

# BODi rS™

More Bandwidth. More Reliability. More Survivability

## **Intelligent Load Balancing: Least Used Balance**

Application Note

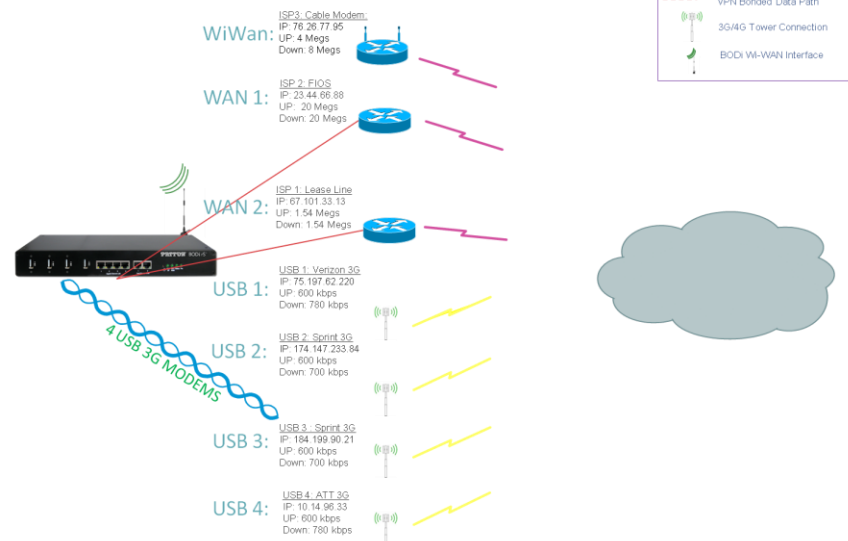
## Understanding Outbound Balance Routing

- The BODi delivers a simple, cost effective way to manage Multi WAN network environments through intelligent Load Balancing Algorithms and advanced VPN bonding technology. The BODi delivers in box solutions to help migrate away from expensive lease line WAN providers in favor of less expensive WAN deliveries, such as cable providers, fiber, and dsl providers, while providing or maintaining business or mission critical reliability and survive-ability to your network. This presentation will focus on pre-configured WAN Balancing Algorithms and how to easily setup and configure your BODi rS for your network needs.

## Load sharing across multiple WAN connections

- **Balance up to 7 WAN interfaces using preconfigured balancing algorithms**
  - **Weighted Balance:** Assign more traffic to a faster links or less traffic to a connection with a costly bandwidth caps.
  - **Priority:** Route traffic to your preferred link as long as it's available.
  - **Overflow Balance:** Prevent traffic flow from slowing down when the connection runs out of available bandwidth.
  - **Least Used:** Help you choose the better connection with more free bandwidth.
  - **Enforced:** Restrict outbound traffic to a particular connection.
  - **Lowest Latency:** Give you the fastest response time when using applications like online gaming.
  - **Persistence:** Eliminate session termination issue for HTTPS, E-banking, and other secure websites.

Traffic Balance Application Diagram for 7 WAN interfaces.



## WAN Optimization: Let's Explore Lowest Latency WAN Balance

- Configure Lowest Latency Algorithm
  - Outbound traffic matching this rule will be routed through a healthy WAN connection
  - Route by Source and Destination IP, Network, Protocol, Port
  - Latency checking packets will be performed on all enabled WAN interfaces
  - Routes traffic to the WAN link with the best response time

The screenshot shows the 'Edit Custom Rule' dialog box for a rule named 'Video Server'. The rule is enabled and configured with the following settings:

Field	Value
Service Name *	Video Server
Enable	<input checked="" type="checkbox"/>
Source	MAC Address   68   B5   99   01   23   45
Destination	Any
Protocol	UDP   Protocol Selection Tool
Port *	Port Range   Port: 7001 - 7008
Algorithm	Least Used
Connection	<input checked="" type="checkbox"/> FIOS <input type="checkbox"/> Lease Line 4T MLPPP <input checked="" type="checkbox"/> LTE 4G <input checked="" type="checkbox"/> USB 2 <input checked="" type="checkbox"/> USB 3 <input checked="" type="checkbox"/> USB 4 <input checked="" type="checkbox"/> Wi-Fi Cable Modem

Buttons: Save, Cancel

## Least Used Balance configuration window

Video Server	
Service Name *	Video Server
Enable	<input checked="" type="checkbox"/>
Source	MAC Address 68 B5 99 01 23 45
Destination	Any
Protocol	UDP
Port *	Port Range Port: 7001 - 7008
Algorithm	Least Used
Connection	<input checked="" type="checkbox"/> FIOS <input type="checkbox"/> Lease Line 4T MLPPP <input checked="" type="checkbox"/> LTE 4G <input checked="" type="checkbox"/> USB 2 <input checked="" type="checkbox"/> USB 3 <input checked="" type="checkbox"/> USB 4 <input checked="" type="checkbox"/> Wi-Fi Cable Modem

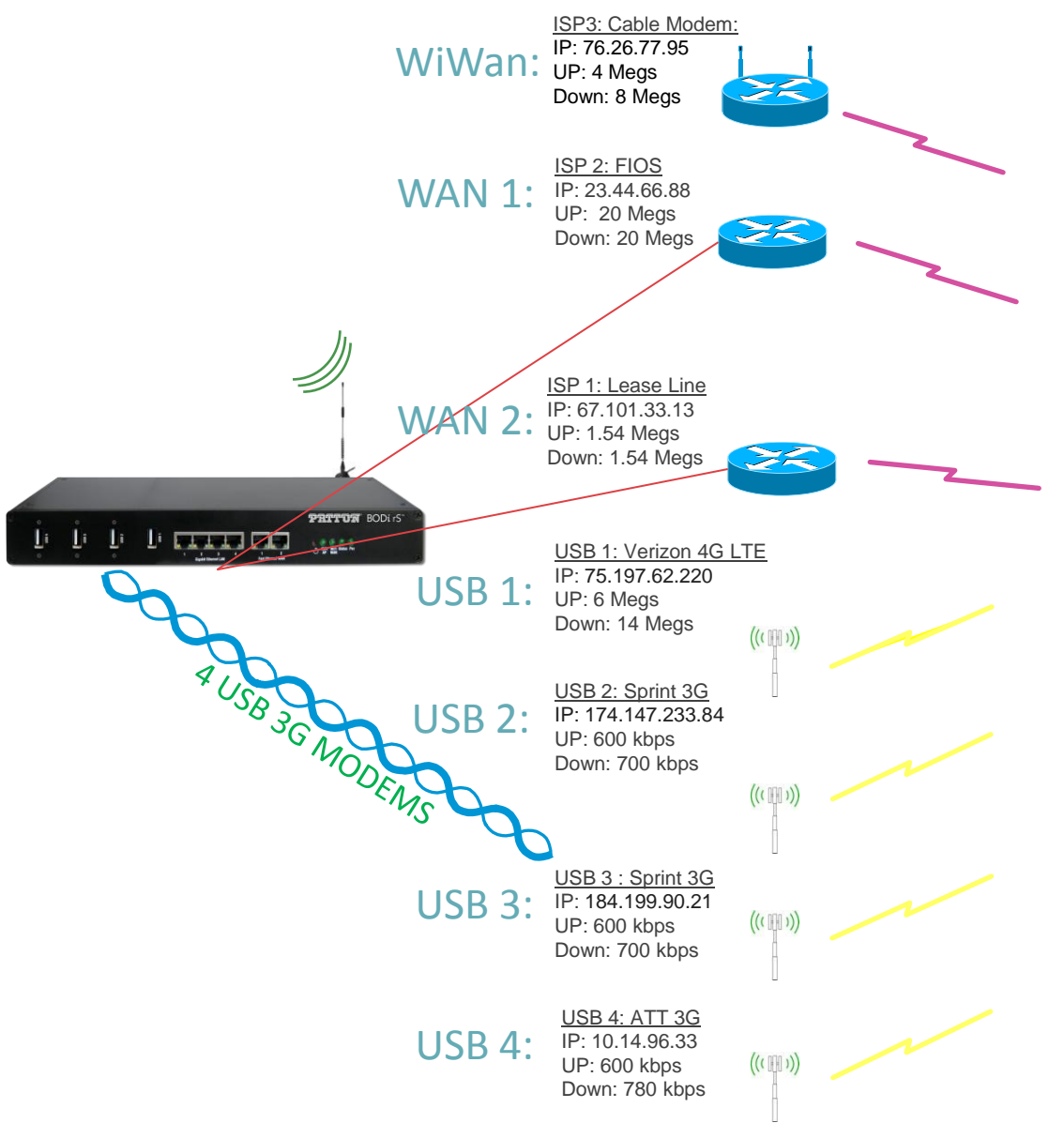
Save Cancel





Source MAC: Video Server  
Protocol: UDP  
Dest port range: 7001-7008

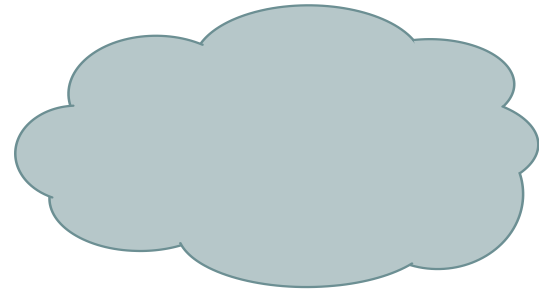
### Video Server: MP4 PUSH

In this application our *Video Server: 68:B5:99:01:23:45* is capable of a pushing out video streams in unicast format using *UDP Protocol* with the destination *port range from 7001 – 7008* to specific clients and agent subscribers. It is desired that outbound packet streams use WAN links that have most bandwidth available at the time the packet is received.

# Lowest Latency Outbound Traffic Balance App



-  WAN Bonding VPN
-  VPN Bonded Data Path
-  3G/4G Tower Connection
-  BODi Wi-WAN Interface



Least Used Balance Rule constantly monitors bandwidth available for outgoing WAN Links for packet distribution decisions.

## Dashboard Network Advanced System Status

[Apply Changes](#)

**Status**

- Device ➔
- Active Sessions ➔
- Client List ➔
- WINS Clients ➔
- SpeedFusion™ ➔
- Event Log ➔

**Bandwidth**

- Real-Time ➔
- Hourly ➔
- Daily ➔
- Monthly ➔

Logout

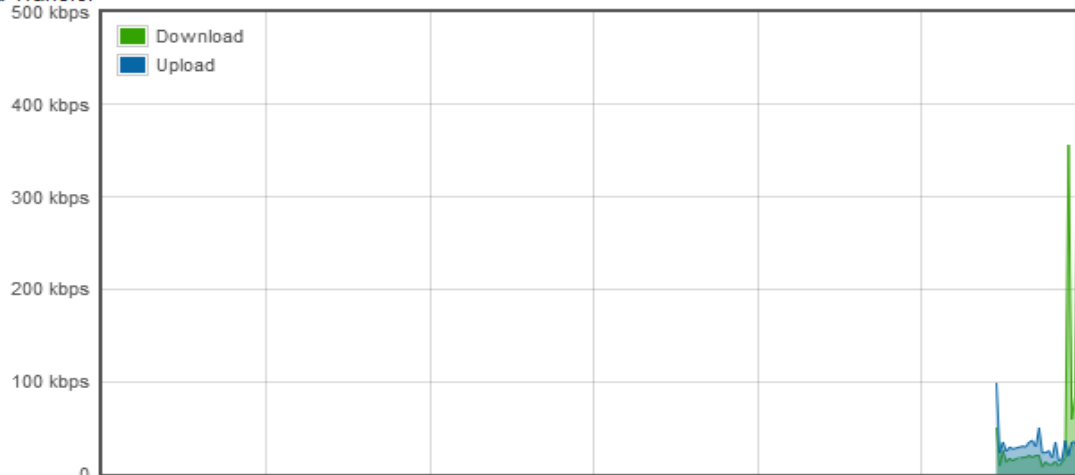
Data transferred since installation (Tue Jun 05 16:11:25 WET 2012)

	Download	Upload	Total
All WAN Connections	0.35 GB	0.69 GB	1.04 GB

Data transferred since last reboot [\[ Show Details \]](#)

	Download	Upload	Total
All WAN Connections	51 MB	122 MB	173 MB

Aggregated Transfer



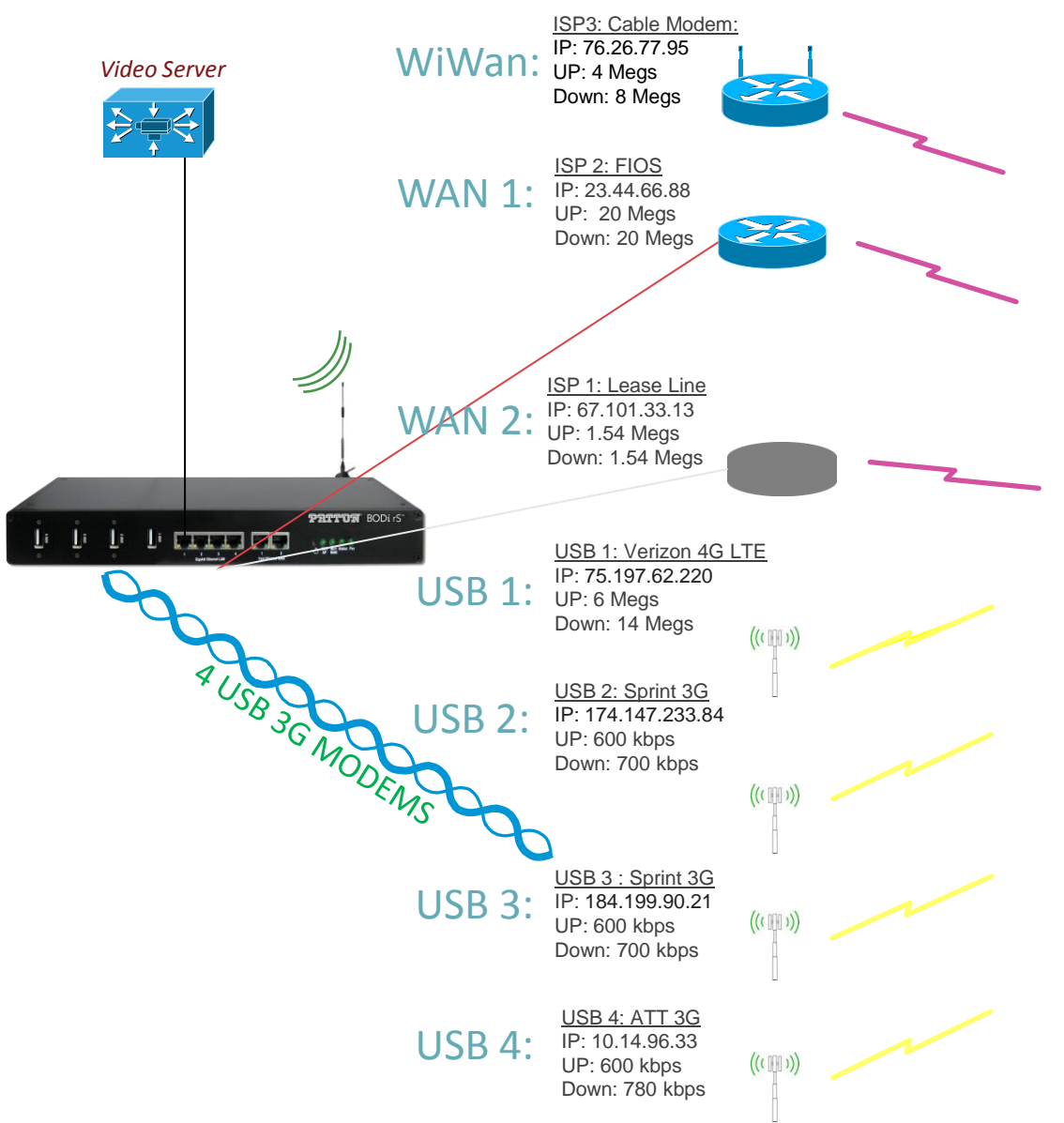
Avg: ↓ 50.04 kbps ↑ 30.64 kbps

Peak: ↓ 441 kbps ↑ 99 kbps

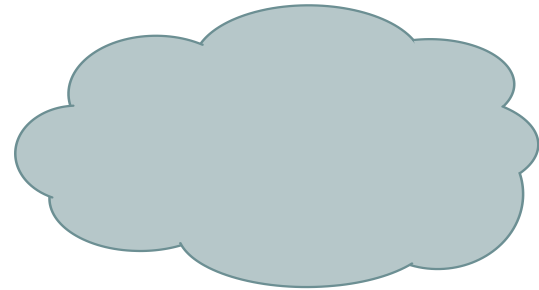
Stacked

	Download	Upload	Total
Overall	12 kbps	31 kbps	43 kbps

# Lowest Latency Outbound Traffic Balance App



- WAN Bonding VPN
- VPN Bonded Data Path
- 3G/4G Tower Connection
- BODi Wi-WAN Interface



# Step-by-Step: Configuration for Least Used Balance Policy

The screenshot displays the Patton router's web-based configuration interface. At the top, a blue navigation bar contains the Patton logo and menu items: Dashboard, Network, Advanced (highlighted), System, and Status. On the right side of this bar is an 'Apply Changes' button. Below the navigation bar is a left-hand sidebar menu with the following sections and items:

- Advanced**
  - Wi-Fi Settings
  - WAN Bonding
  - IPsec VPN
  - Outbound Policy** (highlighted)
  - Port Forwarding
- NAT Mappings**
- QoS**
  - User Groups
  - Bandwidth Control
  - Application
- Firewall**
- Misc. Settings**
  - PPTP Server
  - Service Forwarding
  - Service Passthrough

The main content area shows the 'Outbound Policy' configuration page. The page title is 'Outbound Policy' with a help icon. Below the title, the current policy is set to 'Custom', and there is an edit icon (pencil) to its right. A large teal text overlay reads: '1. Click Advanced -> Click Outbound Policy'.

# Step-by-Step: Configuration for Least Used Balance Policy

The screenshot displays the Patton network management interface. The top navigation bar includes 'Dashboard', 'Network', 'Advanced', 'System', and 'Status', with 'Apply Changes' on the right. The left sidebar lists various settings categories: Advanced (Wi-Fi Settings, WAN Bonding, IPsec VPN, Outbound Policy, Port Forwarding), NAT Mappings, QoS (User Groups, Bandwidth Control, Application), and Firewall (Misc. Settings: PPTP Server, Service Forwarding, Service Passthrough). The 'Advanced' section is expanded, and 'Outbound Policy' is selected. The main content area shows the 'Outbound Policy' configuration page with a dropdown menu set to 'Custom'. A modal dialog titled 'Outbound Policy' is open, showing a 'Select an Outbound Policy' dropdown menu with 'Custom' selected, and 'Save' and 'Cancel' buttons.

1. Click Advanced -> Click Outbound Policy

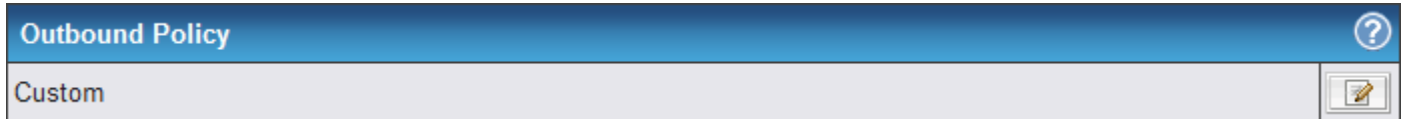
2. Create Custom Outbound Policy and Save

# Step-by-Step: Configuration for Least Used Balance Policy

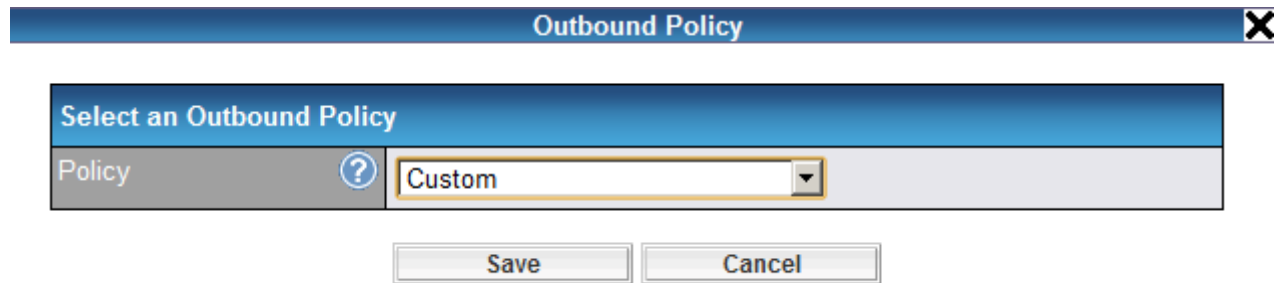


- Advanced**
  - Wi-Fi Settings
  - WAN Bonding
  - IPsec VPN
  - Outbound Policy**
  - Port Forwarding
- NAT Mappings**
- QoS**
  - User Groups
  - Bandwidth Control
  - Application
- Firewall**
- Misc. Settings**
  - PPTP Server
  - Service Forwarding
  - Service Passthrough

1. Click Advanced -> Click Outbound Policy



2. Create Custom Outbound Policy and Save



3. Add Rule

Rules (Drag and drop rows to change rule order)					
Service	Algorithm	Source	Destination	Protocol / Port	
Default			(Auto)		
<input type="button" value="Add Rule"/>					

# Step-by-Step: Configuration for Least Used Balance Policy

The screenshot shows the Patton network management interface. The top navigation bar includes 'Dashboard', 'Network', 'Advanced', 'System', and 'Status'. The 'Advanced' tab is selected, and the 'Apply Changes' button is visible on the right. The left sidebar contains a menu with categories: 'Advanced' (Wi-Fi Settings, WAN Bonding, IPsec VPN, Outbound Policy, Port Forwarding), 'NAT Mappings', 'QoS' (User Groups, Bandwidth Control, Application), 'Firewall', and 'Misc. Settings' (PPTP Server, Service Forwarding, Service Passthrough). The 'Outbound Policy' item is highlighted. The main content area displays the following configuration steps:

## 4. Create the Rule for outbound WEB Traffic

- Service Name: Video Server
- Enable:
- Source MAC:
- Protocol:
- Port Range:
- Choose Least Used Algorithm
- Enable WAN Connections
- Save
- Apply Changes

# Step-by-Step: Configuration for Least Used Balance Policy



- Advanced
  - Wi-Fi Settings
  - WAN Bonding
  - IPsec VPN
  - Outbound Policy**
  - Port Forwarding
- NAT Mappings
- QoS
  - User Groups
  - Bandwidth Control
  - Application
- Firewall
- Misc. Settings
  - PPTP Server
  - Service Forwarding
  - Service Passthrough

## 4. Create the Rule for outbound WEB Traffic

### Edit Custom Rule

<b>Video Server</b>	
Service Name *	Video Server
Enable	<input checked="" type="checkbox"/>
Source	MAC Address 68 : B5 : 99 : 01 : 23 : 45
Destination	Any
Protocol	UDP ← :: Protocol Selection Tool ::
Port *	Port Range Port: 7001 - 7008
Algorithm	Least Used
Connection	<input checked="" type="checkbox"/> FIOS <input type="checkbox"/> Lease Line 4T MLPPP <input checked="" type="checkbox"/> LTE 4G <input checked="" type="checkbox"/> USB 2 <input checked="" type="checkbox"/> USB 3 <input checked="" type="checkbox"/> USB 4 <input checked="" type="checkbox"/> Wi-Fi Cable Modem

Save Cancel

# Step-by-Step: Configuration for Least Used Balance Policy

PATTON
Dashboard
Network
Advanced
System
Status
Apply Changes

**Advanced**

- Wi-Fi Settings ➔
- WAN Bonding ➔
- IPsec VPN ➔
- Outbound Policy ➔
- Port Forwarding ➔

**NAT Mappings**

**QoS**

- User Groups ➔
- Bandwidth Control ➔
- Application ➔

**Firewall**

**Misc. Settings**

- PPTP Server ➔
- Service Forwarding ➔
- Service Passthrough ➔

**Rules** (Hand icon) Drag and drop rows to change rule order ?

Service	Algorithm	Source	Destination	Protocol / Port	
WAN Bonding Routes					
<u>WB-SaveCash</u>	Overflow Wi-Fi Cable Modem...	Any	Any	Any	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-HTTPS</u>	Persistence (Auto)	Any	Any	TCP 443	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-VOIP</u>	Enforced WAN: Lease Line 4T...	MAC Address 00:A0:BA:12:34:56	IP Address 67.100.23.1	Any	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-HTTP</u>	Priority WAN: Wi-Fi Cable M...	Any	Any	TCP 80	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-staff</u>	Weighted Balance 10:5:4:4:4:0:10	IP Network 10.10.5.0/24	Any	Any	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-guest</u>	Weighted Balance 10:0:0:0:0:0:10	IP Network 10.10.6.0/28	Any	Any	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-Webinar</u>	Lowest Latency	Any	www.gotomeeting.com	Any	<span style="color: red; font-weight: bold;">✘</span>
<u>WB-Visuality</u>	Enforced VPN: WAN BONDING	MAC Address 00:A0:BA:12:34:57	Any	Any	<span style="color: red; font-weight: bold;">✘</span>
Default	(Auto)				
<input type="button" value="Add Rule"/>					

## FOR FURTHER INFORMATION

For Further information visit us @ [www.patton.com](http://www.patton.com) or contact us:

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