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TECHDOCS

# ION 2000 Hardware Reference

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### Last Revised

March 26, 2021

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# Before You Begin

Read the following topics before you install or service a Palo Alto Networks® next-generation firewall or appliance. The following topics apply to all Palo Alto Networks firewalls and appliances except where noted.

# Tamper Proof Statement

To ensure that products purchased from Palo Alto Networks were not tampered with during shipping, verify the following upon receipt of each product:

- The tracking number provided to you electronically when ordering the product matches the tracking number that is physically labeled on the box or crate.
- The integrity of the tamper-proof tape used to seal the box or crate is not compromised.
- The integrity of the warranty label on the firewall or appliance is not compromised.

# Third-Party Component Support

Before you consider installing third-party hardware, read the Palo Alto Networks Third-Party Component Support statement.

# Product Safety Warnings

To avoid personal injury or death for yourself and others and to avoid damage to your Palo Alto Networks hardware, be sure you understand and prepare for the following warnings before you install or service the hardware. You will also see warning messages throughout the hardware reference where potential hazards exist.

*All Palo Alto Networks products with laser-based optical interfaces comply with 21 CFR 1040.10 and 1040.11.*

**The following safety warnings apply to all Palo Alto Networks firewalls and appliances, unless a specific hardware model is specified.**

- When installing or servicing a Palo Alto Networks firewall or appliance hardware component that has exposed circuits, ensure that you wear an electrostatic discharge (ESD) strap. Before handling the component, make sure the metal contact on the wrist strap is touching your skin and that the other end of the strap is connected to earth ground.

  **French Translation:** Lorsque vous installez ou que vous intervenez sur un composant matériel de pare-feu ou de dispositif Palo Alto Networks qui présente des circuits exposés, veillez à porter un bracelet antistatique. Avant de manipuler le composant, vérifiez que le contact métallique du bracelet antistatique est en contact avec votre peau et que l'autre extrémité du bracelet est raccordée à la terre.
- Use grounded and shielded Ethernet cables (when applicable) to ensure agency compliance with electromagnetic compliance (EMC) regulations.

  **French Translation:** Des câbles Ethernet blindés reliés à la terre doivent être utilisés pour garantir la conformité de l'organisme aux émissions électromagnétiques (CEM).
- (ION 7000 and ION 9000 only) At least two people are recommended for unpacking, handling, and relocating the heavier firewalls.
- Do not connect a supply voltage that exceeds the input range of the firewall or appliance. For details on the electrical range, refer to electrical specifications in the hardware reference for your firewall or appliance.

  **French Translation:** Veillez à ce que la tension d'alimentation ne dépasse pas la plage d'entrée du pare-feu ou du dispositif. Pour plus d'informations sur la mesure électrique, consulter la rubrique des caractéristiques électriques dans la documentation de votre matériel de pare-feu ou votre dispositif.
- WAN and LAN ethernet ports are suitable for interconnection to other local device ethernet ports. These ports are not designed for direct connection to Public Switched Telephone Network (PSTN) ports or interfaces. In addition, copper-based WAN ports, LAN ports, and copper-based modular transceivers are not rated to connect to Telecommunications Outside Plant (OSP) cabling.

- (Devices with serviceable batteries only) Do not replace a battery with an incorrect battery type; doing so can cause the replacement battery to explode. Dispose of used batteries according to local regulations.

  **French Translation:** Ne remplacez pas la batterie par une batterie de type non adapté, cette dernière risquerait d'exploser. Mettez au rebut les batteries usagées conformément aux instructions.

- I/O ports are intended for intra-building connections only and not intended for OSP (Outside Plant) connections or any network connections subject to external voltage surge events.

| | |
|---|---|
| •  | (All Palo Alto Networks appliances with two or more power supplies)<br><br>Caution: Shock hazard<br><br>Disconnect all power cords (AC or DC) from the power inputs to fully de-energize the hardware.<br><br>**French Translation:** (Tous les appareils Palo Alto Networks avec au moins deux sources d'alimentation) Débranchez tous les cordons d'alimentation (c.a. ou c.c.) des entrées d'alimentation et mettez le matériel hors tension. |

# ION 2000 Overview

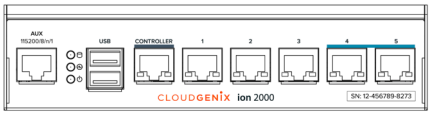
Learn about Instant-On Network (ION) 2000 and plan your deployment.

# ION 2000

The Prisma SD-WAN ION 2000, designed for the enterprise branch, transforms legacy wide area networks (WANs), enabling you to combine heterogeneous underlying transports into a unified hybrid WAN. It establishes service-level agreements (SLAs) for security, path selection, and application performance. It helps gain direct insight into end-user application performance for traditional, SaaS, modern, and encrypted applications.

ION 2000 participates in a bi-directional communication with the Prisma SD-WAN controller, enabling configuration of devices, applications, and WANs, providing analytics on devices and applications.

You can deploy the ION 2000in a standalone fashion without a data center device, enabling granular control and visibility for direct-to-internet deployment scenarios, or in conjunction with ION 7000 or ION 9000 in the data center, creating a secure, full-mesh fabric across the WAN.



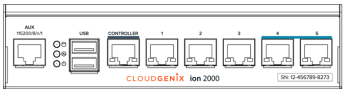

You can deploy the ION 2000 as follows:

- Standalone Prisma ION 2000(No HA)
- Prisma ION 2000 + Existing Router HA
- Prisma ION 2000 + Prisma ION 2000 HA

# ION 2000 Ports

The ports on the ION 2000 are used as follows:




| Ports | Description |
|---|---|
| AUX | This port is an auxiliary access port intended for offline access, configuration, and troubleshooting a system during installation. |
| USB | This port is reserved for future use. |
| Controller | This port is used by ION 2000 to communicate with the Prisma SD-WAN controller. |
| Internet/LAN/WAN Ports | Ports 1 - 5 are used for internet, local area network (LAN), or private router or multi-path label switching (MPLS) connectivity. The WAN or LAN ports can be coupled or de-coupled as needed. By default, ports 2 and 3 are DHCP-enabled ports. |
| Fail-to-Wire Port Pair | By default, ports 4 and 5 are pre-configured as a fail-to-wire port pair. This port pair may be set to fail open or closed. |

# ION 2000 Front Panel with LEDs

The ION 2000 LEDs indicate the status of the disk, power, and the controller connectivity:

| Icons | Color |
|---|---|
| Displays disk status  | Disk activity—Orange light (Blinking)  |
| Displays controller connectivity status  | • Connected—Blue light  <br>• Not Connected—Red light  |
| Displays power status  | • Powered On—Green light  <br>• Powered Off—No light  |

# ION 2000 Specifications

Learn the ION 2000 physical specifications before starting.

| ION 2000 Specification | Description |
|---|---|
| I/O | |
| Controller | 1 x 10/100/1000 RJ-45 |
| Console | 1 x RJ-45 |
| WAN/LAN/Internet | 5 x 10/100/1000 RJ-45. Port pair 4/5 have programmable inline fail-to-wire (bypass-pair) capability. |
| Power and Mechanical | |
| Type/Watts | 60W Power Adapter |
| Power Input | AC 100~240 V @50~60 Hz |
| Fan cooling | Fanless |
| Certifications | |
| Certifications | IEC 60950-1, cULus, FCC & CE Class B, BIS, CCC, KCC |
| Environmental | |
| Operating temperature | 32°F to 104°F (0°C to 40°C) |
| Storage temperature | -4°F to 158°F (-20°C to 70°C) |
| Operating humidity | 5% to 90% (non-condensing) |
| Storage humidity | 5% to 95% (non-condensing) |
| Physical | |
| Weight | 2.64 lbs |
| Dimensions | 5.73" x 6.97" x 1.73" |
| Local network access | Typically a downstream Layer 2 or Layer 3 Ethernet switch and/or a Wireless Access Point (WAP). |
| Internet connectivity | This connectivity is used to reach the Prisma SD-WAN controller. It can be in the form of a private connection by an MPLS network through a corporate data center. |

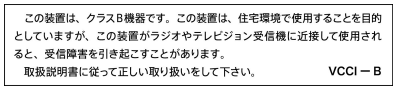
| ION 2000 Specification | Description |
| --- | --- |
| | It can also be a public internet connection provided by a local or broadband connection. |

# ION Device Compliance Statement

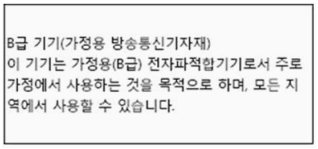
The following lists the ION device hardware compliance statements:

- **VCCI**: This section provides the compliance statement for the Voluntary Control Council for Interference by Information Technology Equipment (VCCI), which governs radio frequency emissions in Japan. The following information is in accordance to VCCI Class B requirements:




  **Translation**: This is a Class B product. In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective actions.

- **KCC**




  **Translation**: Korean Communications Commission (KCC) Class B Statement—This equipment is an electromagnetic compatible device for business purposes (Class B). The provider or user should be aware that the equipment is intended for use outside the home.

- **UL**: Product Ambient Temperature: 0~40 degree C

  *Risk of explosion if battery is replaced by an incorrect type. Dispose of used battery according to local regulations.*

- **CE (European Union (EU) Electromagnetic Compatibility Directive)**

  The ION devices that do not contain radios (ION 1200) comply with the requirements set out in the Electromagnetic Compatibility Directive (2014/30/EU) and the Low Voltage Directive 2014/35/EU.

  The ION devices with radios (ION 1200-C-ROW, ION 1200-C5G-WW) comply with the requirements set out in the Radio Equipment Directive (2014/53/EU).

- **Federal Communications Commission (FCC) statement for a Class B digital device or peripheral**: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 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 receiver.
- Connect the equipment to an outlet on a circuit that is different from the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

- **ICES (Canadian EMC Compliance Statement)**: This Class B digital apparatus complies with Canadian ICES-003.

  **French Translation**: Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

- **Declaration of the Presence Condition of the Restricted Substances Marking.**

**限用物質含有情況標示聲明書**
Declaration of the Presence Condition of the Restricted Substances Marking

證書號碼／受理編號：(No.)　新申請
Certificate No./Application No.
商品標籤及商品檢驗標識：(Picture)
Product Label and Commodity Inspection Mark.
樣張及其標示位置：(Description and Picture)
Sample and its location

設備名稱：　網路服務器　，型號（型式）：ION 2000
Equipment name　Type designation (Type)

| 單元Unit | 限用物質及其化學符號 Restricted substances and its chemical symbols | | | | | |
|---|---|---|---|---|---|---|
| | 鉛Lead (Pb) | 汞 Mercury (Hg) | 鎘 Cadmium (Cd) | 六價鉻 Hexavalent chromium ($Cr^{+6}$) | 多溴聯苯 Polybrominated biphenyls (PBB) | 多溴二苯醚 Polybrominated diphenyl ethers (PBDE) |
| 固態硬碟 HDD | – | ○ | ○ | ○ | ○ | ○ |
| 金屬機構件 ME metal part | ○ | ○ | ○ | ○ | ○ | ○ |
| 塑膠機構件 ME plastic part | – | ○ | ○ | ○ | ○ | ○ |
| 配件(例：電源線等) Accessory (ex:cable, etc.) | – | ○ | ○ | ○ | ○ | ○ |
| 印刷電路板元件 PCBA | – | ○ | ○ | ○ | ○ | ○ |

備考1.〝超出0.1 wt %〞及〝超出0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1：“Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.
備考2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2：“○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.
備考3.〝–〞係指該項限用物質為排除項目。
Note 3：The “–” indicates that the restricted substance corresponds to the exemption.

茲切結保證所提供之商品限用物質含有情況標示內容係經執行測試作業或採適當之品質管理措施，並備置前述相關文件，確認正確無誤後提供貴局。並同意配合貴局執行後市場管理作業所需，依商品檢驗法第49條之規定，於限期28個工作天內提供相關證明文件以供審查。
I hereby ensure that “the presence conditions of the restricted substance” provided above have been proved by testing or appropriate quality control measures, and make sure the relevant documents provided are correct and ready. Also, I agree to cooperate with BSMI, as the Article 49 of the Commodity Inspection Act stipulates, to provide the relevant documents, if needed, for verification within 28 working days when BSMI carries out the market surveillance activities.

# ION 2000 Fail-to-Wire Cabling Matrix

The ION 2000 fail-to-wire cabling matrix is shown below:

| Port Type/ Speed | WAN Port Device | LAN Port Device | Recommend Cable<br>WAN Port-to-WAN Device | Recommend Cable<br>LAN Port-to-LAN Device | Recommend Settings<br>ION 2000 Port | Recommended<br>Cable Connection End Result |
|---|---|---|---|---|---|---|
| **Gigabit Ethernet** | ALL | ALL | Any Ethernet Cable* | Any Ethernet Cable* | Auto Negotiation | Varies |
| **10/100 Ethernet (Hardcoded or Auto Detection)** | Router/PC (NIC MDI) | Router/PC (NIC MDI) | Crossover Ethernet Cable | Crossover Ethernet Cable | Hardcode to Match Both Devices | Crossover |
| | Router/PC (NIC MDI) | Hub/ Switch (HUB MDI) | Crossover Ethernet Cable | Crossover Ethernet Cable | Hardcode to Match Both Devices | Straight Through |
| | Hub/ Switch (HUB MDI) | Router/PC (NIC MDI) | Straight Through Ethernet Cable | Straight Through Ethernet Cable | Hardcode to Match Both Devices | Straight Through |
| | Hub/ Switch (HUB MDI) | Hub/ Switch (HUB MDI) | Straight Through Ethernet Cable | Straight Through Ethernet Cable | Hardcode to Match Both Devices | Crossover |

Note: *Gigabit-rated Crossover or Straight-Through Copper Ethernet Cable. All ports are RJ45.

# ION 2000 Installation Kit Components

The ION 2000 installation kit contains the following parts and tools to install the device:

- 1x 36W power adapter
- 1x USB-to-RJ45 cable
- 1x power cord, which varies depending on the country or region

The following hardware parts are optional and must be ordered separately:

- Rack-mount kit:
  - 2x rack brackets
  - 1x screw kit
- Wall-mount kit:
  - 2x wall brackets
  - 1x screw kit
- Additional external power supply kit:
  - 1x extra power supply and connector
  - 1x power cable

# Power on the ION 2000

Connect the power cables to the ION device and plug the device power cable into an AC power outlet. When you switch on the power, the device is powered on and the power indicator turns green.

## Shut Down the ION 2000

Shut down the ION 2000 in the following ways:

*Do not shut down the ION devices abruptly by pulling the power cord.*

- Shut down using the Device Toolkit commands

  Run the device toolkit command `debug shutdown` to shut down the device.

  *Ensure the device is physically accessible to turn it back on, before executing the command.*

- Shut down using the Power Switch

  Press the power switch 5 times (press and hold for 1 second, then, release) to shut down the device.

- Shut down using a Python script

  Gracefully shut down a single ION device or multiple ION devices using a script.

  First generate an API token and add it to `cloudgenix_settings.py` and then execute the command `./shutdown.py --serial <20-019291-9468>`. To shut down multiple devices, add the serial numbers of the ION devices as shown below:

```
./shutdown.py --serial 20-019291-9468
        ./shutdown.py --serial 20-019291-9469
        ./shutdown.py --serial 20-019291-9470
```

## Reboot the ION 2000

Press the power switch 3 or 4 times to reboot the ION 2000.

# Install ION 2000

Before you install the Prisma SD-WAN ION 2000 at a branch site, verify the following physical installation requirements, the installation kit, wall-mount, and the rack-mount components.

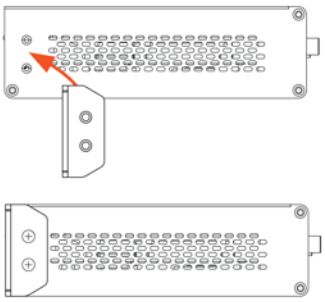
# Rack Mount the ION 2000

Rack-mount the ION 2000 on a standard 19 inch rack. In the optional rack-mount kit, there are two identical L-shaped brackets that is attached to either side of the ION 2000 with two (2) screws.

After you attach the brackets, mount the ION 2000 on to any standard 19 inch rack using three appropriate screws.

**STEP 1 |** Gather the L-shaped rack-mounting brackets.

**STEP 2 |** Locate the two (2) screw holes on each side of the device.

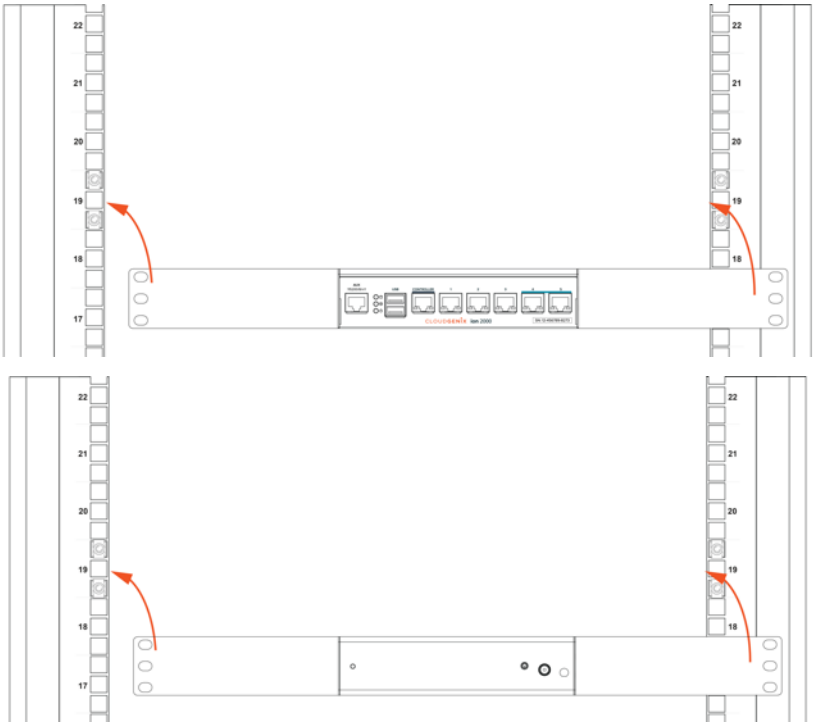


**STEP 3 |** Attach the L-shaped brackets to the screw holes on either the front or back of the device.

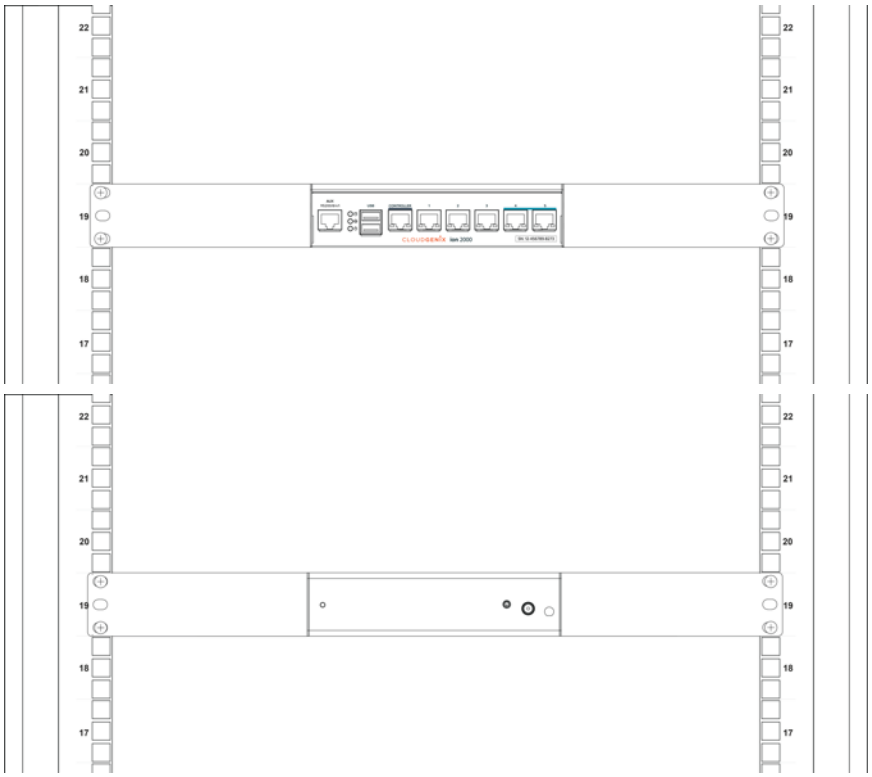

**STEP 4 |** Ensure that the screws are securely tightened into the brackets.

**STEP 5 |** Attach the L-shaped rack-mounting brackets to a standard 19 inch rack with the long-threaded nails.



**STEP 6 |** Finally, verify that the device is securely mounted on the rack.

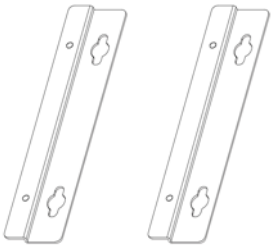


# Wall Mount the ION 2000

Mount the Prisma SD-WAN ION 2000 on the wall using the optional wall mounting kit.

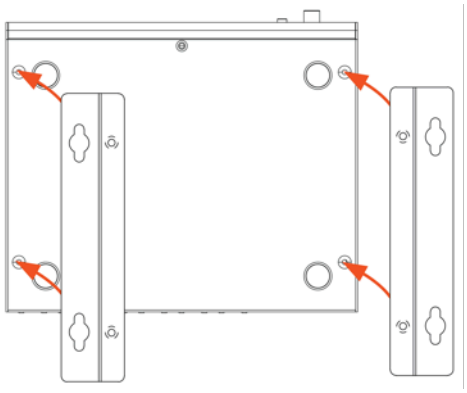
**STEP 1 |** Gather the wall mounting brackets.

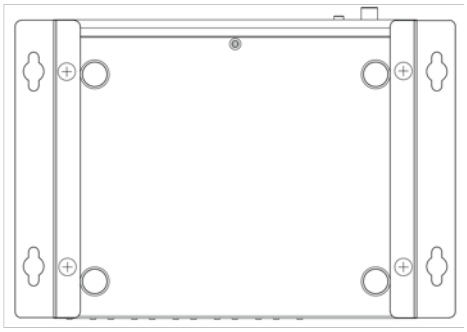


**STEP 2 |** Turn the ION device upside down and locate the four (4) screw holes on each corner of the device.

**STEP 3 |** Place the brackets on each side of the device, making sure to align the screw holes on the bracket and the device.

**STEP 4 |** Insert the screws to secure the brackets.

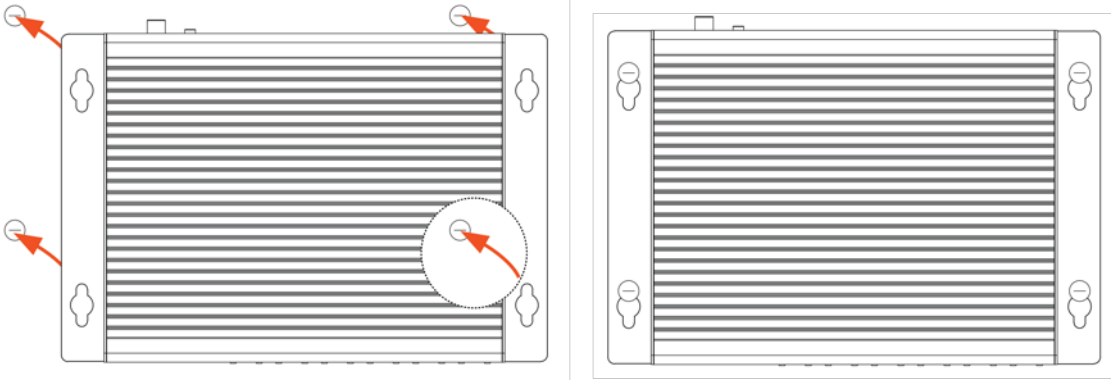




**STEP 5 |** Place the device on the wall where it will be mounted. Mark the wall with circles for each screw hole so it can be used later to insert the wall anchors.

**STEP 6 |** With a power drill, apply the four (4) white wall anchors into the screw holes.

**STEP 7 |** Insert the threaded nails partially into the anchors, leaving a tiny gap to hang the wall mounting bracket.



**STEP 8 |** Hang the device onto the wall, making sure to match the four (4) screw holes on the bracket with the four (4) threaded nails on the wall.

**STEP 9 |** Tighten the screws to secure the device on the wall.

**STEP 10 |** Finally, verify that the device is securely mounted on the wall.

# Set Up the ION 2000 with an Existing Router

The analytic or control mode with an existing router allows you to insert the ION 2000 without modifying any network settings at the remote office. The ION 2000 utilizes an inline insertion method with fail-to-wire redundancy to accomplish this. The inline insertion method enables the ION device to inspect or process traffic by only requiring physical changes to the network while maintaining or enabling additional redundancy.

While the control mode removes an existing router at a site, it is often simpler and less intrusive to deploy in the control mode with an existing router. In this scenario, you can unplug or disable the existing router after all functions are verified.

**STEP 1 |** Prepare the cabling of the ION 2000 to insert it into your network.

Ensure that internet access via a private WAN connection or direct internet broadband is available at your site to allow for remote configuration of the ION 2000.

**STEP 2 |** Mount the ION 2000 in the desired installation location before powering on or making any network modifications.

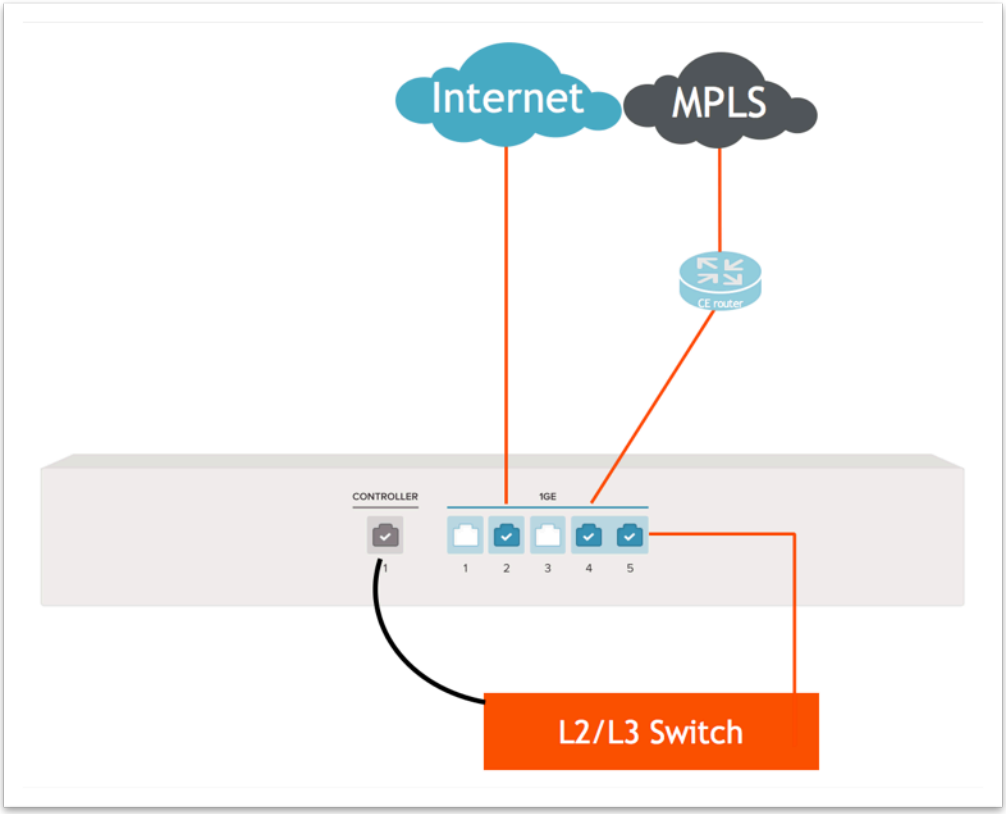
**STEP 3 |** Connect the power cable to the ION device and then plug the device power cable into an AC power outlet.

**STEP 4 |** Power on the ION 2000 device.

When the device is powered on, the power indicator turns green.

**STEP 5 |** Connect the cables to controller, internet, and LAN or WAN ports.




- Controller Port: Connect the controller port to an ethernet port. The controller port is used for ION-to-network controller communication and monitoring. By default, it is configured as a DHCP client.
- Internet or WAN or LAN Ports:
  - Ports 1 to 3 are used as internet, WAN, or LAN ports. Ports 2 and 3 are DHCP-enabled by default.
  - Ports 4 and 5 are used as WAN or LAN ports. They are pre-configured as bypass pairs with inline fail-to-wire capability.

**STEP 6 |** Select any port(s) from ports 1 to 3 to configure as internet ports and plug the internet ports into a broadband internet source.

- By default, the ports configured for internet are protected by a firewall. They can exist behind a traditional firewall or NAT device.
- Configure the controller port to an existing DHCP-enabled LAN with access to the internet via a private network to enable configuration of static internet port values, if the internet ports require static IP configuration.

**STEP 7 |** Connect the cables to port 4 and 5 for private WAN connections as shown in step 5, and verify communication between the devices connected to the corresponding WAN or LAN ports.

*Best Practice*

*It is best practice to execute this step during low traffic time or a network maintenance window where a 1-5 second network interruption can be tolerated.*

At this point, the ION 2000 displays as **Connected** and **Online-restricted** on the Prisma SD-WAN console.

**STEP 8 |** Next Step: Proceed to claim and configure the ION device through the Prisma SD-WAN console.

# Set Up the ION 2000 by Replacing the Router

In control mode, you replace the existing router with the ION 2000 as a drop-in replacement for a WAN router. This mode is most useful for saving cost at new sites that are designed without a traditional router.

**STEP 1 |** Prepare the cabling of the ION 2000 to the rest of the network.

Ensure that internet access via broadband or a temporary private network connection is available at the site to allow for remote configuration of the ION 2000.

**STEP 2 |** Mount the ION 2000 in the desired installation location before powering on or making any network modifications.

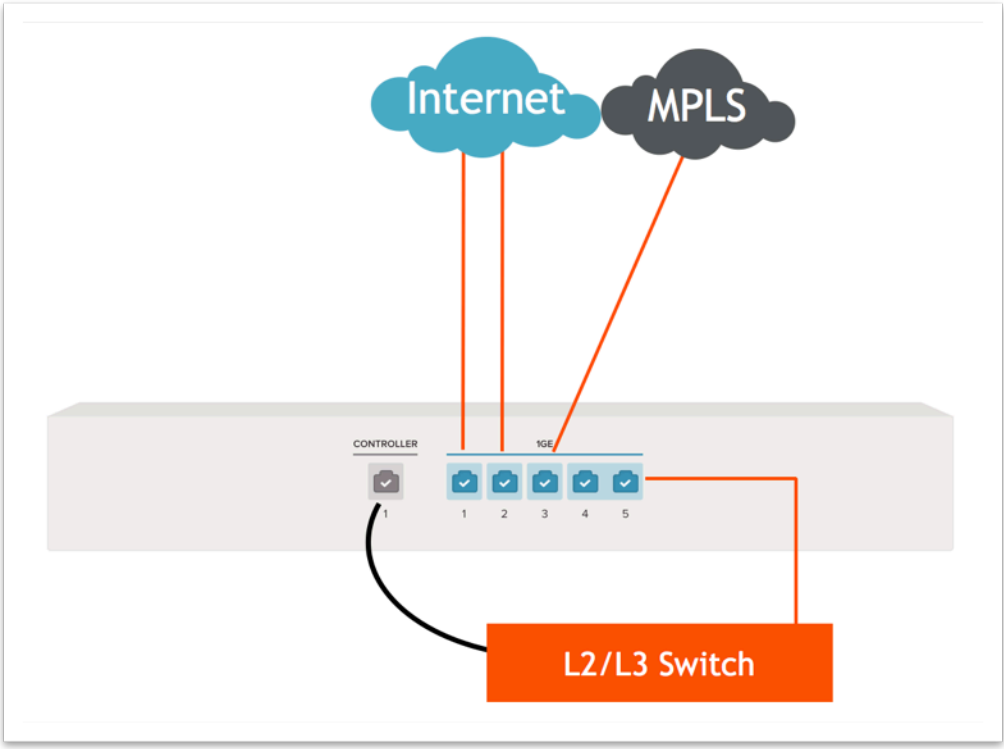
**STEP 3 |** Connect the power cable to the ION device and then plug the device power cable into an AC power outlet.

**STEP 4 |** Power on the ION 2000 device.

When the device is powered on, the power indicator turns green.

**STEP 5 |** Connect the cables for controller, internet, and LAN or WAN ports.




- Controller Port: Connect the controller port to an ethernet port similar. The controller port is used for ION-to-Prisma SD-WAN controller communication and monitoring. By default, it is configured as a DHCP client.
- Internet/WAN/LAN Ports:
  - Ports 1 to 3 are used as internet or WAN or LAN ports. Ports 2 and 3 are DHCP-enabled by default.
  - Ports 4 and 5 are used as WAN or LAN ports. They are pre-configured as bypass pairs with inline fail-to-wire capability.

**STEP 6 |** Select any port(s) from ports 1 to 3 to configure as internet ports and plug the internet ports into a broadband internet source.

- By default, the ports configured for internet are protected by a firewall. They can exist behind a traditional firewall or NAT device.
- If the internet ports require static IP configuration, configure the Controller port to an existing DHCP-enabled LAN with access to the internet via a private network to enable configuration of static internet port values.

**STEP 7 |** Connect the cables to port 4 and 5 for private WAN connections as shown in step 5, and verify communication between the devices connected to the corresponding WAN/LAN ports.

*Best Practice*

*It is best practice to execute this step during low traffic time or a network maintenance window where a 1-5 second network interruption can be tolerated.*

At this point, the ION 2000 displays as **Connected** and **Online-restricted** on the Prisma SD-WAN console.

**STEP 8 |** Next Step: Proceed to claim and configure the ION device through the Prisma SD-WAN console.