When using the serial port, in addition to configuring the PowerLink via the System Utilities – Network Services – Set Email Alerts command, you must also do a Configure DNS command with the IP address of the DNS server to be used to look up the address of the recipient. When using the WEB page for configuration, you can configure and enable/disable the email alerts via the Services menu.

AUTHORITATIVE DNS

The Authoritative DNS Server function may be purchased as a feature on the PowerLink. Having the Authoritative DNS server resident on the PowerLink enables immediate recognition of a WAN line failure and the removal of the failed line from the DNS Name Server Record that is transmitted in response to a caching server's request. This prevents the Domain Name System from advertising a malfunctioning IP address to a query and the resultant lack of access to a server. Having the DNS authority resident on the PowerLink also allows automatic failover for VPN tunnels on a WAN failure and optionally automatic fail back when the link comes back up. To review whitepapers on DNS and VPN failover go to Astrocom's web site at www.astrocorp.com .
To configure DNS, go to the PowerLink web page and select "Authoritative DNS" under the Advanced Setup category. Follow the directions on the web page.

HARDWARE FAILOVER

This feature allows a failover scheme with two PowerLink™s. In normal operation the Primary PowerLink™ is active and the Secondary is idle. The two devices communicate using the Idle IP addresses, which should be unique addresses not in any local networks. If the Primary goes down the Secondary becomes active. If the Primary comes back up it will stay idle as long as the Secondary is active.

The PowerLink™ that is configured to be the **Primary** uses the **Idle IP** addresses inserted in the **Primary PowerLink™ Settings** section to communicate with the Secondary. The **Secondary** will use the **Idle IP** addresses inserted in the **Secondary PowerLink™ Settings** section to communicate with the Primary. These menus are identical on both devices, so either device may be configured as the Primary or Secondary and the ***same Idle IP addresses*** "***must"*** be entered in both devices.

If the **Synchronize To Secondary When Saving Configuration** box is checked, the ACTIVE PowerLink™ will send its current configuration to the IDLE PowerLink™ every time changes are activated. If "Save Configuration" is selected on the ACTIVE PowerLink™, the configuration will also be saved to flash on the IDLE PowerLink™. The **Detection Interval** sets how often the PowerLink™ sends "keep-alive" packets. If the ACTIVE PowerLink™ does not respond to a keep-alive query after the specified number of **timeouts**, the IDLE device will become active and will send e-mail alerts, if enabled. The ACTIVE PowerLink™ monitors the status of the IDLE PowerLink and sends e-mail alerts when the IDLE PowerLink™ status changes.

ADVANCED FEATURE CONFIGURATION

Control Port or Telnet Advanced Feature Setup

Port Forwarding & VPN
If you have a server on your LAN, you must set up port forwarding, as follows:
Note that if the server is behind a firewall, the IP address of the server must be the address that the firewall listens on for server traffic.

1 From the Main Menu, type "**5**", Configure Port Forwarding.
2 Type "**A**", Add New Entry.
3 Enter the port number.
4 Enter the IP address of the server. (Note: The server must be assigned a static fixed IP address.)
5 If you are forwarding port 500 or 1723 respond to forwarding IPsec or PPTP.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a "Save Current Configuration" command in the System Utilities Menu to permanently save the new configuration.

Advanced Port Forwarding
Advanced Port Forwarding is used where there are duplicate server types on the LAN (i.e two web servers). There are 2 types of Advanced Port Forwarding, single and multiple. Single is used where a single WAN IP and a port or range of ports is directed to one of the servers on the LAN. Multiple is used where multiple WAN IP's and ports are directed to a server on the LAN.
Note that if the server is behind a firewall, the IP address of the server must be the address that the firewall listens on for server traffic.

1. From the Main Menu, type "**5**", Configure Port Forwarding.
2. Type "**C**", Configure Advanced Port Forwarding.
3. Type "S" or "M".
4. Enter the WAN IP addresses for the networks associated with each WAN link
5. Enter the port or range of ports to be forwarded.
6. Enter the IP address of the server. (Note: The server must be assigned a static fixed IP address.)
7. If you are forwarding port 500 or 1723 respond to forwarding IPsec or PPTP.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a "Save Current Configuration" command in the System Utilities Menu to permanently save the new configuration.

Static Routes

Basic Static Routes
1. From the Main Menu, type "6", Configure Static Routes.

2. Type "A" Add Static Route.
3. Enter the destination IP address
4. Enter the mask for the IP address, (press the Enter key for the default).
5. Enter "y" to designate this as a fixed static route or "n" if it is not fixed.
6. If you are designating this as a fixed static route, enter the router's IP address.
7. Message "Changes activated" will display.
8. Press any key to continue.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a "Save Current Configuration" command in the System Utilities Menu to permanently save the new configuration.

Advanced Static Routes

1. From the Main Menu, type "6", Configure Static Routes.
2. Type "C", Configure Advanced Static Routes.
3. Type "A", Add Advanced Static Routes
4. Enter the Destination IP address
5. Enter the Destination Network mask
6. Enter the LAN Source IP address
7. Enter the LAN Source Network mask
8. Enter Source WAN IP address (WAN address of PowerLink) or
   WAN Hostname (i.e. name.com) (This name must be entered in the PowerLink's DNS table in order for it to be resolved into an address.
9. Press any key to continue.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a "Save Current Configuration" command in the System Utilities Menu to permanently save the new configuration.

Email Alerts

1. From the Main Menu, type "U", System Utilities Menu.
2. Type "N", Network Services.
3. Type "A", Set Email Alerts.
4. Select "y" to enable Email Alerts.
5. Enter the SMTP Server Name.
6. Enter the SMTP port number. (Default is 25)
7. Enter the recipient's Email address (multiple recipients to the same server may be entered by separating them with a comma.
8. Enter your SMTP Domain name.
9. Press any key to continue.

You must configure the PowerLink with an IP address for the DNS resolver using the Configure DNS command from the Main Menu before Email alert will work. This is to enable the PowerLink to do a DNS lookup of the IP address of the recipient.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a "Save Current Configuration" command in the System Utilities Menu to permanently save the new configuration.

Configure DNS for Email alerts

1. From the Main Menu, type “8”, Configure DNS.
2. Type “C”, Set DNS Resolver.
3. Enter the IP address of the DNS server that will be accessed to resolve names.
4. Press any key to continue.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a “Save Current Configuration” command in the System Utilities Menu to permanently save the new configuration.

Configure DNS Authoritative Server

Configuration of the DNS Authoritative Server must be done using the web interface. Select “Authoritative DNS” under Advanced Setup on the PowerLink web page.
You can enable or disable the authoritative server using menu item “8” (Configure DNS) and “S” (Enable / Disable Authoritative Name Server).

Configure Hardware Failover

1. Configure the Primary PowerLink™ in the normal way with the Secondary disconnected from the network.
2. On the Primary’s Main Menu, select “7”, Hardware Failover.
3. Select “Configure Hardware Failover”
4. Make this box the Primary with Failover enabled.
5. Insert the Idle IP addresses for the Primary and Secondary. i.e. 100.10.10.1 and 100.10.10.2.
6. Select “Synchronize” in the Primary.
7. Reset the Secondary PowerLink™ to the factory default configuration, select the Hardware Failover feature, making this box the Secondary, and insert the Idle IP addresses for the Primary and Secondary. i.e. 100.10.10.1 and 100.10.10.2.
8. Connect the Secondary to your network. The Secondary will now accept the configuration from the Primary.
9. Activate or Save your configuration on the Primary. This will trigger the synchronization between the two devices.
   As long as the synchronization is ON, the ACTIVE PowerLink™ will activate/save its current configuration to the IDLE PowerLink™ whenever changes are activated.

Note: These changes will take effect immediately but will be lost if the PowerLink is reset or if power is cycled. You must do a “Save Current Configuration” command in the System Utilities Menu to permanently save the new configuration.

Web Page Advanced Feature Setup

Port Forwarding

If you have a server on your LAN, you must set up Port Forwarding, as follows:

1. In the Advanced Setup box, select Port Forwarding
2. Enter the information in the Basic, Advanced Single or Advanced Multiple table as appropriate for your network.
3. If you are forwarding ports 1723 or 500, select "Forward PPTP" or "Forward IPsec" if required.
4. Select whether to save the new configuration to the configuration file. (Note that if you do not save the new configuration, it will be activated but will revert back to the previous configuration if the PowerLink is reset or power is cycled.).
5. Click on "activate" to activate the changes.

Note that if the server is behind a firewall, the IP address of the server must be the address that the firewall listens on for server traffic.

If you have duplicate servers (i.e. two web servers) on your LAN or if you designate a WAN address other than PowerLink's WAN IP (an address in the router's network), you must use Advanced Port Forwarding. Use Advanced Single or Advanced Multiple depending on whether you are grouping one WAN line or multiple WAN lines to a LAN IP.

Static Routes

Basic Routes

1. In the Advanced Setup box, select Static Routes
2. Enter the Destination Network IP address and net mask, the router's IP address and select if it's a fixed route.
3. Click on "Add" button.
4. Repeat steps 2 and 3 for all routes desired.
5. Select whether to save this configuration to the configuration file.
6. Click on "activate" to activate the changes.

Advanced Routes

1. In the Advanced Setup box, select Static Routes
2. Enter the Destination Network IP address and netmask, the Source (LAN) IP address and netmask and the Source WAN IP address or Hostname.
   Note that if you use an IP address for the Source WAN address you will not have failover if that line goes down. If you use a Hostname for the Source WAN, PowerLink will lookup the IP address from its DNS table and will failover if the line is down. You must have entries in PowerLink's DNS table for the Hostname.
3. Click on "Add" button.
4. Repeat steps 2 and 3 for all routes desired.
5. Select whether to save this configuration to the configuration file.
6. Click on "activate" to activate the changes.

Email Alerts

1. In the Basic Setup box, select “Services”.
2. Select “Email Alerts”
3. Enter the desired email address to be notified. (You may enter multiple addresses separated by a comma. They must be served by the same SMTP server)
4. Enter the IP address of the DNS server that will perform the lookup.
5. Enter the Domain Name for the sending email domain.
6. Enter the SMTP port number to be used or leave the default of 25.
7. Select whether to save this configuration to the configuration file.
8. Click on “activate” to activate the changes.

Configure Authoritative DNS Server

1. In the Advanced Setup box, select Authoritative DNS
2. In the Authoritative Name Server Configuration box
   - ? Select “Enable/Disable Authoritative Name Server”
   - ? Select “Check Off Site IP addresses”
   - ? Select “Enable/Disable this PowerLink to act as a Backup Site”
   - ? Click on “Add”
3. Select whether to save this configuration to the configuration file.
4. Click on “activate” to activate the changes.
5. In the Domains Management box, enter the new domain name and select type of site
6. Select whether to save this configuration to the configuration file.
7. Click on “activate” to activate the changes.

Configure Hardware Failover

Configure the Primary PowerLink™ in the normal way with the Secondary disconnected from the network.

1. In the Advanced Setup box, select Hardware Failover
2. Make this box the Primary with Failover enabled.
3. Insert the Idle IP addresses for the Primary and Secondary. i.e. 100.10.10.1 and 100.10.10.2.
4. Select “Synchronize” in the Primary.
5. Reset the Secondary PowerLink™ to the factory default configuration, select the Hardware Failover feature, making this box the Secondary, and insert the Idle IP addresses for the Primary and Secondary. i.e. 100.10.10.1 and 100.10.10.2.
6. Connect the Secondary to your network. The Secondary will now accept the configuration from the Primary.
7. Activate or Save your configuration on the Primary. This will trigger the synchronization between the two devices.
   As long as the synchronization is ON, the ACTIVE PowerLink™ will activate/save its current configuration to the IDLE PowerLink™ whenever changes are activated.

To make the changes permanent, be sure the "Save Changes" box is checked when you click "Activate". Otherwise the PowerLink™ will revert to the previous settings the next time it is powered on.

NETWORK EXAMPLES

Following are diagrams showing various network configurations and the accompanying worksheet examples for each configuration. It is strongly recommended that you select the diagram that most closely resembles your network and use the example to aid you in completing the worksheet for your network prior to attempting to configure your PowerLink.

EXAMPLES WITHOUT THE POWERLINK

BASIC NETWORK

Figure 1 shows a basic configuration for a LAN connected to a WAN access line using a standard router with all users and system components assigned static routable IP addresses. The gateway to the WAN for all LAN devices is the router.

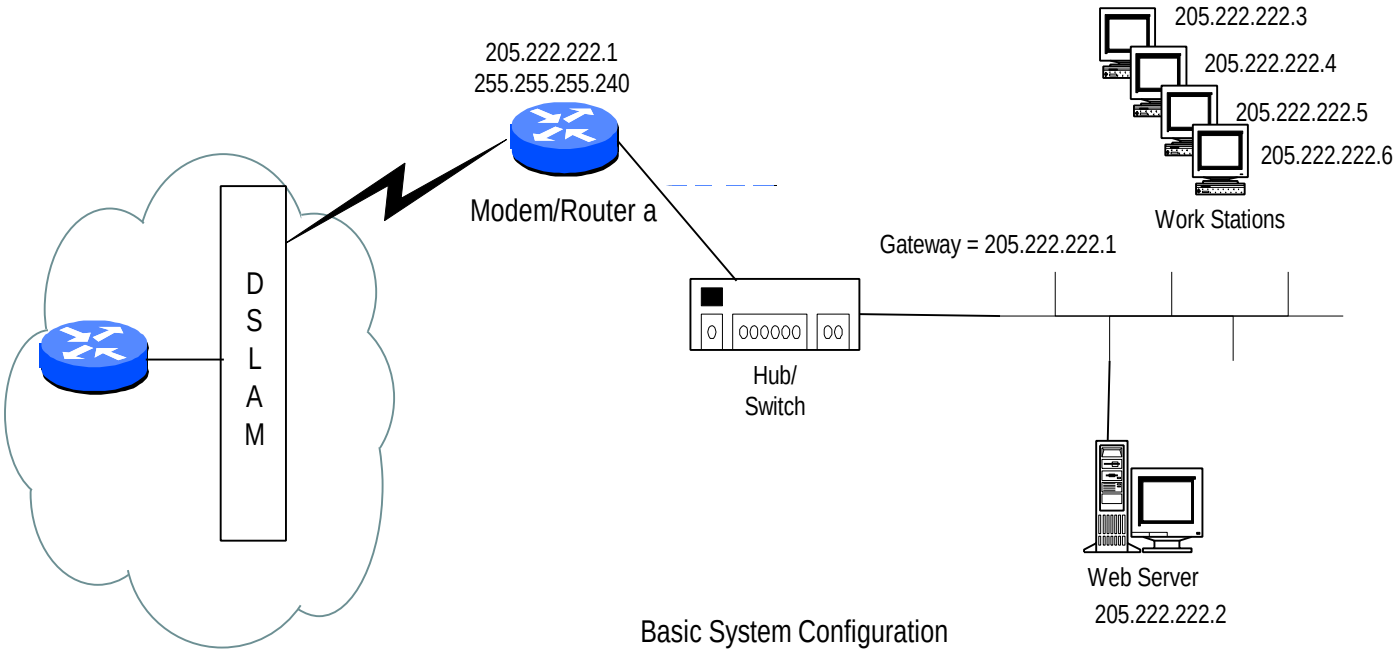


Figure 1

NETWORK WITH FIREWALL

Figure 2 shows a LAN connected to a WAN access line through a firewall. The firewall is assigned a static routable IP address with all users on the LAN assigned private non-routable addresses. The firewall translates (NATs) the LAN IP packets destined for the WAN. The gateway for all LAN devices is the LAN side of the firewall. The gateway for the firewall is the router.

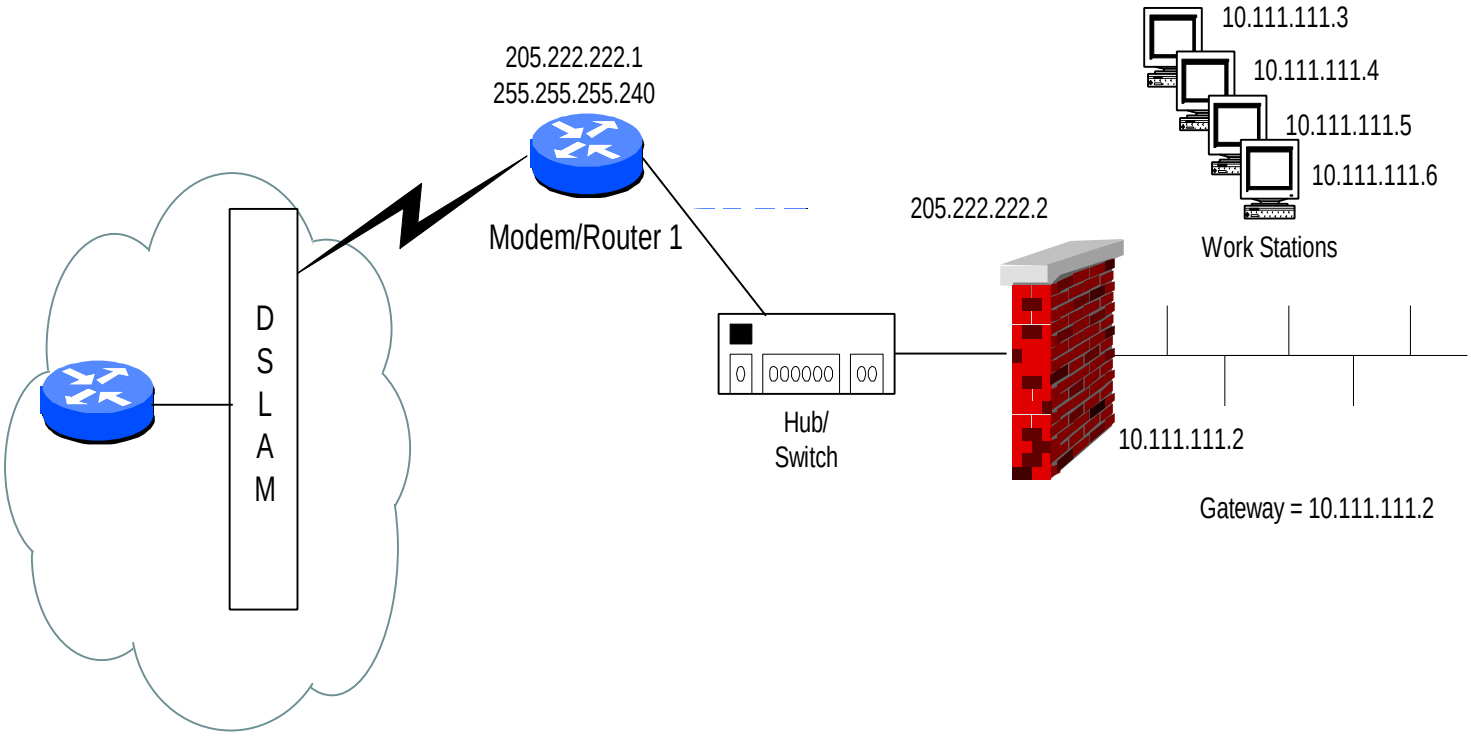


Figure 2

NETWORK WITH A FIREWALL AND SERVERS

Figure 3 shows a LAN, with a mail and web server, connected to a WAN access line through a firewall. The firewall is assigned a static routable IP address with all users on the LAN assigned private non-routable addresses. The firewall translates (NATs) the LAN IP packets to and from the WAN. In addition, the firewall port forwards all WAN mail (port 110 and port 25) and web (port 80) packets to the mail and web server. The gateway for all LAN devices is the LAN side of the firewall. The gateway for the firewall is the router.

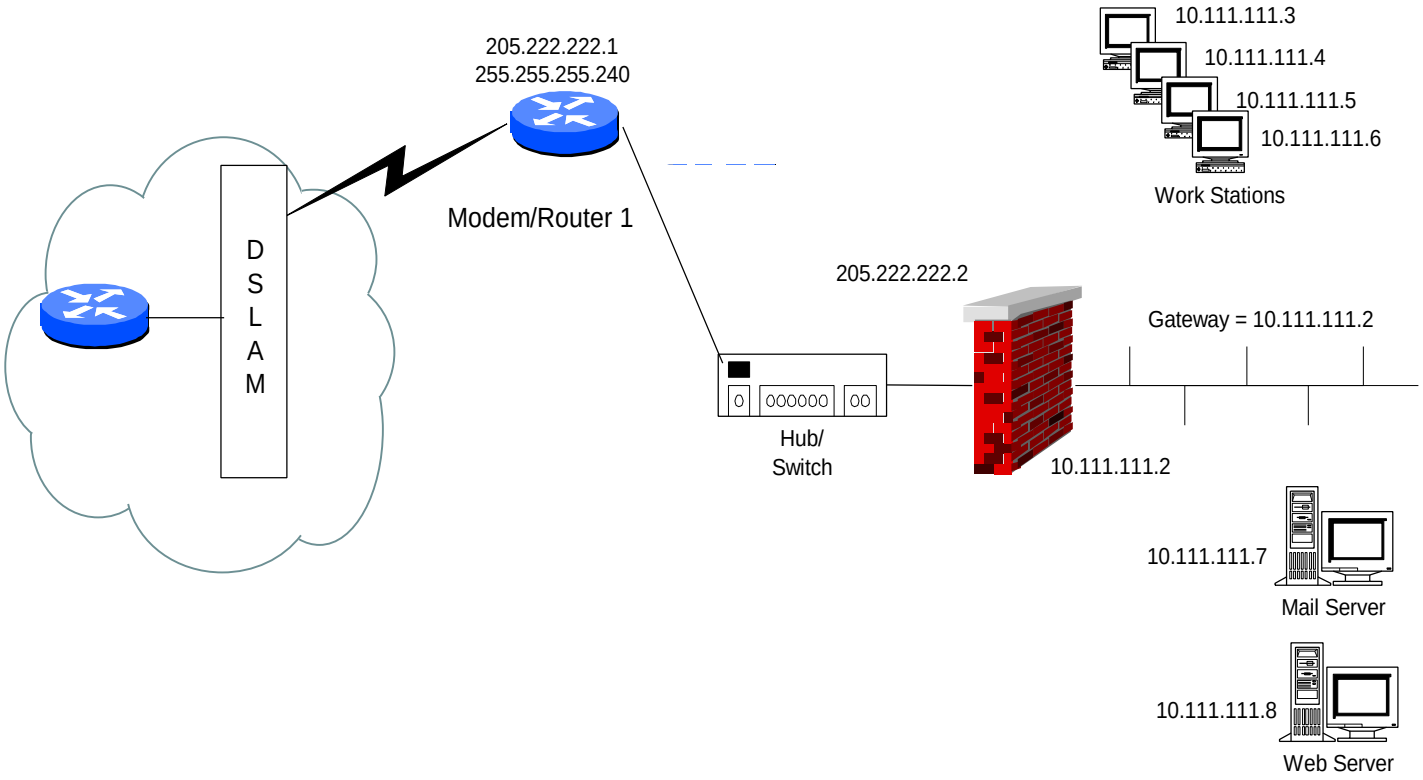


Figure 3

NETWORK WITH FIREWALL AND DUPLICATE SERVERS

Figure 4 shows a LAN, with two mail and two web servers, connected to a WAN access line through a firewall. The firewall is assigned two static routable IP addresses, (one for each set of servers) with all users on the LAN assigned private non-routable addresses. The firewall translates (NATs) the LAN IP packets to and from the WAN. In addition, the firewall port forwards all WAN mail (port 110 and port 25) and web (port 80) packets to the mail and web servers. The gateway for all LAN devices is the LAN side of the firewall. The gateway for the firewall is the router.

This configuration requires Advanced Port Forwarding, which is only available on the PowerLink IV.

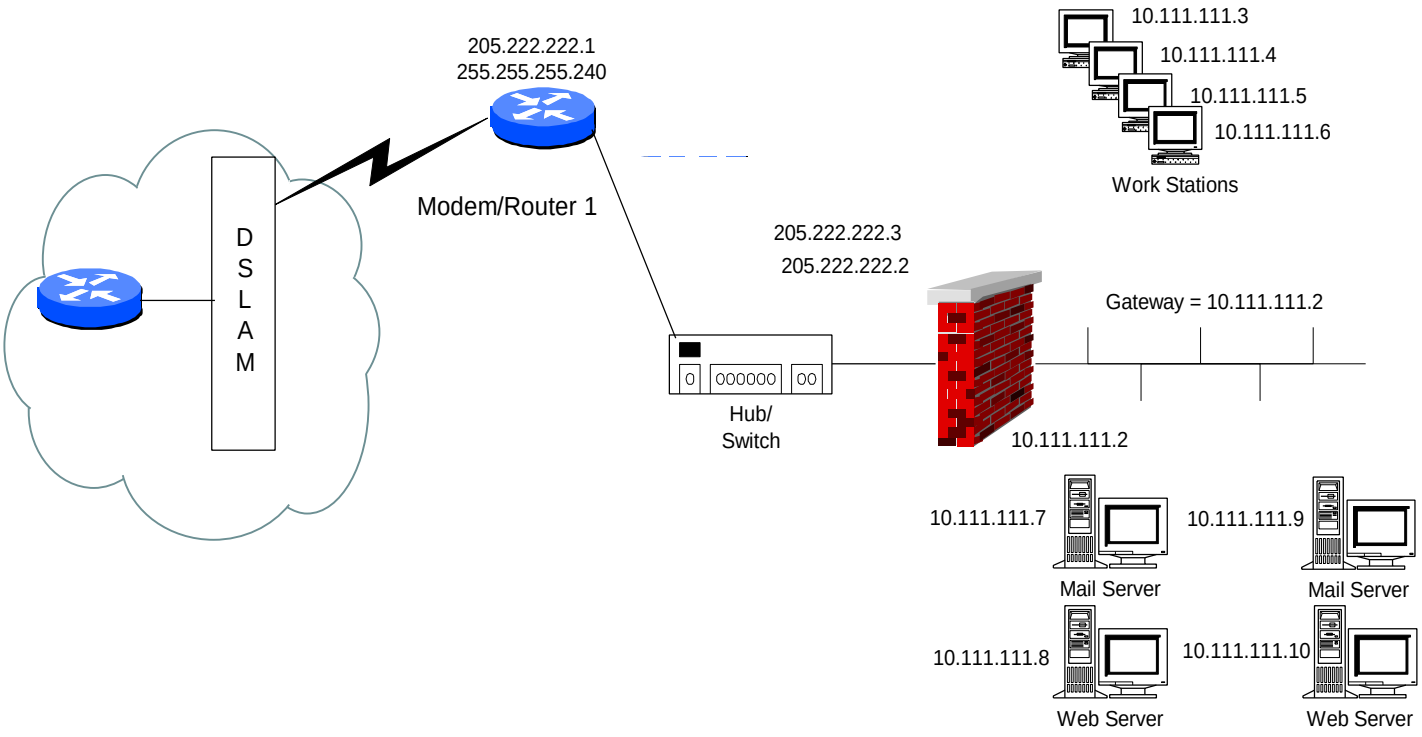


Figure 4

Blank Page

EXAMPLES WITH THE POWERLINK

NETWORK WITH POWERLINK

Figure 5 shows the PowerLink in a network with 2 WAN lines. The WAN 1 IP address of the PowerLink is the former IP address of the web server and the PowerLink must be configured to port forward traffic to the web server (all port 80 traffic). The PowerLink is designated as the gateway for all LAN devices and all LAN addresses are private.

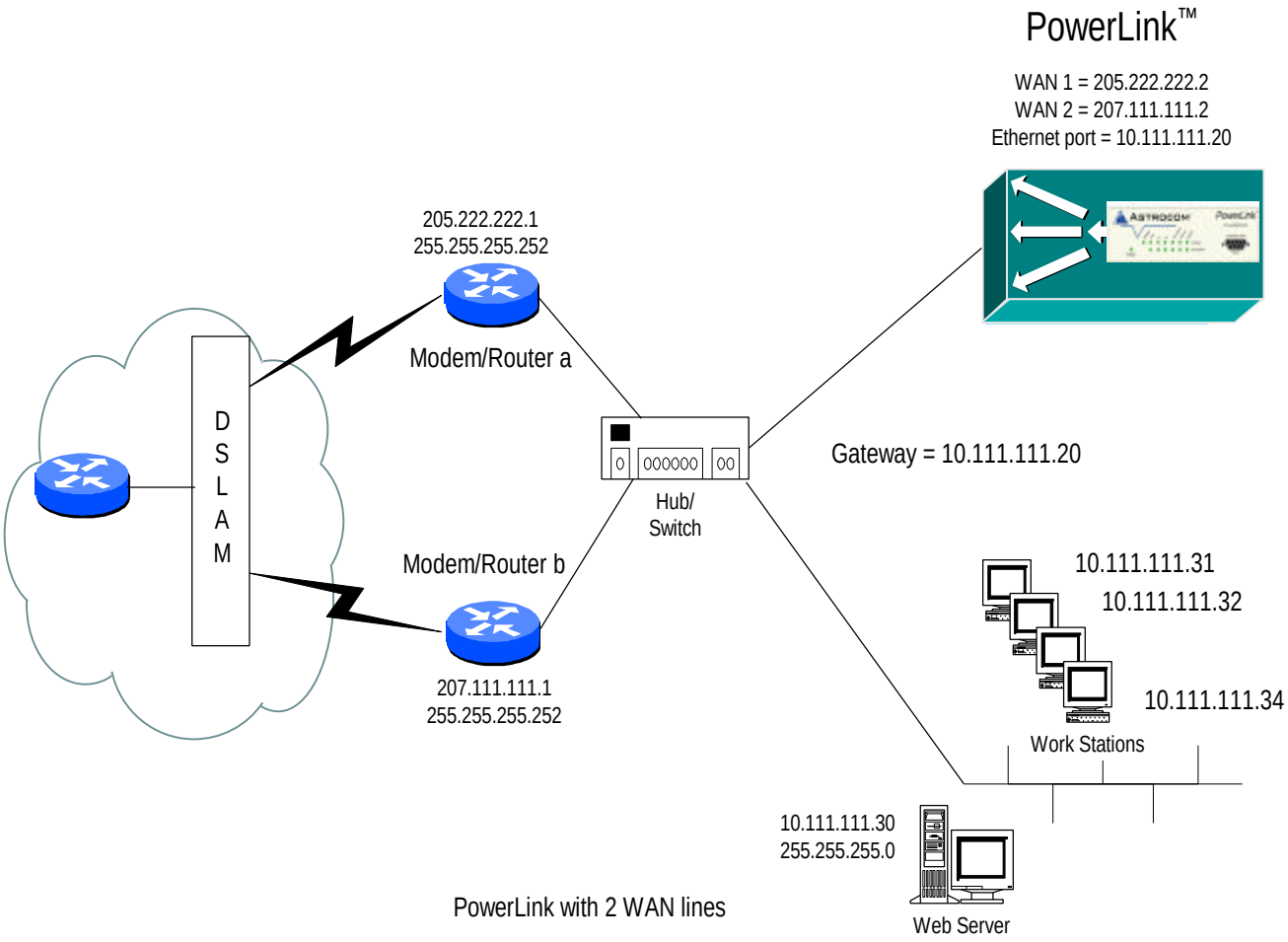
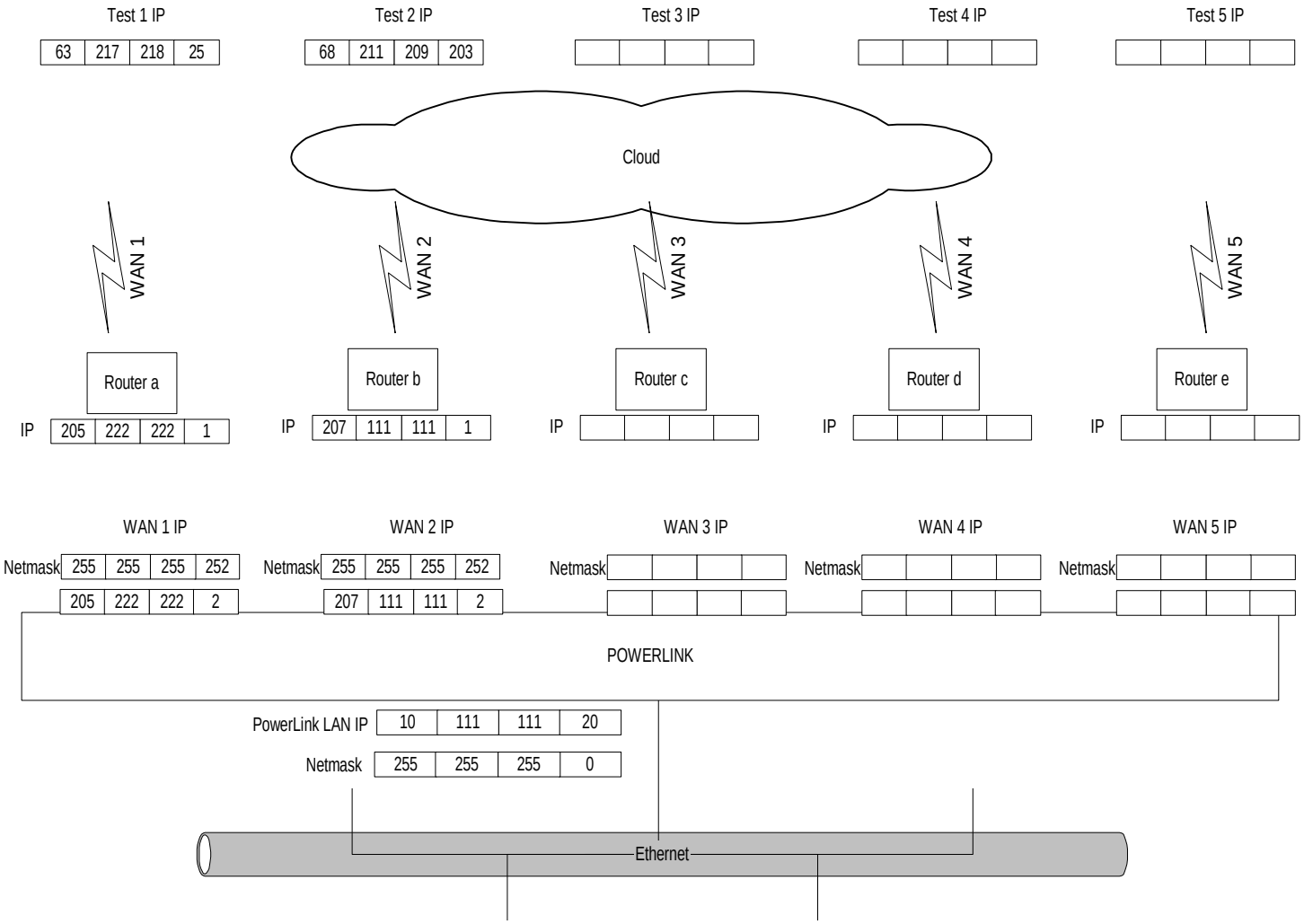


Figure 5

WORKSHEET - NETWORK WITH POWERLINK

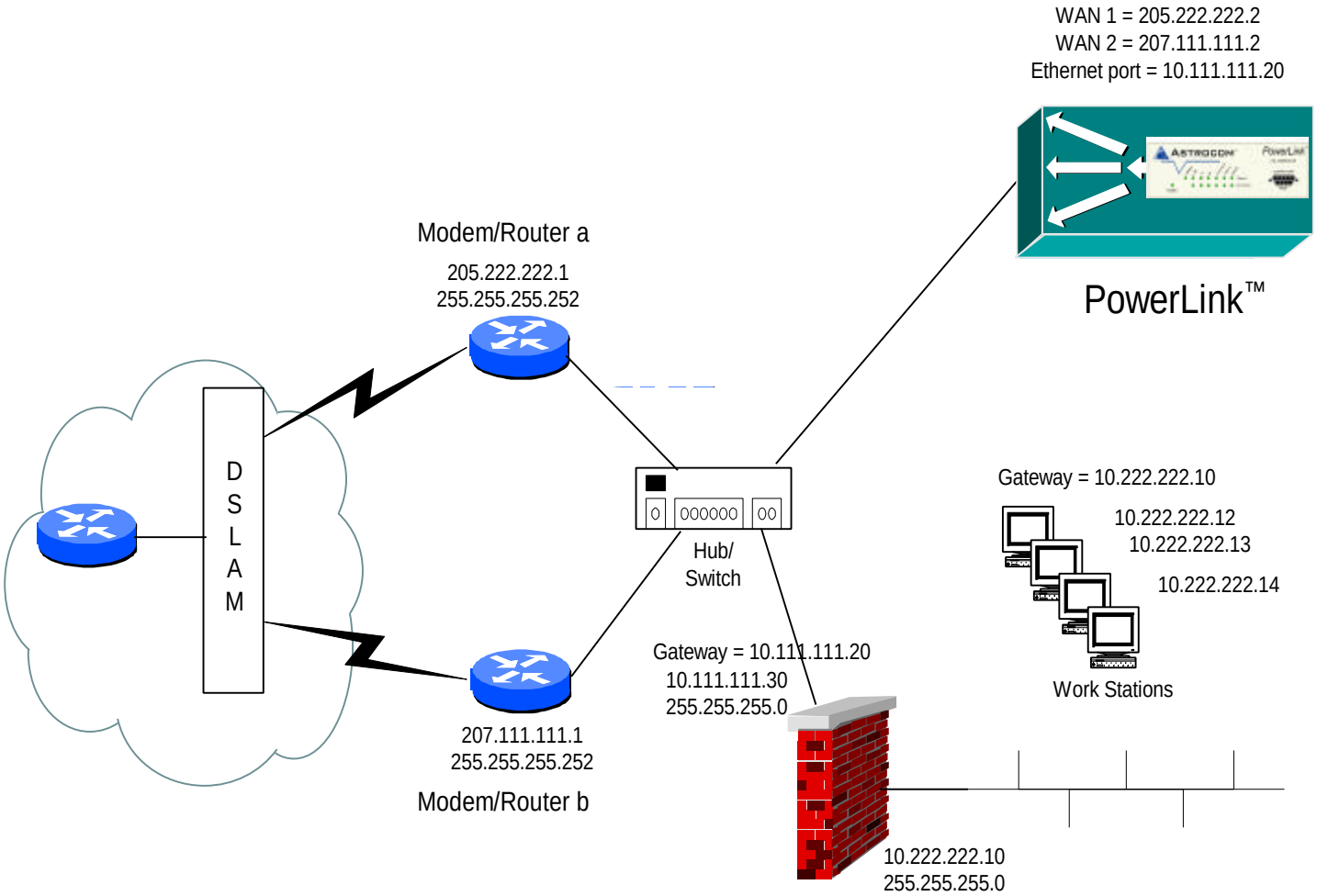


Configuration Workseet
Basic Network

Figure 6

NETWORK WITH POWERLINK AND A FIREWALL

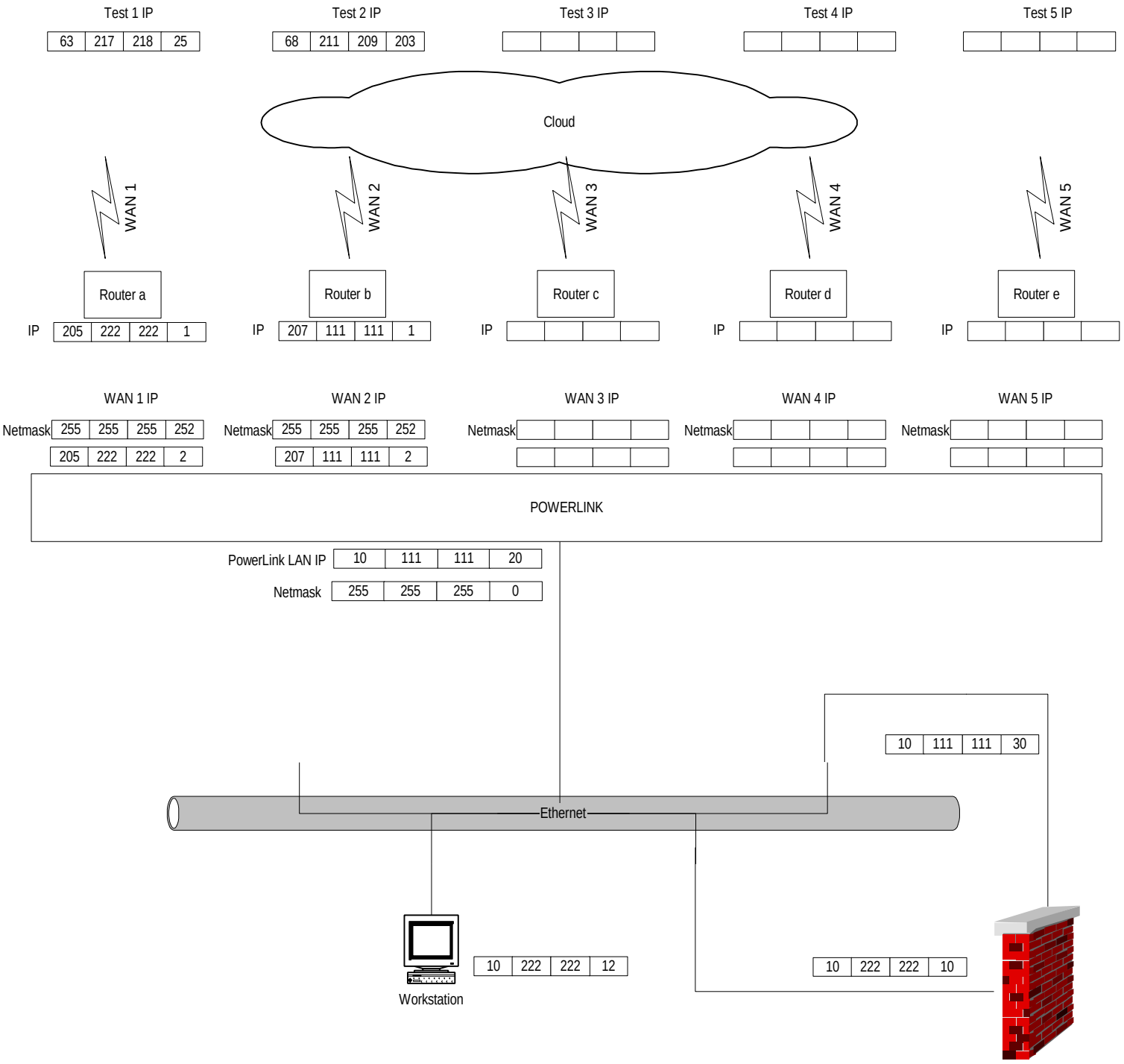
Figure 7 shows the PowerLink in a network with 2 WAN lines and a firewall on the LAN with workstations behind the firewall. The PowerLink WAN 1 IP address is the former IP address that was assigned to the firewall. The public side of the firewall and the PowerLink are configured on a separate private network. The Firewall is designated as the gateway for all devices on the LAN and the PowerLink is the gateway for the firewall.



PowerLink with 2 WAN lines and a Firewall

Figure 7

WORKSHEET - NETWORK WITH POWERLINK AND A FIREWALL

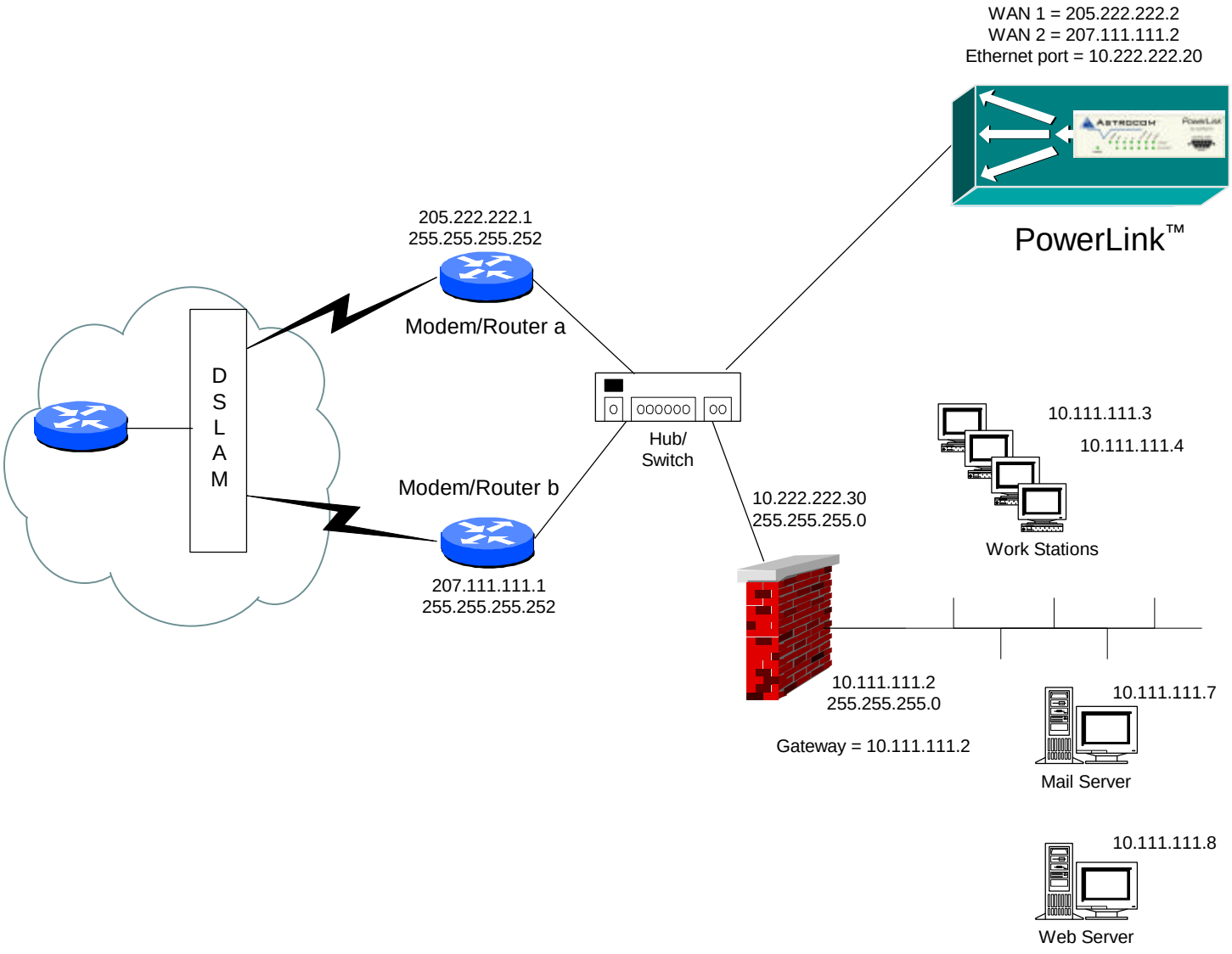


Configuration Workseet
with Firewall

Figure 8

NETWORK WITH POWERLINK AND A FIREWALL WITH SERVERS

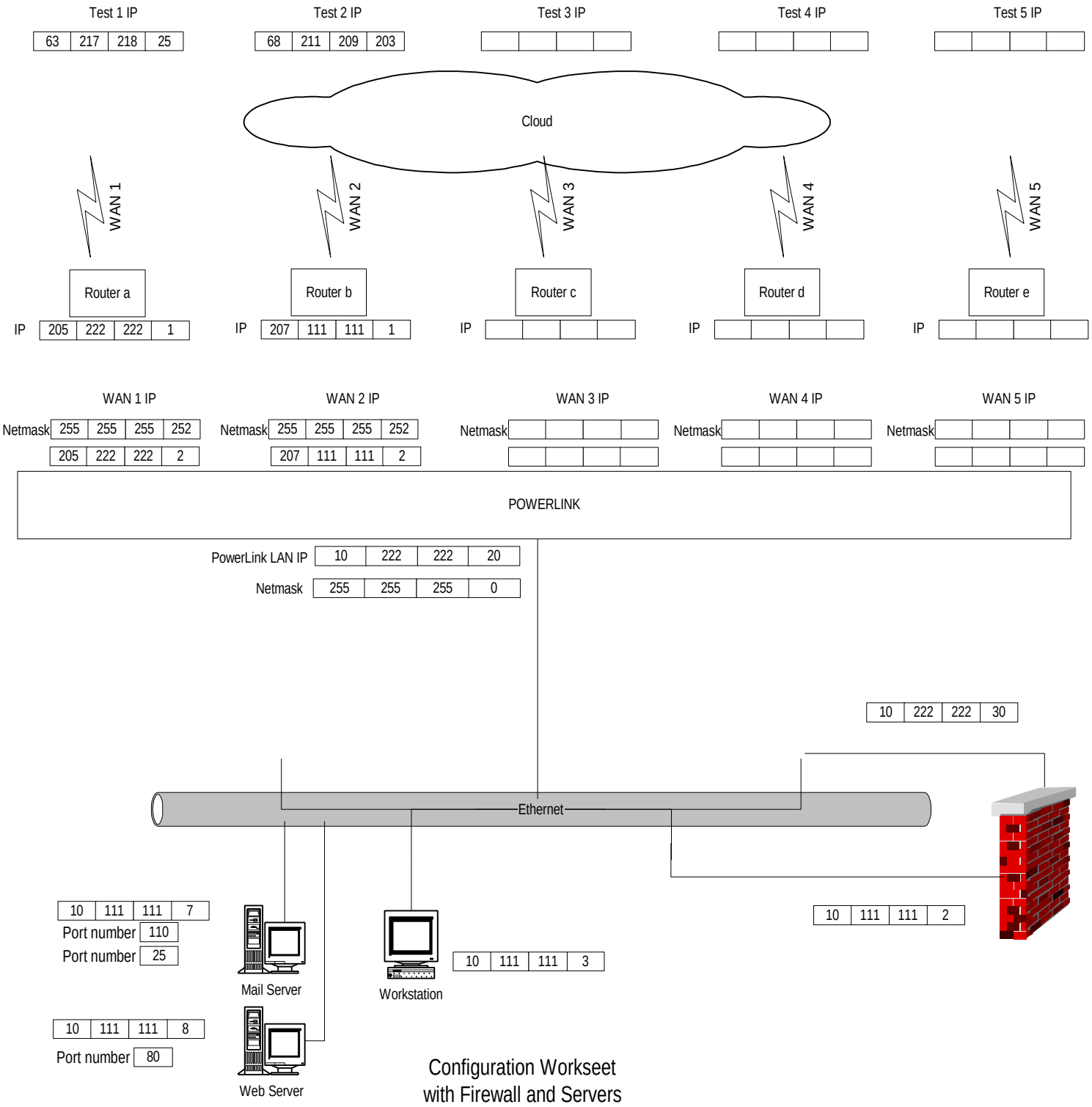
Figure 9 shows the PowerLink in a network with 2 WAN lines and a firewall on the LAN with workstations and a mail and web server behind the firewall. The PowerLink WAN 1 IP address is the former IP address that was assigned to the firewall. The PowerLink must be configured to port forward traffic to the web (port 80) and mail servers (ports 110 and 25). The WAN side of the firewall and the PowerLink are configured on a separate private network. The Firewall is designated as the gateway for all devices on the LAN and the PowerLink is the gateway for the firewall.



PowerLink with a Firewall and Web
and Mail servers

Figure 9

WORKSHEET - NETWORK WITH POWERLINK AND A FIREWALL WITH SERVERS

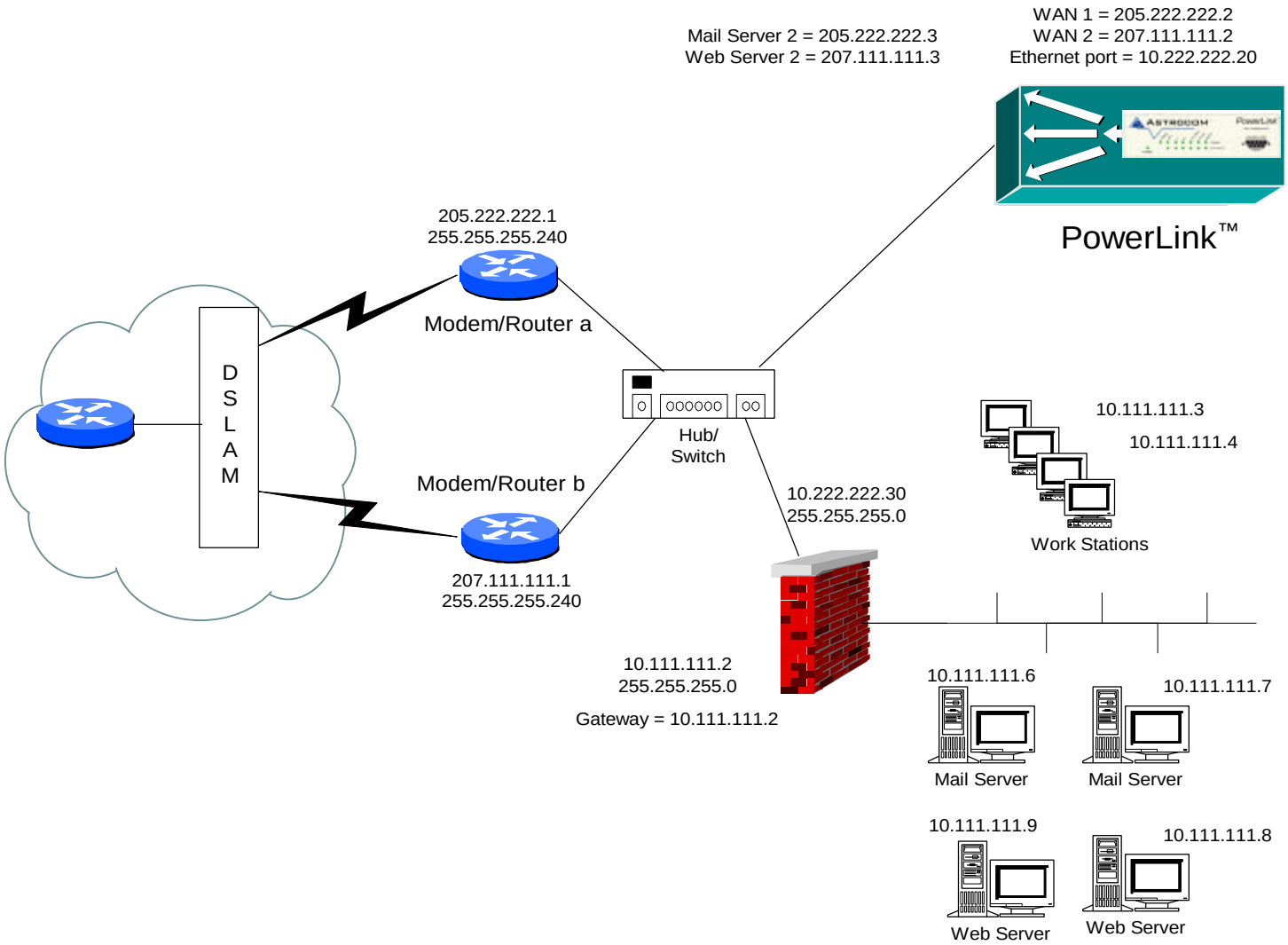


Configuration Workseet with Firewall and Servers

Figure 10

NETWORK WITH POWERLINK AND A FIREWALL WITH DUPLICATE SERVERS

Figure 9 shows the PowerLink in a network with 2 WAN lines and a firewall on the LAN with workstations and two mail and two web servers behind the firewall. The PowerLink WAN 1 IP address is the former IP address that was assigned to the firewall. The PowerLink must be configured with Advanced Port Forwarding, to forward traffic to the web (port 80) and mail servers (ports 110 and 25). The WAN side of the firewall and the PowerLink are configured on a separate private network. The Firewall is designated as the gateway for all devices on the LAN and the PowerLink is the gateway for the firewall.



PowerLink with a Firewall and
duplicate Web and Mail servers

Figure 11

WORKSHEET - NETWORK WITH POWERLINK AND A FIREWALL WITH DUPLICATE SERVERS

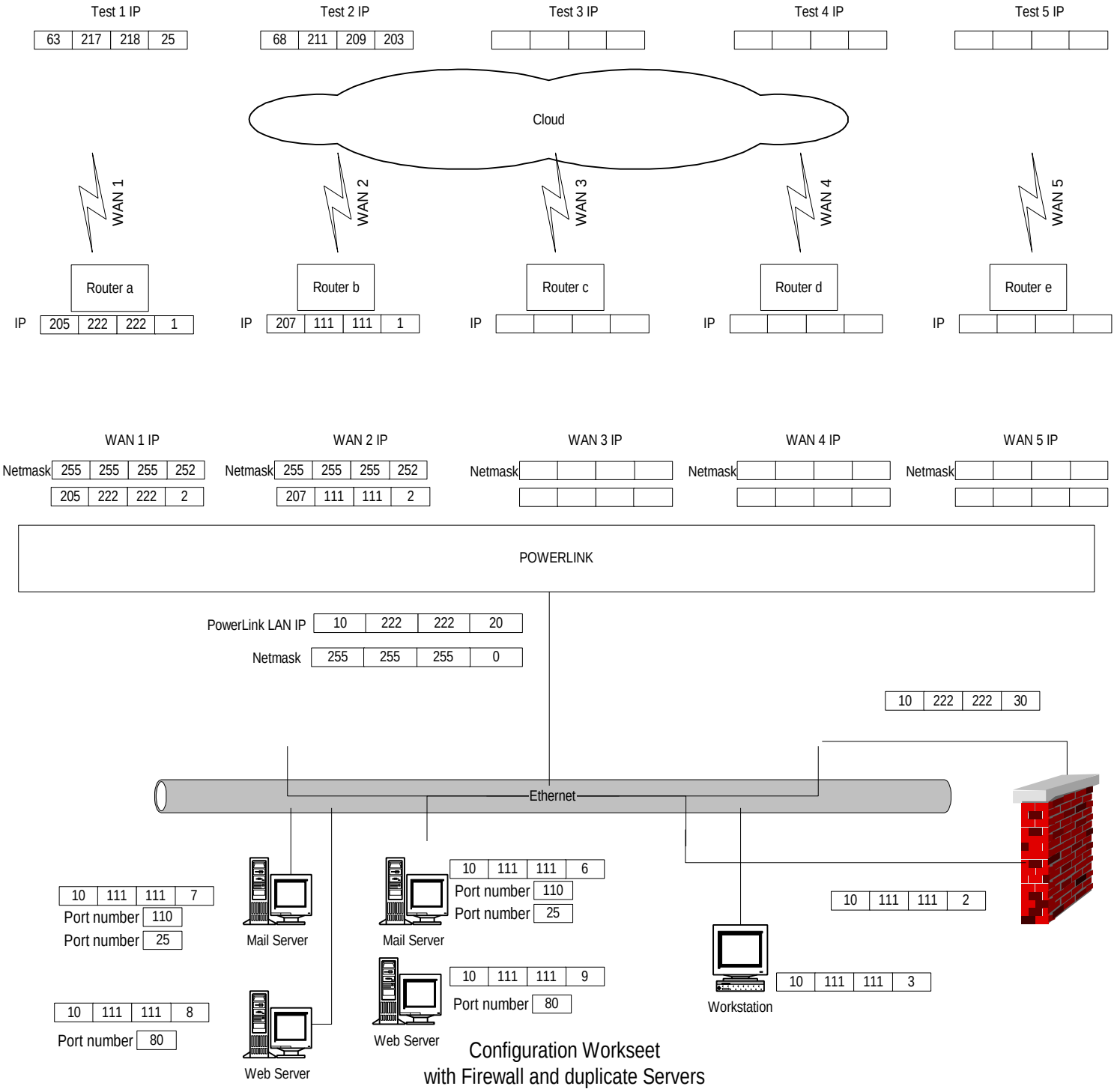
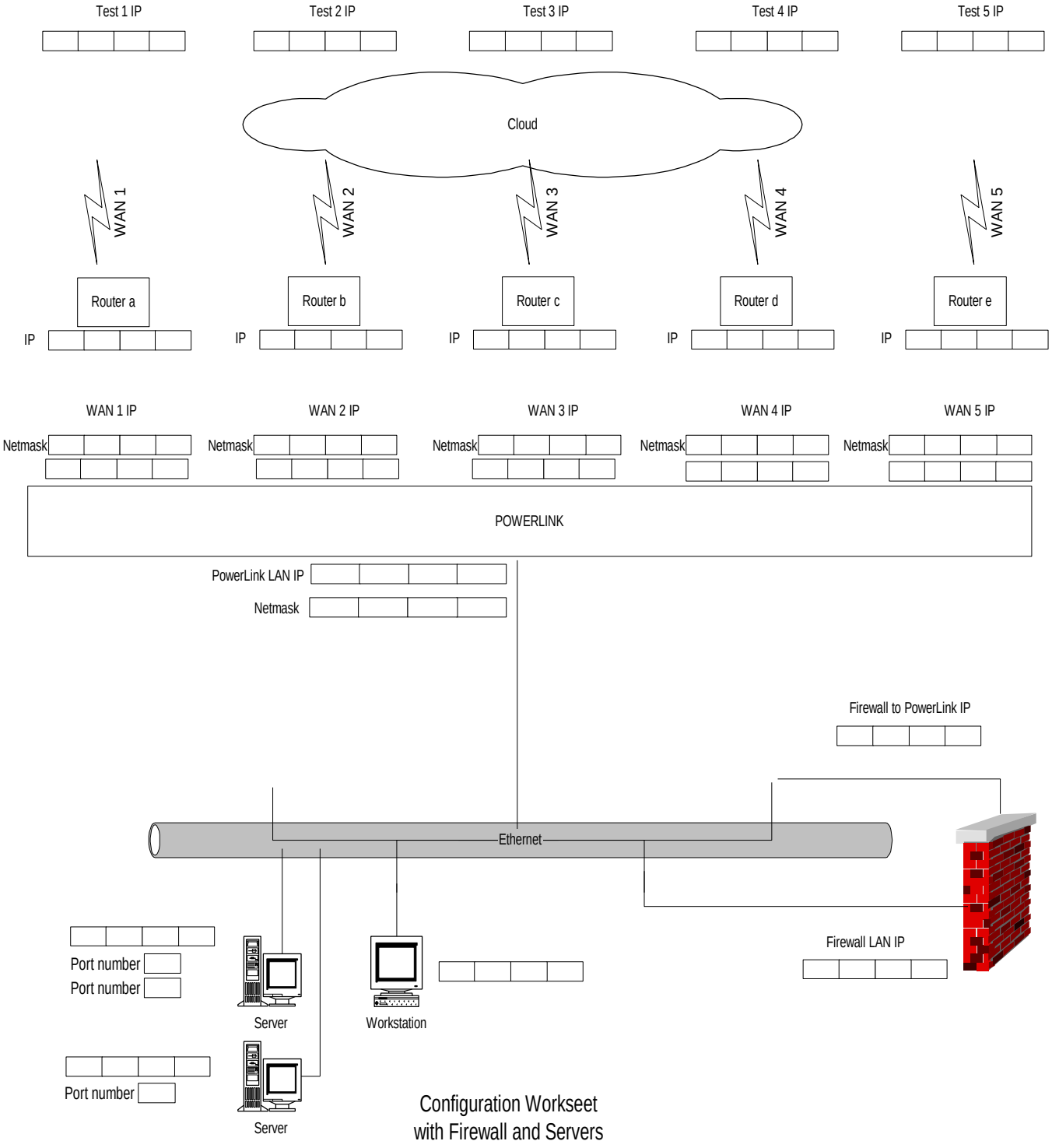


Figure 12

Configuration Worksheet



Configuration Workseet
with Firewall and Servers

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