# Panabit Intelligent Application Gateway

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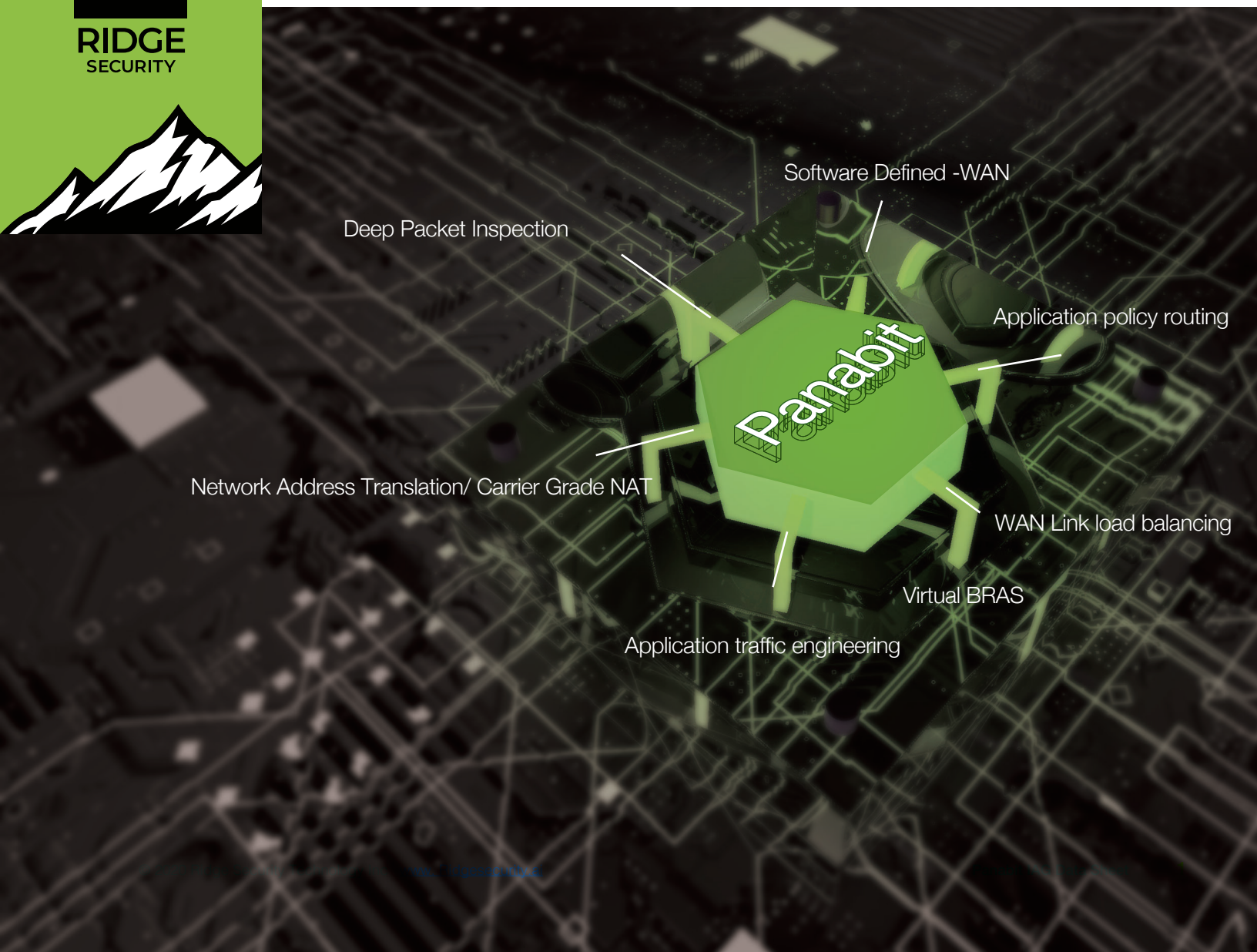
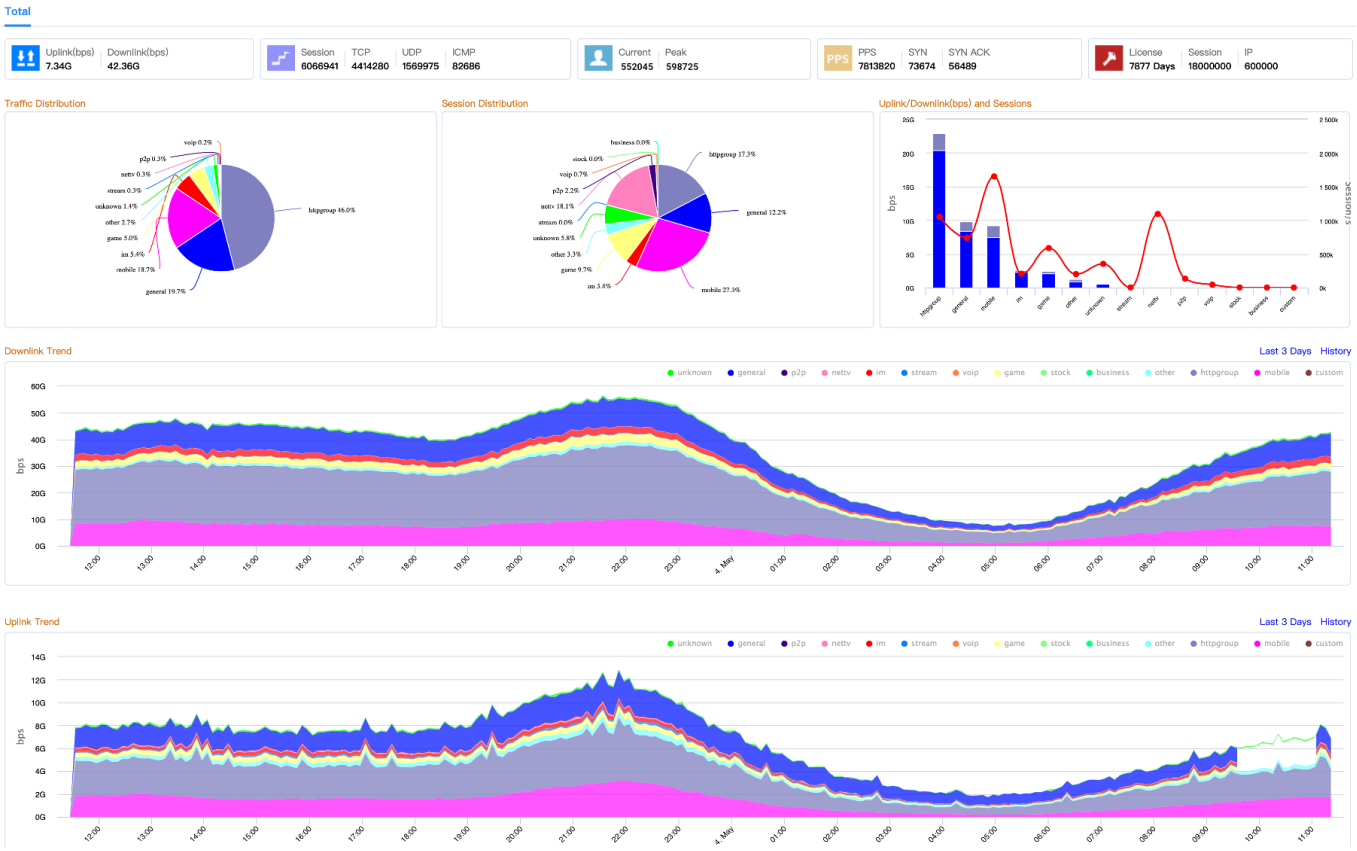





The Panabit Intelligent Application Gateway(IAG) is an “all-in-one” solution which redefines the network edge architecture of an organization’s network. It helps customers to save CapEx and OPEX on network infrastructure while providing better performance and user experience for mission critical applications.

## Product Overview

Panabit IAG is deployed at the Internet edge of an organization’s computer network. It utilizes the network function virtualization(NFV) architecture and provides comprehensive Internet access management and application performance optimization functions in one system, such as Application Traffic DPI(Deep Packet Inspection) and Visualization, Application Policy Routing and Traffic Control, High-Performance NAT/Carrier-Grade NAT, WAN Link Load Balancing and Software-Defined WAN, virtual BRAS and User Behavior Analytics.

Panabit IAG supports both appliance and software-only form factors, providing the highest flexibility for customer deployments. Its carrier-class scalability can support 80Gbps traffic throughput and manage 1000+ virtual WAN interfaces and 600,000 concurrent users, meet the toughest performance and scalability requirements of Internet Service Provider, Enterprise, Education, Finance, Healthcare, Government and Hospitality customers.

## Customer Advantages

Panabit IAG offers a holistic approach for Internet access management and application performance optimization. Customers gain many advantages when Panabit IAG is deployed, including:

**Highly accurate application recognition.** Empowered by its industry leading DPI(Deep Packet Inspection) engine, Panabit IAG can analyze 80Gbps application traffic in real time and accurately identify more than 1000 applications in

a customer network, from streaming services, social media apps to database and SaaS business software suites, from major online games to encrypted p2p download. Panabit IAG achieves 95+% application traffic recognition accuracy and lays a solid foundation for advanced management of application policy routing, traffic control and WAN link optimization.

**Application traffic visualization and end-to-end performance monitoring** through a dashboard and drill through web user interface. Panabit IAG can show the real time throughput and historical traffic trend of an application or an application group as well as the real-time Top App, Top IP and Top Session data to support IT organization's data-driven decision making. By enabling the embedded application performance monitor function, Panabit IAG can also measure the end-to-end latency of an individual application and help IT administrator to pin-point the root cause if there is an application performance issue.

**High-Performance NAT and Carrier-Grade NAT.** Panabit IAG consolidates high-performance NAT/CGNAT function into the system. The customer doesn't need to invest in a separate NAT equipment for a large network deployment. This will simplify the network edge architecture and management.

**Application-based policy routing and traffic engineering.** Panabit IAG's superior application visibility drives better application traffic optimization. On an intuitive web user interface, IT administrators can define application routing policies and various traffic engineering policies for an individual application or an application group to optimize network performance, make sure mission critical applications are prioritized and their network bandwidth consumptions are guaranteed while low-priority traffic,  such as p2p downloads, are suppressed or are routed to lower cost network links.

**WAN cost optimization.** One Panabit IAG system supports 20 WAN Groups, 24 physical WAN interface cards and 1000+ virtual WAN links. The customer can define flexible WAN link load balancing policies to accommodate WAN link quality and cost reduction for different applications.

**Software-Define WAN for Enterprise.** Panabit IAG supports iWAN tunnel technology and can help enterprise customers to build a private WAN service on top of a public network infrastructure. It's cloud-based management platform provides a central management portal for SD-WAN network topology, iWAN tunnel and policy management

**Integrated vBRAS and subscriber management for ISP.** Panabit IAG supports virtual BRAS with embedded subscriber management. One Panabit IAG system can be virtualized to 500 vBRAS instances, maximize the flexibility to serve a large ISP access network. ISP's administrator can integrate subscribers' access control with application traffic optimization, provide differentiated quality of services to different subscribers, reduce management complexity and training cost.

## Features

### Network Services

- Deep packet inspection
- Application performance monitor and traffic visualization
- NAT and Carrier-Grade NAT(CGNAT)
- Static Routing and Application Policy Routing
- Application Traffic Engineering
- DNS Policy Routing
- WAN group and WAN link load balancing
- Virtual BRAS/PPP over Ethernet
- Software-Define WAN

- WAN Port Mapping and Server Load Balancing
- Built-in Wireless LAN Controller for Panabit access points
- Built-in DHCP and DNS

### Deep Packet Inspection

- Maximum 80Gbps DPI throughput
- Support encrypted traffic analysis
- Support 1GbE/10GbE/40GbE network interfaces and line-rate DPI for 40GbE network interface
- Support MPLS and IPv6
- Support application recognition of 14 categories and 1000+ applications
- Support DPI signature online upgrade

### Application Performance Monitor and Traffic Visualization

- Application traffic real-time dashboard: throughput, session counts, top IP, top session, top application
- Application traffic historical view: last-day, last 3-day, last week and last month
- Application end-to-end performance monitor: latency, session status and duration, number of packets, maximum packet size, maximum segment size
- Panabit IAG system status monitor: network throughput, total session counts and new sessions per second, active IP's, packet per second, CPU utilization/temperature
- Physical network interface real-time traffic view and historical traffic trend
- Virtual network interface real-time traffic view and historical traffic trend
- WAN group real-time traffic view and historical traffic trend: last-day, last 3-day, last week, last month
- Virtual link(network interface/source IP/destination IP) traffic view
- Custom application group traffic view
- DNS QPS view
- DHCP lease view
-

### Network Address Translation

- Support NAT and Carrier Grade NAT
- Maximum 18 million concurrent sessions
- Maximum 1 million new sessions per second
- NAT configuration: per application, application group, PPPoE service
- NAT policy parameters: source interfaces, IP pool, VLAN ID, source IP/port, destination IP/port, protocol, DSCP marking
- Support NAT/CGNAT policy scheduler

### Application Policy Routing

- Maximum 64K entries for Application Policy Routing
- Support routing policy for an individual application or an application group
- Support routing policy for an individual PPPoE server or all PPPoE servers
- Application routing policy parameters: source interfaces, IP pool, VLAN ID, source IP/port, destination IP/port, protocol, DSCP marking
- Support routing policy for DNS request: permit/deny/redirect/reply/QPS limit
- Support application routing policy scheduler

### Application Traffic Engineering

- Maximum 64K entries for Application Traffic Engineering Policy
- Application traffic control policy for an individual application or an application group
- Application traffic control policy parameters: network interface, traffic direction, VLAN ID, IP/MAC address, source IP/port, destination IP/port
- Application traffic control actions: permit/deny/redirect/rate limit/DSCP marking
- Application session control policy for an individual application or an application group
- Application session control policy parameters: network interface, source IP/port, destination IP/port
- Application session control policy actions: session rate limits for TCP sessions, UDP sessions or total sessions
- HTTP access control policy parameters: source interface, VLAN ID, source IP, HTTP GET or POST, URL Group, File Type,
- HTTP access control policy actions: permit/deny/redirect/notification/request forward/TCP reset
- Support application traffic engineering policy scheduler

### WAN Group and WAN link load balancing

- Maximum 20 WAN Groups
- Link load balancing algorithm for WAN Group
  - Source IP+Destination IP
  - Source IP/Port+Destination IP/Port
  - Source IP
  - Source IP/Port
  - Destination IP
  - Destination IP/Port
- Support bandwidth weight for each WAN link
- Support to assign one WAN link to multiple WAN Groups

### Virtual BRAS/PPPoE

- Maximum 80Gbps PPPoE throughput
- Maximum 500 virtual PPPoE server instances with independent IP pool, QoS settings and subscriber authentication
- Maximum 32,000 PPPoE clients per system
- Embedded subscriber management
- Support subscriber local authentication, RADIUS AAA and RADIUS Vender Specific Attributes(VSA)
- Support application routing policy for individual PPPoE server or all PPPoE traffic

### Software-Defined WAN

- Support Panabit iWAN encrypted tunnel
- Support multiple tunnels per site
- Cloud or central management for multiple sites deployment, manage SD-WAN topology and connection
- Support application policy routing for iWAN tunnel

### WAN Port Mapping and Server Load Balancing

- Support WAN Port Mapping for an IP address, a server or a server group
- Support Server Group load balancing algorithm: Round Robin, Source IP, Source IP/Port
- Support WAN Port Mapping/Server Load Balance policy parameters: WAN Interface, destination IP/port range, Source IP/port range, Protocol, Next-hop

### High Availability

- Dual-OS on each system, failover time < 1ms
- Support active-passive high availability cluster
- Support WAN link status healthcheck
- Support hardware bypass on selected appliance models

### Administration

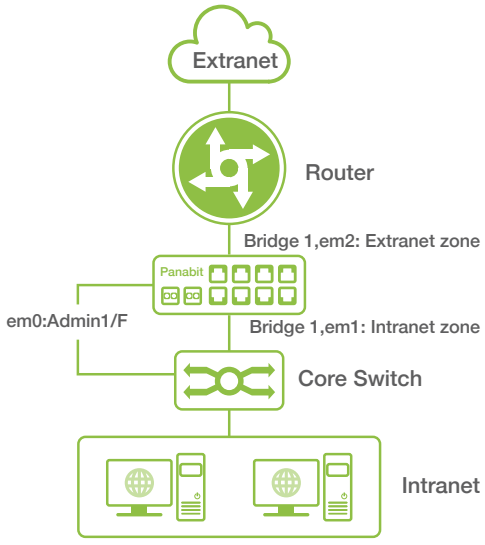
- Management access: HTTPS, SSH, telnet, console
- Central Management: Panabit Cloud Platform
- System Integration: SNMP, syslog, panalog
- Administrator Role-Based Access Control
- Language support: English

### System Performance Spec

- Maximum 40 million packets per second (Mpps) forwarding capability
- Maximum 18 million concurrent sessions
- Maximum 1 million new sessions per second
- Maximum 600,000 concurrent users/active IP addresses
- Maximum 24 physical WAN interfaces, support Intel 1GbE, 10GbE and 40GbE network interface cards
- Maximum 1000 virtual WAN interfaces
- Maximum 20 WAN groups

## Panabit IAG Typical Deployment Modes

Transparent Bridging Mode




Panabit is deployed as a transparent bridge between the customer network's router and core switches. The customer doesn't need to change their network design, as Panabit is transparent for existing network equipment.

In Transparent Bridging mode, Panabit can be used for application analysis and visualization, application traffic optimization and user behavior analytics

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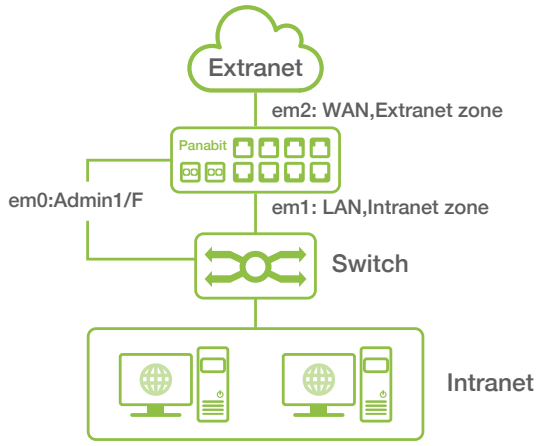
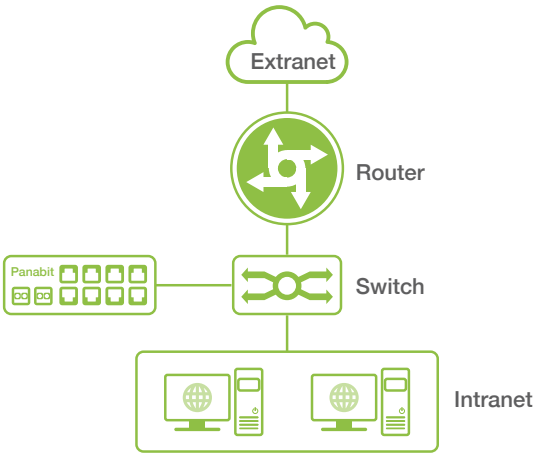
Gateway Mode




Panabit is deployed as a gateway at the network's exit point. It provides DHCP service, PPPoE authentication, Web Authentication, high performance NAT, static

routing, application traffic optimization and WAN link load balancing.

TAP Mode




TAP Mode redirects network traffic to Panabit by utilizing switch-port traffic mirroring or splitting, minimizing network disruption. Panabit will then analyze network traffic for user behavior analytics.

## Panabit Licensing Model

Panabit IAG offers perpetual licenses for its appliance offerings and subscription licenses for its Professional Edition software offerings. The customer can purchase capacity on a needs-basis and Panabit IAG system capacity can be increased seamlessly by purchasing an upgrade license any time during the license's validity period.

For evaluation customers, Panabit also offers a 100-user(IP addresses) standard edition software license. It is free of use but possesses limited functionality.

## Specifications

Table 1: Panabit IAG Appliance Specification

| Panabit IAG Appliance Specifications | | | | | |
|---|---|---|---|---|---|
| Panabit IAG Appliance | | | | | |
| Panabit IAG Appliance | Mini | PX3 | PX7S | PX23 | PX41S |
| Maximum Packet Per Second(PPS) | 500Kpps | 500Kpps | 7Mpps | 14Mpps | 40Mpps |
| Maximum Throughput | 2 Gbps | 2 Gbps | 30Gbps | 55Gbps | 160Gbps |
| Recommended Throughput | 1 Gbps | 1 Gbps | 10 Gbps | 20 Gbps | 80 Gbps |
| Application Routing Policies | 64K | 64K | 64K | 64K | 64K |
| Traffic Engineering Policies | 64K | 64K | 64K | 64K | 64K |
| BASE Concurrent Users/IP Hosts | 200 | 600 | 1,800 | 6,400 | 16,000 |
| BASE Concurrent Sessions | 100,000 | 256,000 | 658,000 | 1,418,000 | 2,570,000 |
| New Sessions Per Second | 2,000 | 6,000 | 15,000 | 200,000 | 1,000,000 |
| Maximum Concurrent Users/IP Hosts | 600 | 3,200 | 32,000 | 300,000 | 600,000 |
| Maximum Concurrent Sessions | 256,000 | 938,000 | 3,690,000 | 12,050,000 | 18,050,000 |
| System | Mini | PX3 | PX7S | PX23 | PX41S |
| Rack Units(RU) | Desktop Form Factor | 1RU | 2RU | 2RU | 2RU |
| Dimensions (WxDxH, mm) | 166Wx108Dx36H (mm) | 426Wx330Dx44H (mm) | 440Wx500Dx70H (mm) | 440Wx560Dx88H (mm) | 430Wx550Dx88H (mm) |
| Management Ports | 1x HDMI<br>2x USB Port<br>1x Mgmt GE | 1x Console Port<br>2x USB Port<br>1x Mgmt GE | 1x Console Port<br>2x USB Port<br>1x Mgmt GE | 1x Console Port<br>2x USB Port<br>1x Mgmt GE | 1x Console Port<br>2x USB Port<br>1x Mgmt GE |
| Fixed I/O Ports | 3 GE | 4 GE/2 GE bypass/2 SFP | 5 GE/4 SFP/2 SFP+ | 1GE/4 SFP/4 SFP+ | 1 GE/8 SFP+ |
| Expansion Slots | 0 | 0 | 0 | 2 | 2 |
| Expansion Modules | N/A | N/A | N/A | PX23-4GE<br>PX23-4GF<br>PX23-2XF<br>PX23-4XF-XL | PX41-8GE<br>PX41-8GF<br>PX41-4GF<br>PX41-4GE<br>PX41-4XF-XL<br>PX41-2XF-40G |
| Default Power Supply | Single AC power supply | Single AC power supply | Single AC power supply | Dual AC power supply | Dual AC power supply |
| Optional Power Supply | N/A | N/A | Second AC power supply DC power supply | Dual DC power supply | N/A |
| Weight | 1KG | 6KG | 12KG | 16KG | 22.1KG |
| Shipping Weight | 1.5KG | 8KG | 15KG | 18KG | 24.5KG |
| Operating Environment | Mini | PX3 | PX7S | PX23 | PX41S |
| AC Power | 100-240V~50/60Hz | 100-240V~50/60Hz | 100-240V~50/60Hz | 100-240V~50/60Hz | 100-240V~50/60Hz |
| Optional DC Power | N/A | N/A | -36 to -72V | -36 to -72V | N/A |
| Power Consumption (W) | 20W | 30W | 120W | 150W | 300w |
| Temperature | 0~45°C | 0~45°C | 0~45°C | 0~45°C | 0~45°C |
| Relative Humidity | 5%~85% noncondensing | 5%~85% noncondensing | 10%~85% noncondensing | 10%~85% noncondensing | 5%~95% noncondensing |

**Notes:**

"Maximum Packet Per Second(PPS)" is obtained under test conditions: DPI is enabled, 300 traffic sessions without any policy enforced

'Maximum Throughput" is obtained using the real-world application traffic mix: 512 Byte-600 Byte per packet

Table 2: System Requirements for Panabit IAG Software Offering

| System Requirements |
| --- |
| Intel X86-based bare-metal platform |
| Minimum 2GB RAM |
| Minimum 128GB hard drive |
| Ethernet Controller (Only support NIC listed below) |
| Gigabit: Intel Ethernet Controller 82574, 82576, 82580, 82583, i210, i211, i350 series |
| 10 Gigabit: Intel Ethernet Controller 82599, XL710 series |
| 40 Gigabit: Intel Ethernet Controller XL710 series |
| **Panabit IAG Software License** |
| Subscription license, minimum 80 concurrent users(IP hosts)/30,000 concurrent sessions, can be upgraded to maximum 600K concurrent users(IP hosts)/18M concurrent sessions if the hardware configuration allows |

**Notes:**

Panabit IAG software download link https://panabit.ridgesecurity.ai

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