

Virtual ION on Azure Deployment Guide

1.1.0

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About the Documentation

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Plan a Prisma SD-WAN Azure Virtual Deployment

Prisma SD-WAN Azure Virtual Deployment guide provides instructions for deploying Prisma SD-WAN ION devices to Microsoft Azure. This guide is intended for network administrators.

- [Prerequisites to Prisma SD-WAN Azure Deployment](#)
- [Prisma SD-WAN Azure Virtual Deployment](#)
- [Manage Virtual ION Licenses and Tokens](#)

Prerequisites to Prisma SD-WAN Azure Deployment

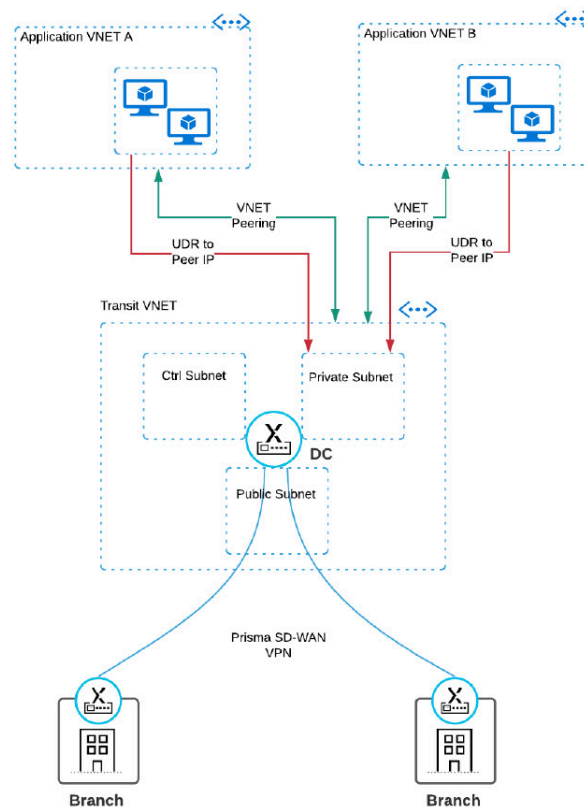
The following considerations are required to be met for the Prisma SD-WAN Azure deployment:

- Prisma SD-WAN
 - An active Prisma SD-WAN subscription with sufficient licenses to install at least 1 x v7108 ION.
- Microsoft Azure
 - An Azure account with permissions to create and update Azure Resource Groups, VNET (Virtual Network) and Virtual Machines.
 - An active Azure marketplace subscription to the Prisma SD-WAN ION Virtual Appliance.

Prisma SD-WAN Azure Virtual Deployment

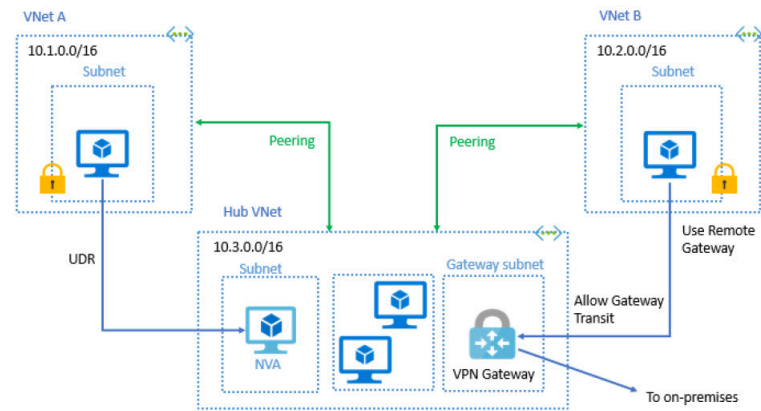
The Prisma SD-WAN Azure Virtual Deployment guide provides instructions for deploying Prisma SD-WAN ION devices to Microsoft Azure. It is intended for network administrators who plan to extend the Prisma SD-WAN fabric between existing or, to be deployed data centers in Azure VNets hosting applications and the rest of the corporate locations; thereby allowing administrators to align their WAN policies with business intent for performance, security, and compliance.

Figure 1 shows an example of branch deployments connecting to applications hosted in different Azure VNets, with a Prisma SD-WAN ION in Azure acting in a data center deployment model.



With cloud services such as Azure, there may be a single Resource Group with workloads behind it as previously shown. However, there may be instances where there are multiple workloads and associated resource groups.

To accomplish this, Microsoft implements Virtual network peering. With this type of deployment, a Prisma SD-WAN ION may be placed in the logical location where the Azure VPN is shown depending on the design of the organization. Refer [here](#) for more information on VPN Gateway Peering.




Manage Virtual ION Licenses and Tokens

For virtual form factors in Prisma SD-WAN, the instance(s) are bound to an authorization token. This provides for a set of controls to prevent unauthorized virtual devices to be added to an environment.

Generate Tokens

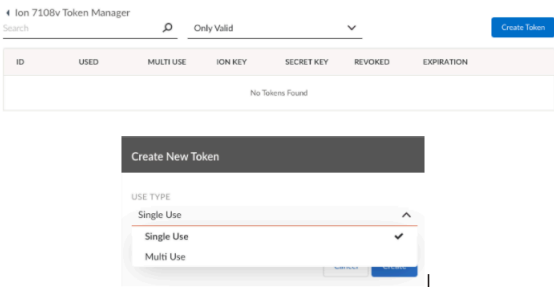
To deploy a Virtual ION using the Prisma SD-WAN Deployment Template in Azure you must first login to the Prisma SD-WAN portal and generate a token for the appropriate model.

 Only a **Super User** role can generate the authorization tokens.

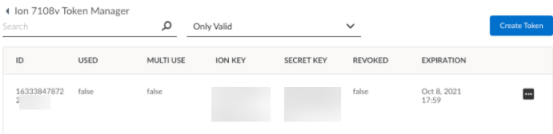
STEP 1 | Log in to the Prisma SD-WAN portal and select **Settings > ION License Management > Manage Tokens**.

STEP 2 | Create **Create Token**.

Single-use or Multi-use tokens can be generated through the Prisma SD-WAN portal. If deploying more than one ION device of the same model type within a 48-hour period, select **Multi Use** token, otherwise select **Single Use** token.



STEP 3 | Copy the **ION Key** and **Secret Key** that will be used during the Azure deployment. These are mapped to the values of `ion_key` and `secret_key` in the Azure environment.



ID	USED	MULTI USE	ION KEY	SECRET KEY	REVOKED	EXPIRATION
1633847872	false	false			false	Oct 8, 2021 17:59

Deploy Prisma SD-WAN to Azure

- [Deploy Using the Prisma SD-WAN Azure Deployment Template](#)
- [Deploy vIONs with \(High Availability\) HA in Azure](#)
- [Claim the Prisma SD-WAN ION and Assign to a Datacenter](#)
- [Finalize Azure Configuration](#)
- [Use Azure Serial Console to access Virtual ION](#)

Deploy Using the Prisma SD-WAN Azure Deployment Template

STEP 1 | Log in to the Azure Portal and navigate to the Marketplace. Search for **Prisma SD-WAN vION Solution Template for Azure Cloud** and select **Create**.



STEP 2 | In the **Basic** tab you will have the following options:

- **Subscription:** Select the appropriate Azure subscription you wish to use to deploy the Virtual Appliance.
- **Resource Group:** Create a new resource group to deploy the Virtual ION and associated resources.



In this release you can only deploy a new resource group, you cannot use an existing resource group.

- **Region:** Select the Azure Compute Region where you want to deploy the Virtual Appliance.

Create Prisma SD-WAN vION Solution Template ...

Basics Prisma SD-WAN vION network config Prisma SD-WAN vION Configuration Review + create

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ AzureCGXTME

Resource group * ⓘ (New) Prisma-SDWAN-ION-RG
[Create new](#)

Instance details

Region * ⓘ East US

[Review + create](#) < Previous Next: Prisma SD-WAN vION network config >

STEP 3 | Select Next: Prisma SD-WAN vION network config.

On the **Prisma SD-WAN vION network config** tab you will have the following options:

- Virtual Network
 - Virtual Network: transitVNET
 - Controller Subnet: 10.x.0.0/24
 - Internet/Public Subnet: 10.x.1.0/24
 - LAN/Private Subnet: 10.x.2.0/24
- Network Security Group: Inbound source IP
 - The NSG by default will allow only UDP 500/4500 inbound. If you wish to modify the sources you can specify here. It is recommended to leave this as the default 0.0.0.0/0 setting.

Basics **Prisma SD-WAN vION network config** Prisma SD-WAN vION Configuration Review + create

Configure virtual networks

Virtual network * [Create new](#)

Controller Subnet *

Internet/Public Subnet *

LAN/Private Subnet *

Network Security Group: inbound source IP *

[Review + create](#) [< Previous](#) [Next: Prisma SD-WAN vION Configuration >](#)



*These are the default values, if you want to customize these settings select **Create new** and complete.*

If using a custom VNET ensure that each of the subnets is at least a /29 and falls within the range of the VNET address range you select.

Create virtual network

The Microsoft Azure Virtual Network service enables Azure resources to securely communicate with each other in a virtual network which is a logical isolation of the Azure cloud dedicated to your subscription. You can connect virtual networks to other virtual networks, or your on-premises network. [Learn more](#)

Name *

ADDRESS SPACE

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

Address range	Addresses
<input type="text" value="10.100.0.0/16"/>	10,100,0,0 - 10,100,255,255 (65536 addresses)

SUBNETS

The subnet's address range in CIDR notation. It must be contained by the address space of the virtual network.

Subnet name	Address range	Addresses
Controller	10.100.0.0/24	10,100,0,0 - 10,100,0,255 (256 addresses)
Internet	10.100.1.0/24	10,100,1,0 - 10,100,1,255 (256 addresses)
<input type="text" value="LAN"/>	<input type="text" value="10.100.2.0/24"/>	10,100,2,0 - 10,100,2,255 (256 addresses)

STEP 4 | Once complete, click **Next: Prisma SD-WAN vION Configuration**.

STEP 5 | On the **Prisma SD-WAN vION Configuration** tab complete the following:

- Public IP address: Name of the Public IP Address for Port 1 that will be created.
- Domain name label: Must be unique
- Private IP Address: IP address in the Internet Subnet that will be assigned to the Virtual IONs Port 1 interface.



Azure reserves the first 3 IP addresses in any subnet, chose from the 4th available IP address in the Internet Subnet.

- Gateway: First IP address from the Internet Subnet
- DNS: DNS IP address for Port 1, you can use Azure's own DNS 168.63.129.16# or any public DNS for example 8.8.8.8 or 1.1.1.1.
- Prisma SD-WAN vION Version: Software version of the Virtual Appliance to deploy, recommended to use the latest version.
- Prisma SD-WAN vION Licence Key: Use the License Key that was generated from the Prisma SD-WAN portal.
- Prisma SD-WAN vION Secret Key: Use the License Key that was generated from the Prisma SD-WAN portal.
- Virtual Machine Size: Leave at the default selection.
- Virtual Machine Secret: Enter a secret code.
- Confirm Virtual Machine Secret: Re-enter the secret code.



*The **Virtual Machine Secret** specifies the default administrative password for direct access to the deployed vION instance within Azure. This credential is required by Azure to enforce administrative access for all deployed virtual machines. The corresponding default username is **adminuser**. Direct virtual machine access is typically not required, as vION management is primarily performed via remote sessions through the SCM portal.*

Create Prisma SD-WAN vION Solution Template

Basics Prisma SD-WAN vION network config **Prisma SD-WAN vION Configuration** Review + create

Public IP address * [Create new](#)

Domain name label * netis.cloudapp.azure.com

Private IP address *

Gateway *

DNS *

Prisma SD-WAN vION Version

Enable Bootstrap ☒ yes

Prisma SD-WAN vION License Key *

Prisma SD-WAN vION Secret Key *

Virtual machine size * 8 vcpus, 32 GB memory [Change size](#)

Virtual Machine Secret *

Confirm Virtual Machine Secret *

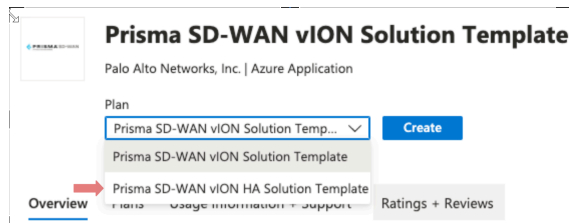
STEP 6 | Click **Next: Review + Create now**, Azure will validate the configuration against the deployment template.**STEP 7 |** Once validated, click **Create** to deploy the virtual appliance.

Deploy vIONs with (High Availability) HA in Azure

Use the Azure high availability (HA) templates to deploy the vIONs in Prisma SD-WAN using the marketplace solution.

STEP 1 | Create a **Resource Group** in the desired region in Azure.

Find the Marketplace listing of Prisma SD-WAN vION solution template and select **Prisma SD-WAN vION HA Solution Template**.



STEP 2 | Deploy the pair of vIONs by following the steps in the solution template.

1. Select the correct **Subscription**, **Resource Group**, and **Region**.

Basics Prisma SD-WAN vION network config Prisma SD-WAN vION Configuration Review + create

Project details
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource group *

Instance details
Region *

2. Configure the virtual networks required for the HA vIONs.
The template creates a new **Virtual network** with six subnets:

- ION 1 Controller
- ION 1 Internet/Public
- ION 1 LAN/Private
- ION 2 Controller
- ION 2 Internet/Public
- ION 2 LAN/Private

If you choose to use an existing virtual network, ensure that the selected **Virtual network** consists of six subnets.

Basics Prisma SD-WAN vION network config Prisma SD-WAN vION Configuration Review + create

Configure virtual networks

Virtual network *

Controller Subnet of vION 1 *

Internet/Public Subnet of vION 1 *

LAN/Private Subnet of vION 1 *

Controller Subnet of vION 2 *

Internet/Public Subnet of vION 2 *

LAN/Private Subnet of vION 2 *

Network Security Group: inbound source IP *

3. Configure the Private IP addresses for the internet or Public of each vION required for the vIONs to reach the controller over the WAN interface.
 - Configure the IP address for the Internet/Public subnet and the Gateway.
 - Take note of the Internet/Public subnet for each ION.
 - For the IP address, assign any address in the subnet other than the first four prefixes in the subnet (Azure uses these and are reserved).
 - For the Gateway address, use the first available IP address in the subnet.
 - For the DNS address, use a well-known public DNS service (For example, 8.8.8.8 or 1.1.1.1).
4. Configure the **Availability Zones** or **Sets**.

The screenshot shows the 'Prisma SD-WAN vION Configuration' tab in the Azure portal. It displays configuration options for vIONs, including public and private IP addresses, gateway addresses, and DNS addresses. The configuration is for two vIONs, vION1 and vION2. The public IP addresses are set to '(new) vION1' and '(new) vION2'. The private IP addresses are set to '10.0.0.1' and '10.0.0.2'. The gateway addresses are set to '10.0.0.1' and '10.0.0.2'. The DNS address is set to '10.0.0.1'.

- When deploying in an **Availability Zone**, ensure that the Azure region you are deploying supports zones. If the region does not, you can use an **Availability Set**.
 - Enter a numerical value for the Zone parameter for each ION. This is typically a numeric value and is a number in the range of 1-3. When you use the same zone number for both vIONs, the vIONs are deployed in the same zone, and there will be no use of an Availability Set.
 - Specify **None** as the zone value, if there is no Zone support in the region you're deploying or you wish to use an availability set. The vIONs thereby will be deployed in an Availability Set (across different fault or update domains) within the same region.
5. Configure the vION **License and Secret Keys** obtained from Prisma SD-WAN Controller.
 6. Configure the vION version. It's recommended to use the default configuration.

The screenshot shows the 'Prisma SD-WAN vION Configuration' page with the following settings:

- Prisma SD-WAN vION Version**: latest
- Enable Bootstrap**: yes
- Virtual machine size**: 1x Standard D8s v3 (8 vcpus, 32 GB memory)
- Virtual Machine Secret**: [Redacted]
- Confirm Virtual Machine Secret**: [Redacted]


7. Enter and confirm a secret code for the virtual machine.



The **Virtual Machine Secret** specifies the default administrative password for direct access to the deployed vION instance within Azure. This credential is required by Azure to enforce administrative access for all deployed virtual machines. The corresponding default username is **adminuser**. Direct virtual machine access is typically not required, as vION management is primarily performed via remote sessions through the SCM portal.

STEP 3 | Confirm if all resources are fully deployed and appear in the resource group created.

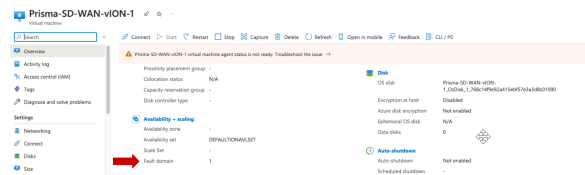
If the zones configured are correct and are supported in Azure, the vIONs will be deployed according to the specified availability zones. You can view and access the vIONs in the Prisma SD-WAN portal.


 *It can take a while for the resources to be fully deployed and the vIONs to connect to the controller.*

Name ↑	Type ↑
DefaultONNSG	Network security group
Prisma-SD-WAN-Transit-VNET	Virtual network
Prisma-SD-WAN-vION-1	Virtual machine
Prisma-SD-WAN-vION-1-eth0	Network Interface
Prisma-SD-WAN-vION-1-eth1	Network Interface
Prisma-SD-WAN-vION-1-eth2	Network Interface
Prisma-SD-WAN-vION-1-OSDisk_1_a90c40d5c4a846e5bbe4447699c4822d	Disk
Prisma-SD-WAN-vION-2	Virtual machine
Prisma-SD-WAN-vION-2-eth0	Network Interface
Prisma-SD-WAN-vION-2-eth1	Network Interface
Prisma-SD-WAN-vION-2-eth2	Network Interface
Prisma-SD-WAN-vION-2-OSDisk_1_98236c5bae604427803afcb752d53a3b	Disk
vlon-1-publicIP	Public IP address
vlon-2-publicIP	Public IP address

Mark the availability zone as **None**, to create the following resource within the resource group.

STEP 4 | If Availability zones are not configured, verify the vIONs deployed across different fault domains by accessing the vION instance overview page in the Azure portal.



 *You must deploy both vIONs in the same resource group along with one virtual network containing six subnets; three each for each vION's controller, internet, and LAN interfaces. You can now **claim** and **configure** the IONs in the Prisma SASE portal.*

Claim the Prisma SD-WAN ION and Assign to a Datacenter

After the ION successfully boots, as long as it can connect to the Prisma SD-WAN controller it will show up as Unclaimed: Online under the Map -> Unclaimed Devices section of the portal.



It can take up to 10 minutes for the ION to show up in the Controller.

STEP 1 | Claim the device by selecting **Workflows > Prisma SD-WAN Setup > Devices > Unclaimed Devices > Claim the device.**

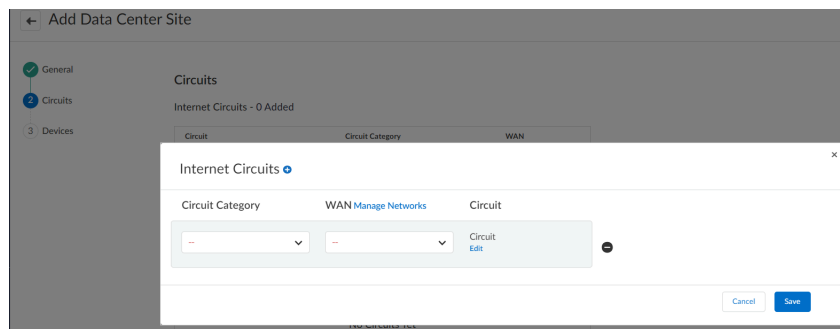
It will transition to an offline state while going through the claiming process.

STEP 2 | Create a Data Center Site while the device is being claimed.

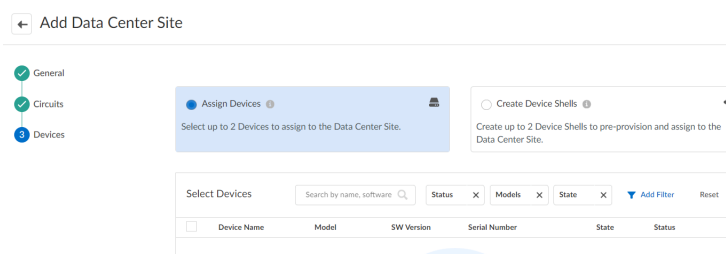


Although this workflow depicts how to assign the vION to a data center site, you can also assign the vION to a branch site or a branch gateway site. However, Prisma SD-WAN does not support high availability for vIONs deployed at a branch site or a branch gateway site.

1. Select **Workflows > Prisma SD-WAN Setup > Data Centers > Add Site.**
2. Enter a name for the site and other site details and click **Next.**
3. Add an Internet Circuit in the **Circuits** section and click **Next.**



4. Assign the device to the data center by selecting **Assign Devices** and selecting the ION device from the list of **Select Devices** and **Save.**



Configure Interface: 2

Main Configuration Sub-Interfaces (0) PPPoE

INTERFACE STATUS Port 2

ADMIN UP? ☐ No ☒ Yes

NAME 2

DESCRIPTION Optional

TAGS (MAX 10)

INTERFACE TYPE Port

USE THIS PORT FOR... Peer with a Network

CIRCUIT LABELS Select Circuits...

CONFIGURATION DHCP

> Advanced Options

STEP 4 | Configure a static default route pointing to the gateway of port 2 (the 1st IP address of the private subnet specified in the deployment template).

Azure-US-East-ION7K

Book Info Device Troubleshooting Interfaces Routing VPNs Settings HTTP Client

Static

Static Route

DEST. PREFIX SCOPE NEXT HOPS REACHABILITY PROBE NAME DESCRIPTION TAGS

No Results

Create Static Route

DESTINATION PREFIX 0.0.0.0/0

NEXT HOP REACHABILITY PROBE ☒ False

SCOPE Local

NEXT HOPS (MAX 8)

IP 10.10.10.1 ADMIN DISTANCE 1

INTERFACE -- choose -- SELF false

Add Next Hop

NAME

Cancel Save

STEP 5 | Switch the site to **Control** mode and verify the VPNs are up and active.

Azure US East DC Reston, VA, United States

Configurations Overlay Connections

CONNECTIVITY Physical: 0 of 0 Secure Fabric: 2 of 32 Standard VPN: 0 of 0

MODE Disabled Analytics Control Disabled

INTERNET CIRCUITS Circuit to Azure Internet Change Circuits

PRIVATE WAN CIRCUITS No private WAN circuits Add Circuits

DEVICES Azure-US-East-ION7K (Ion 71...

IP PREFIXES (View Global) No IP prefixes Add IP Prefixes

Proceed to the next section to finalize the Azure deployment steps.

Finalize Azure Configuration

STEP 1 | Login to the Azure Portal and go into the Resource group that was created via the deployment template select the VNET object.

The screenshot shows the Azure Portal interface for the resource group 'Prisma-SDWAN-ION-RG'. The left sidebar contains navigation options like Tags, Resource visualizer, Events, Settings, Deployments, Security, Policies, Properties, Locks, Cost Management, and Monitoring. The main pane displays the 'Essentials' section with subscription details and a list of resources. The 'transitVNET' resource is highlighted with a red box.

Prisma-SDWAN-ION-RG Resource group

Search (Cmd+/)

Essentials

Subscription (change) [AzureCGXTME](#)

Subscriptions ID: 80c49be4-fee2-45b6-9160-0a9b0fbae491

Deployments: 2 Succeeded

Location: East US

Tags (change) [Click here to add tags](#)

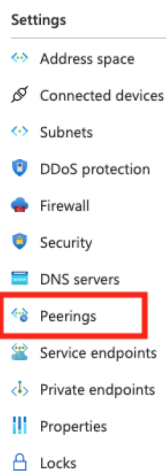
Resources Recommendations

Filter for any field... Type == all Location == all Add filter

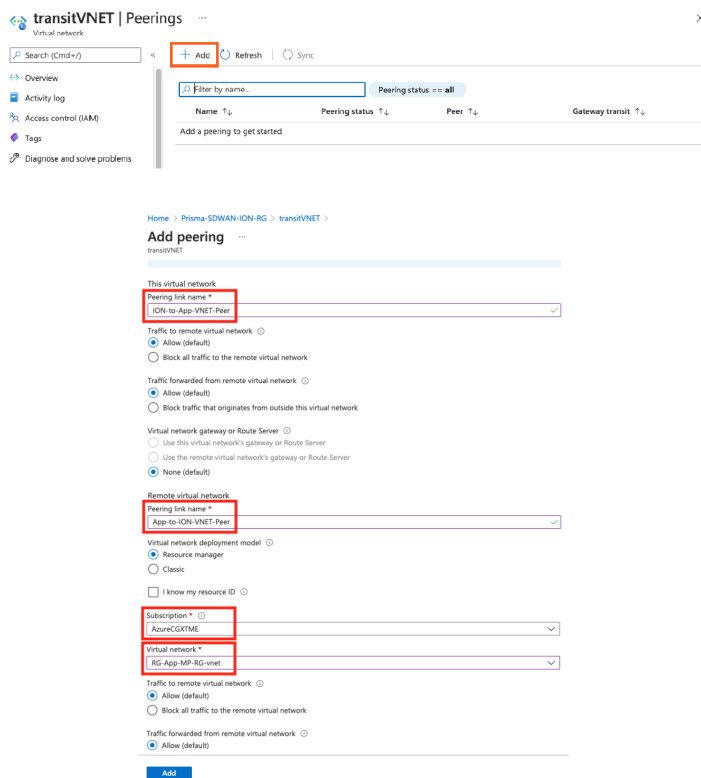
Showing 1 to 9 of 9 records. Show hidden types No grouping List view

Name	Type	Location
Prisma-SDWAN-ION-RG-ION_OsDisk_1_3e45c0b1dcf34ba29...	Disk	East US
Prisma-SDWAN-ION-RG-ION-eth0	Network interface	East US
Prisma-SDWAN-ION-RG-ION-eth1	Network interface	East US
Prisma-SDWAN-ION-RG-ION-eth2	Network interface	East US
DefaultIONNSG	Network security group	East US
ionpublicip	Public IP address	East US
sdwanionstorage	Storage account	East US
Prisma-SDWAN-ION-RG-ION	Virtual machine	East US
transitVNET	Virtual network	East US

STEP 2 | Enter the **Peerings** configuration section to set up VNET peering between the Prisma SD-WAN VNET and each of your application VNETs.

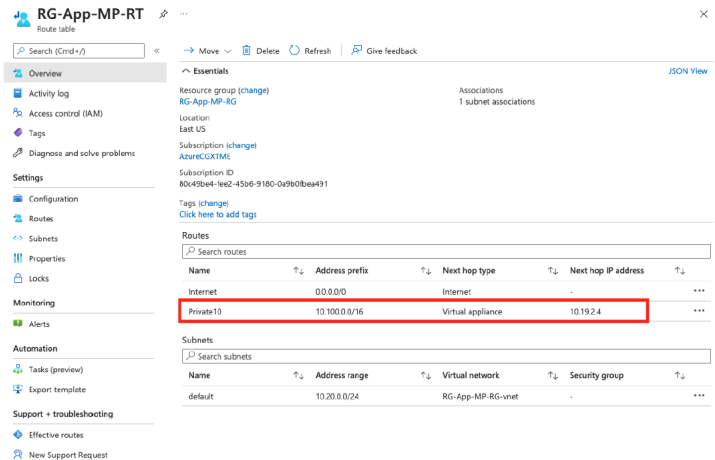


STEP 3 | Add a VNET peering relationship from the Prisma SD-WAN VNET to the application VNETs. Specify the VNET you wish to peer with from the drop-down, select the check box to allow traffic to and from the remote VNET. Once complete, verify the peering status is connected.




STEP 4 | In order for return traffic from the application back to the on-premise networks to be sent through the Prisma SD-WAN VPN, add a static virtual appliance route in the application VNET subnet route table pointing back to the ION as the next hop for corporate subnets.

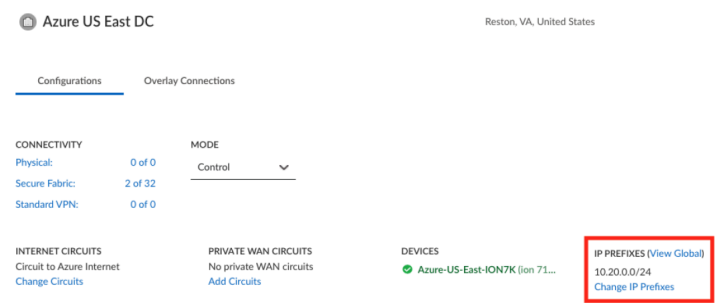
In the below example, 10.19.2.4 is the IP address of the Peering port of the ION 7K and 10.100.0.0/16 is the summary prefix of all remote sites that have Prisma SD-WAN IONs deployed.



Name	Address prefix	Next hop type	Next hop IP address
Internet	0.0.0.0/0	Internet	-
Private10	10.100.0.0/16	Virtual appliance	10.19.2.4

 It is assumed a route table is already deployed within the application VNET for which the application VMs are associated, including the relevant subnet associations.

STEP 5 | Advertise the Azure application VNET prefixes into the Prisma SD-WAN fabric by defining them on the Azure data center site. From the Prisma SD-WAN portal, go to **Map > Azure Site > Site** to bring up the menu to **Add IP Prefixes**.



IP PREFIXES (View Global)
10.20.0.0/24
Change IP Prefixes

Once complete, traffic destined to the prefix (10.20.0.0/24) will be sent directly to Azure over one or more Prisma SD-WAN Internet VPN paths.

This assumes that the traffic destined to these applications and prefixes match a path policy rule that allows VPN over a public path.

Use Azure Serial Console to access Virtual ION

To connect to the console of the vION using the Azure serial console:

STEP 1 | Navigate to the Virtual Machine in the Resource group where the vION was deployed and select Boot Diagnostics.

The screenshot shows the Azure portal interface for a virtual machine named 'Prisma-SDWAN-ION-RG-ION'. The left-hand navigation pane is expanded, and the 'Boot diagnostics' option is highlighted with a red rectangle. The main content area displays the 'Essentials' tab for the virtual machine, showing details such as Resource group (Prisma-SDWAN-ION-RG), Status (Running), Location (East US), Subscription (AzureCGXTME), and Subscription ID (80c49be4-fee2-45b6-9180-0a9b0fba491). Below this, the 'Properties' tab is selected, showing a table of virtual machine properties. The 'Networking' section is also visible, showing public and private IP addresses and the virtual network/subnet (transitVNET/Controller).

Virtual machine	
Computer name	Prisma-SDWAN-ION-RG-ION
Operating system	Linux
Publisher	paloaltonetworks
Offer	prisma-sd-wan-ion-virtual-appliance
Plan	prisma-sdwan-ion-virtual-appliance
VM generation	V1
Agent status	Not Ready
Agent version	Unknown


Networking	
Public IP address	-
Public IP address (IPv6)	-
Private IP address	10.19.0.4
Private IP address (IPv6)	-
Virtual network/subnet	transitVNET/Controller
DNS name	-

STEP 2 | Enable boot diagnostics by selecting Enable with custom storage account and choose an existing or create a new storage account.

Boot diagnostics ...

Prisma-SDWAN-ION-RG-ION

 Save  Discard

Use this feature to troubleshoot boot failures for custom or platform images. Boot diagnostics can be used with a custom storage account or with a pre-provisioned storage account managed by Microsoft. Please download the info you need before switching from managed storage account to custom storage account. [Learn more](#) 

Status

- ☐ Enable with managed storage account (recommended)
- ☒ Enable with custom storage account
- ☐ Disable

Diagnostics storage account *

(new) sdwanionstorage 

[Create new](#)

STEP 3 | From the Support + Troubleshooting in the left hand navigation bar of the virtual machine select Serial Console.

Dashboard > paloaltonetworks.prisma-sdwan-vion-solution-templ-20211005093150 > Prisma-SDWAN-ION-RG > Prisma-SDWAN-ION-RG-ION >

Prisma-SDWAN-ION-RG-ION | Serial console ...

Virtual machine

Search (Cmd+ /)

Insights

Alerts

Metrics

Diagnostic settings

Logs

Connection monitor (classic)

Workbooks

Automation

Tasks (preview)

Export template

Support + troubleshooting

Resource health

Boot diagnostics

Performance diagnostics

Reset password

Redeploy + reapply

Serial console

Connection troubleshoot

Support + Troubleshooting

```

2021/10/05 13:35:16 AES-CBC test started
2021/10/05 13:35:16 AES-CBC test ok
2021/10/05 13:35:16 CCM test started
2021/10/05 13:35:16 CCM test ok
2021/10/05 13:35:16 RSA test started
2021/10/05 13:35:16 RSA test ok
2021/10/05 13:35:16 ECDH P-224 test started
2021/10/05 13:35:16 ECDH P-224 test ok
2021/10/05 13:35:16 DRBG_CONT test started
2021/10/05 13:35:16 DRBG_CONT test ok
2021/10/05 13:35:16 FIPS_POST test passed for GoLang
Configuring network interfaces... RTNETLINK answers: File exists
Starting system message bus: dbus.
Starting OpenBSD Secure Shell server: sshd
generating ssh RSA host key...
generating ssh ECDSA host key...
generating ssh ED25519 host key...
done.
Starting Quagga daemons: zebra bgpd.
Starting watchdog: [ OK ]
Starting watchdog keepalive daemon: wd_keepalive.
Starting DHCP server: .
Not starting irqbalance
Starting syslogd/klogd: done
Starting random number generator daemon.
No kdump kernel image found.
device driver not loaded, skipping.
Starting crond: OK
Starting network management services: snmpd.
Starting quagga watchdog daemon: watchquagga.
Starting TCG TSS2 Access Broker and Resource Management daemon: device driver not loaded, skipping
.
device driver not loaded, skipping.

CloudGenix 5.5.3-b2
e291e9ae-fc8c-1e48-9937-c67738e3262c login:
  
```



For an unclaimed device the default credentials are:

- Login: elem-admin
- Password: hackle628)bags

For a claimed device use the device toolkit user names and passwords.

