



# Veeam PN

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Version 2.1

User Guide

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# Contacting Veeam Software

At Veeam Software we value feedback from our customers. It is important not only to help you quickly with your technical issues, but it is our mission to listen to your input and build products that incorporate your suggestions.

## Customer Support

Should you have a technical concern, suggestion or question, visit the [Veeam Customer Support Portal](#) to open a case, search our knowledge base, reference documentation, manage your license or obtain the latest product release.

## Company Contacts

For the most up-to-date information about company contacts and office locations, visit the [Veeam Contacts Webpage](#).

## Online Support

If you have any questions about Veeam products, you can use the following resources:

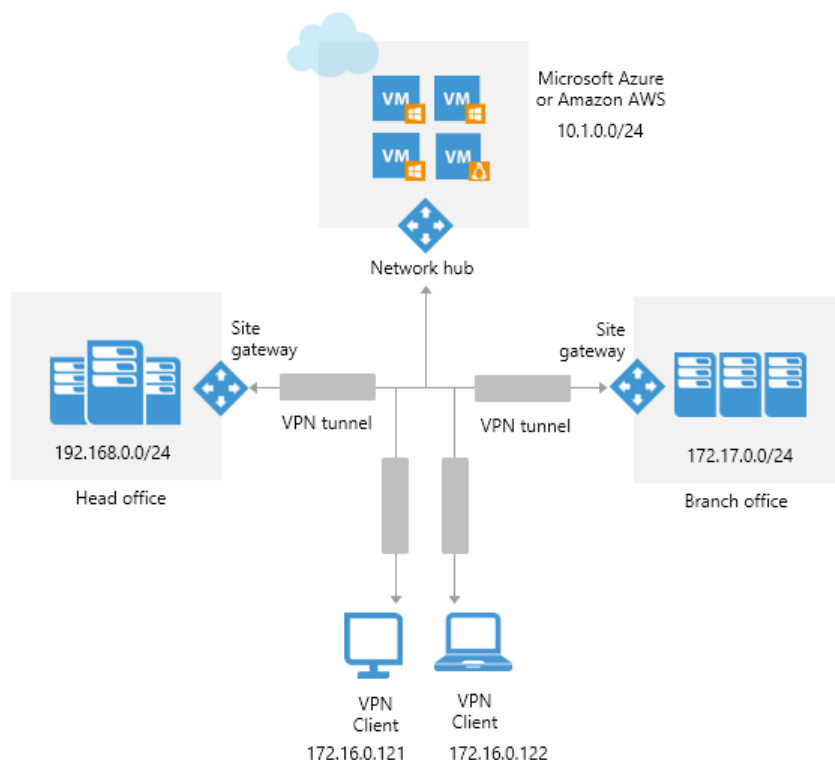
- Full documentation set: [www.veeam.com/documentation-guides-datasheets.html](http://www.veeam.com/documentation-guides-datasheets.html)
- Veeam R&D Forums at [forums.veeam.com](http://forums.veeam.com)

# About Veeam PN

Veeam Powered Network (Veeam PN) is a free Veeam solution that supplements the Veeam functionality of restore to cloud repositories (Azure, Amazon EC2) and allows you to create a VPN connection between remote sites over the public network. You can use Veeam PN to implement the following scenarios:

- **Microsoft Azure**
  - Set up a site-to-site VPN between company offices and a Microsoft Azure network to which VMs restored in Microsoft Azure are connected.
  - Set up a point-to-site VPN between remote computers and a Microsoft Azure network to which VMs restored in Microsoft Azure are connected.
  - Allow remote users to get access to a company network through a Microsoft Azure network.
- **Amazon Web Services (AWS)**
  - Set up a site-to-site VPN between company offices and an AWS network to which VMs restored in Amazon EC2 are connected.
  - Set up a point-to-site VPN between remote computers and an AWS network to which VMs restored in Amazon EC2 are connected.
  - Allow remote users to get access to a company network through an AWS network.

Veeam PN lets you set up VPN connections between Microsoft Azure or AWS networks and on-premises networks. The solution is based on the WireGuard®\* and OpenVPN technology and features a web-based interface that simplifies VPN configuration and administration.



\* WireGuard is a registered trademark of Jason A. Donenfeld.

# Usage Scenarios

Veeam PN allows you to configure two types of VPN connections:

- [Site-to-site VPN](#)
- [Point-to-site VPN](#)

# Site-to-site VPN

A site-to-site VPN allows you to establish a secure connection between remote networks over a public network. You can implement the site-to-site VPN scenario if you need to join on-premises networks and private cloud networks in Microsoft Azure or AWS. For example, if some of your VMs are restored to Microsoft Azure or Amazon EC2, you can join the cloud network to which these VMs are connected with company on-premises networks.

Veeam PN also lets you set up a VPN exclusively for on-premises networks. This scenario lets you extend the company network and make resources in one remote site available to machines and users in another remote site. For example, you can join several company networks into a single private network or allow machines and users from company branch offices to connect to the company datacenter.

## Technology

Site-to-site VPN functionality of Veeam PN is based on WireGuard technology. WireGuard does not support TCP, but Veeam PN eliminates this limitation by tunneling UDP encrypted traffic in TCP tunnel. WireGuard has significant performance advantage compared to OpenVPN:

- It is implemented inside the Linux kernel, so no userspace-kernel cycles wasted.
- WireGuard scales up to all available CPU's (not stuck only on one CPU as in case of OpenVPN).

To learn more about WireGuard functionality, see the [WireGuard's White Paper](#).

## Topology

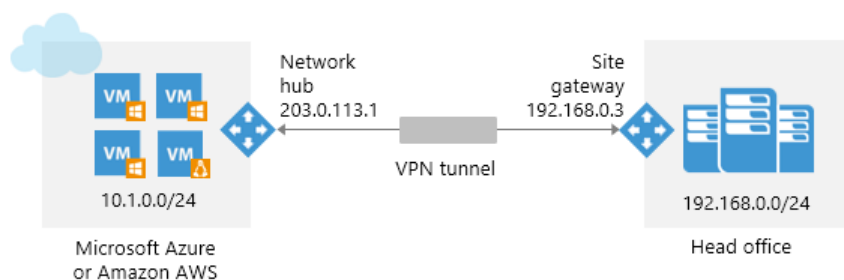
In the VPN, all traffic between remote networks is routed over a secure communication channel – VPN tunnel. To establish a VPN tunnel, Veeam PN uses its appliances: network hub and site gateways.

The Veeam PN VPN is organized around the **network hub**. The network hub is the core of the VPN infrastructure. The hub is responsible for all background work: traffic routing, encryption, user management, authentication and so on.

The network hub is accessible from all remote networks added to the VPN. Veeam PN supports two deployment scenarios for the network hub: you can deploy the network hub in Microsoft Azure or in an on-premises network.

The network hub acts as one point of the VPN tunnel. To create the other point of the VPN tunnel, you must deploy a **site gateway** in a remote network that you plan to add to the VPN. The site gateway is a virtual appliance that establishes a secure connection with the network hub.

In the site-to-site scenario, all traffic in the VPN is handled by the network hub and site gateways. You do not need to additionally configure VPN settings on standalone machines in remote sites.





The VPN organized with Veeam PN has the star network topology. All traffic in the VPN is always routed through the network hub. For example, you add three remote networks to the VPN: 2 on-premises networks and a cloud network in Microsoft Azure. With such configuration, you must deploy the network hub in Microsoft Azure, and a site gateway in each on-premises network. All traffic will be routed through the network hub in Microsoft Azure, even if machines from one on-premises network need to communicate with machines in the other on-premises network.

## DNS forwarding

Since version 2.0, Veeam PN supports DNS forwarding and client configuration:

- Fully automatic detection of DNS settings
- Endpoint clients automatically receive DNS settings to resolve all FQDNs in all connected sites

In the network hub console, you can disable DNS forwarding, and see the list of DNS servers and DNS suffixes for configured sites. For details, see [Enabling and Disabling DNS](#).

### NOTE

To bring DNS forwarding feature on site configuration an administrator should change configuration of local DNS server, so all requests to domain suffixes of other sites should be forwarded to local Veeam PN site appliance or change DNS server IP address settings individually on each client machine.

## Related Topics

- [Deploying Network Hub](#)
- [Deploying Site Gateways](#)
- [Configuring Standalone Computers](#)

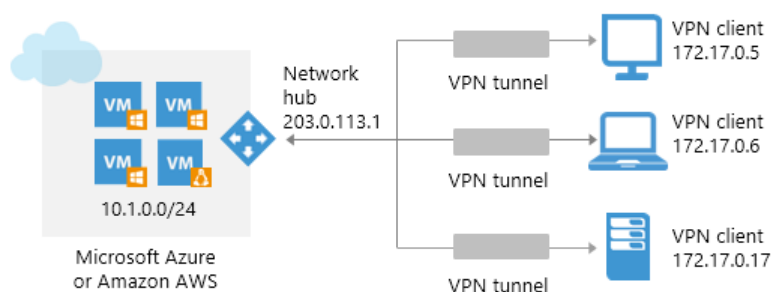
# Point-to-site VPN

## Overview

A point-to-site VPN allows you to establish a secure connection from a standalone computer to a remote network. You can implement the point-to-site scenario, for example, if you want to allow remote users to communicate with machines restored to Microsoft Azure and Amazon EC2. You may also implement this scenario if you want to provide remote users with access to resources in an on-premises company network.

As well as in the site-to-site scenario, in the point-to-site scenario the VPN is organized around the **network hub**. The network hub is placed in a network to which remote users must gain access. You can deploy the network hub in Microsoft Azure, Amazon AWS or in an on-premises network, depending on the usage scenario.

To let a remote user access the VPN organized with Veeam PN, you must set up **OpenVPN** on the user computer and configure it in a proper way. The user side does not require a site gateway or a public-facing IP address or DNS name. Whenever a remote user needs to communicate with a machine in the VPN, it establishes a connection to the network hub. The network hub then routes traffic to necessary resources in the VPN.



## DNS forwarding

Since version 2.0, Veeam PN supports DNS forwarding and client configuration:

- Fully automatic detection of DNS settings
- Endpoint clients automatically receive DNS settings to resolve all FQDNs in all connected sites

### NOTE

To bring DNS forwarding feature on site configuration an administrator should change configuration of local DNS server, so all requests to domain suffixes of other sites should be forwarded to local Veeam PN site appliance or change DNS server IP address settings individually on each client machine.

## Related Topics

- [Deploying Network Hub](#)
- [Deploying Site Gateways](#)
- [Configuring Standalone Computers](#)

# System Requirements

## Network Hub in Microsoft Azure

*A1 VM* size (1 core, 1.75 GiB RAM, 70 GB of disk space) is minimum. For more information about VM sizes in Microsoft Azure, see <https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-windows-sizes>.

## Network Hub in Amazon AWS

*t2.micro* instance (1 vCPU, 1GiB RAM). For more information about EC2 instance types, see <https://aws.amazon.com/ec2/instance-types/>.

## Network Hub in On-Premises Network

- Platform: VMware vSphere ESXi host/cluster 5.0 or later (hardware version 8 and later).
- Host RAM: 1 GB.
- Appliance disk size: 3.9 GB (thin-provisioned disk) or 16 GB (thick-provisioned disk).

## Site Gateways

Appliance disk size: 3.9 GB (thin-provisioned disk) or 16 GB (thick-provisioned disk).

## Standalone Computers

See system requirements to OpenVPN clients: <https://openvpn.net/index.php/open-source/documentation/install.html>.

## Web Browsers

To access Veeam PN portals, you can use any of the following web browsers: Microsoft Internet Explorer 11 or later, Microsoft Edge updated for KB4486996 (OS Build 16299.967) or later, Mozilla Firefox 56 or later, Google Chrome 62 or later.

## Networking Schemes

Networks that you add to the VPN with Veeam PN must have different IP schemes. Otherwise you will need to configure routing settings manually.

# Used Ports

Make sure that you open the required ports, listed below.

From	To	Protocol	Port	Notes
Site gateways	Network hub	TCP/UDP	1194	<p>Default port on which the network hub listens for site gateway connections.</p> <p>You can change the port in the network hub settings. For details, see <a href="#">Configuring VPN Settings</a>.</p>
Standalone computers	Network hub	TCP/UDP	6179	<p>Default port on which the network hub listens for standalone computers connections.</p> <p>You can change the port in the network hub settings. For details, see <a href="#">Configuring VPN Settings</a>.</p>
Browser	Network hub or site gateway	HTTPS	443	Port used to communicate with the network hub or site gateway portal.
Client machine	Network hub or site gateway	SSH	22	[Optional] Default SSH port used as a control channel from the client machine to the network hub or site gateway appliance.
	DNS server	UDP	53	Port used for communication with the DNS server.

# Deployment and Configuration

To set up the VPN infrastructure with Veeam PN and enable secure communication between remote sites and users, you must perform the following steps:

## Site-to-Site Scenario

1. **Deploy and configure the network hub.**

You must deploy the network hub in Microsoft Azure, Amazon AWS or in an on-premises site. The network hub is the core of the VPN infrastructure. The network hub manages incoming and outgoing traffic and provides clients with access to resources in the VPN. For more information, see [Deploying Network Hub](#).

2. **Register Veeam PN clients.**

You must register clients in the network hub portal. In the site-to-site scenario, clients are on-premises networks that you add to the VPN. For more information, see [Registering Clients](#).

3. **Deploy and configure site gateways.**

You must deploy a site gateway in every remote network that you add to the VPN (except the network in which the network hub is deployed). The site gateway is a virtual appliance that establishes a VPN tunnel with the network hub, which lets the VPN traffic to travel securely between remote sites. For more information, see [Deploying Site Gateways](#).

4. **Add static routes for outgoing traffic on default gateways.**

In every remote network that you add to the VPN, you must add a new route on the default gateway. The route must destine traffic outgoing from the network to the site gateway. For more information, see [Adding Static Routes on Default Gateways](#).

## Point-to-Site Scenario

1. **Deploy and configure the network hub.**

You must deploy the network hub in Microsoft Azure, Amazon AWS or in an on-premises site. The network hub is the core of the VPN infrastructure. The network hub manages incoming and outgoing traffic and provides clients with access to resources in the VPN. For more information, see [Deploying Network Hub](#).

2. **Register Veeam PN clients.**

You must register clients in the network hub portal. In the point-to-site scenario, clients are standalone computers that must have access to the VPN. For more information, see [Registering Clients](#).

3. **Configure standalone computers.**

You must configure VPN settings on all standalone computers that must have access to the VPN. For more information, see [Configuring Standalone Computers](#).

# Deploying Network Hub

The first step of the VPN infrastructure configuration is to deploy the network hub. The network hub is the core component in the VPN infrastructure that provides VPN connections and services to remote sites and users. All traffic in the VPN is routed through the network hub.

Veeam PN supports two scenarios of the network hub deployment:

- **Microsoft Azure deployment**

This scenario is recommended if you run some applications and services in Microsoft Azure and need to join an on-premises network with the Microsoft Azure network (site-to-site scenario), or provide users in remote networks with access to applications and services in Microsoft Azure (point-to-site scenario). In such situation, you must place the network hub in a Microsoft Azure network. After that, you must deploy site gateways in on-premises networks (site-to-site scenario) or configure OpenVPN on remote user computers (point-to-site scenario).

Setup of the VPN infrastructure with the network hub residing in Microsoft Azure is easier. You do not have to manually configure routing on remote sites — routes between remote sites are automatically added to the user-defined routing table in the Microsoft Azure network. However, since the VPN traffic is routed through the Microsoft Azure, such deployment scenario may involve additional expenses.

- **Amazon AWS deployment**

This scenario is recommended if you run some applications and services in Amazon AWS and need to join an on-premises network with the Amazon AWS network (site-to-site scenario), or provide users in remote networks with access to applications and services in Amazon AWS (point-to-site scenario). In such situation, you must place the network hub in an Amazon AWS network. After that, you must deploy site gateways in on-premises networks (site-to-site scenario) or configure OpenVPN on remote user computers (point-to-site scenario).

Setup of the VPN infrastructure with the network hub residing in Amazon AWS is easier. You do not have to manually configure routing on remote sites — routes between remote sites are automatically added to the user-defined routing table on the Amazon AWS network. However, since the VPN traffic is routed through Amazon AWS, such deployment scenario may involve additional expenses.

- **On-premises deployment**

This scenario is recommended if you want to join several remote on-premises networks (site-to-site scenario) or provide remote users with access to resources in an on-premises network (point-to-site scenario). In such situation, you must place the network hub in an on-premises network. After that, you can deploy site gateways in other on-premises networks that you want to add to the VPN (site-to-site scenario) or configure OpenVPN on remote user computers (point-to-site scenario).

Setup of the VPN infrastructure with the network hub residing in an on-premises network is more complicated than that for Microsoft Azure. You will need to manually configure routing between local sites. For more information, see [Adding Static Routes on Default Gateways](#).

## NOTE

Within the Veeam PN deployment wizard, there is no option to set a static IP for the network hub appliance. If you want to set a static IP, you can configure it manually or use the Netplan tool.

## In This Section

- [Deploying Network Hub in Microsoft Azure](#)
- [Deploying Network Hub in Amazon AWS](#)

- [Deploying Network Hub in On-Premises Network](#)
- [Configuring Network Hub Settings](#)

# Deploying Network Hub in Microsoft Azure

If you want to place the network hub in Microsoft Azure, you must deploy the network hub from the Microsoft Azure Resource Manager template named *Veeam PN*. The template lets you deploy a 64-bit Linux virtual appliance on which Veeam PN components are set up. You can then configure the appliance as the network hub.

To deploy and set up the network hub, you must perform the following steps:

[Step 1. Deploy Network Hub Appliance in Azure](#)

[Step 2. Configure Network Hub Settings](#)

[Step 3. Configure Clients](#)

## NOTE

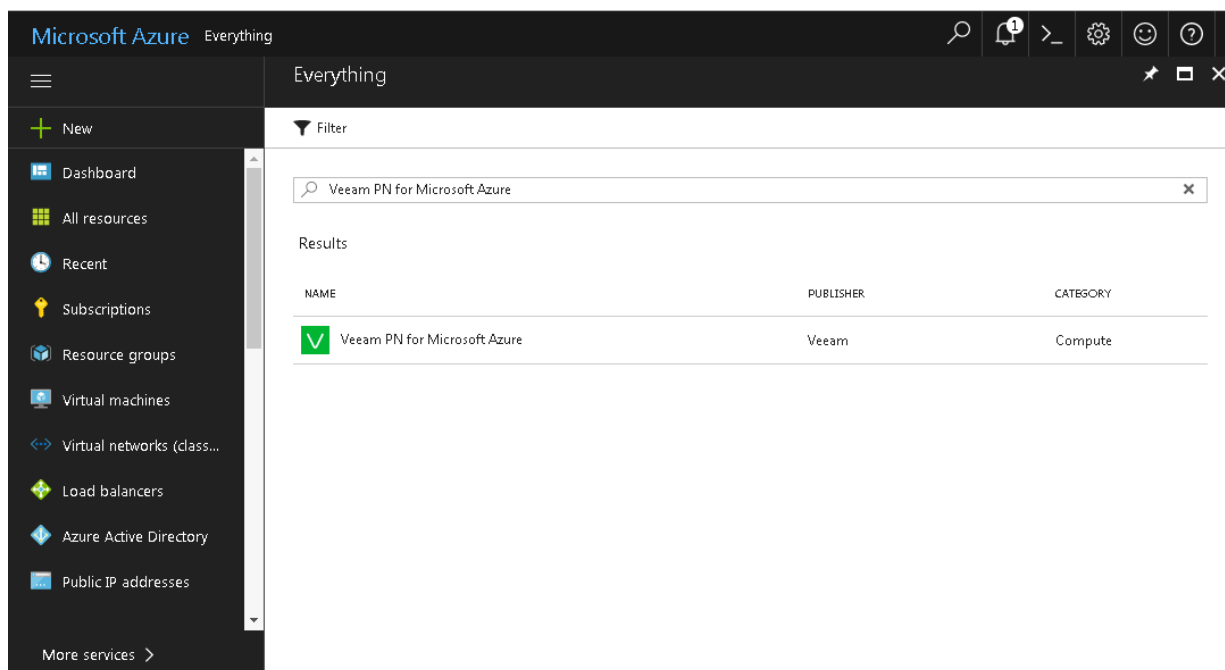
You can deploy the network hub using the Azure Resource Manager model only. You cannot use the Classic deployment model.



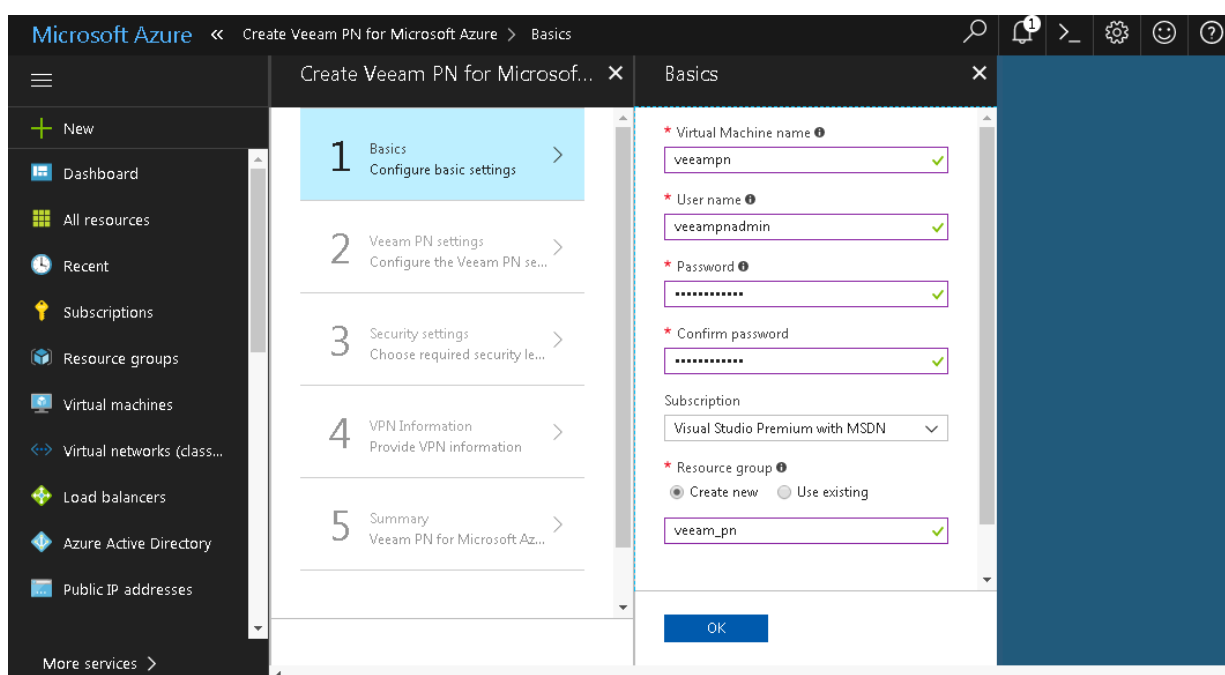
# Step 1. Deploy Network Hub Appliance in Azure

To deploy a network hub appliance from the Microsoft Azure template:

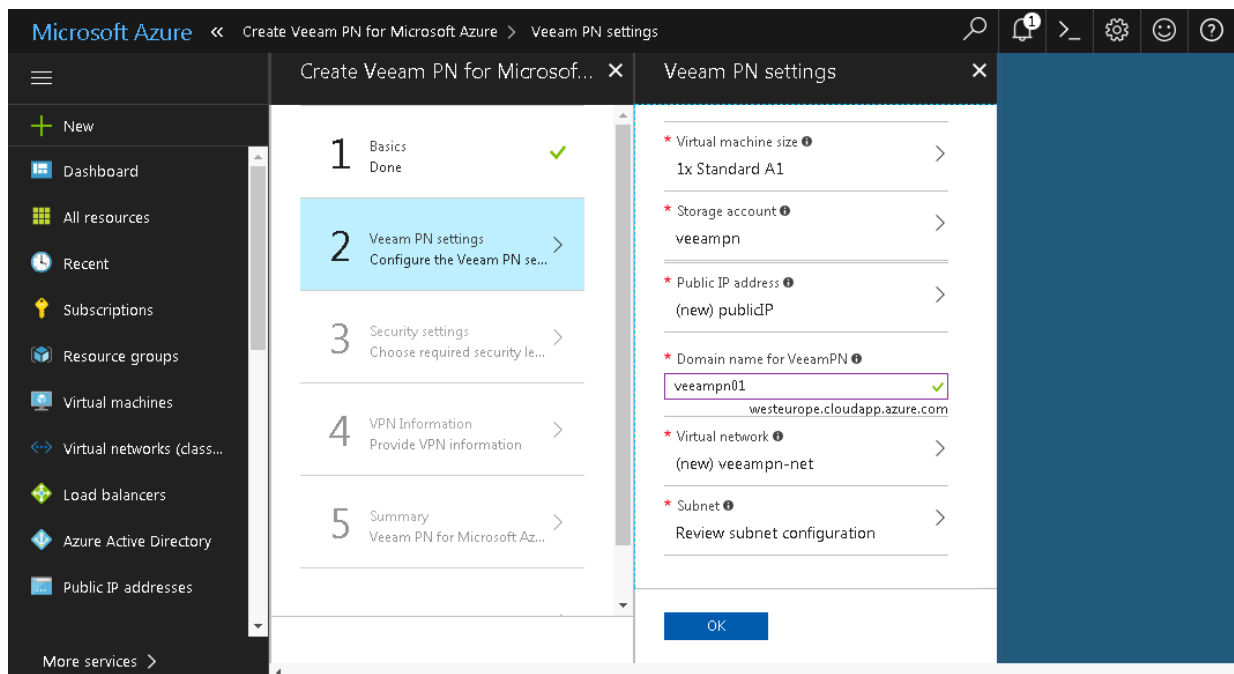
1. Sign in to the Microsoft Azure portal at <https://portal.azure.com>.
2. In the menu on the left, click **New**.
3. In the marketplace, search for the 'Veeam PN for Microsoft Azure' template.
4. Select the template and click **Create**.



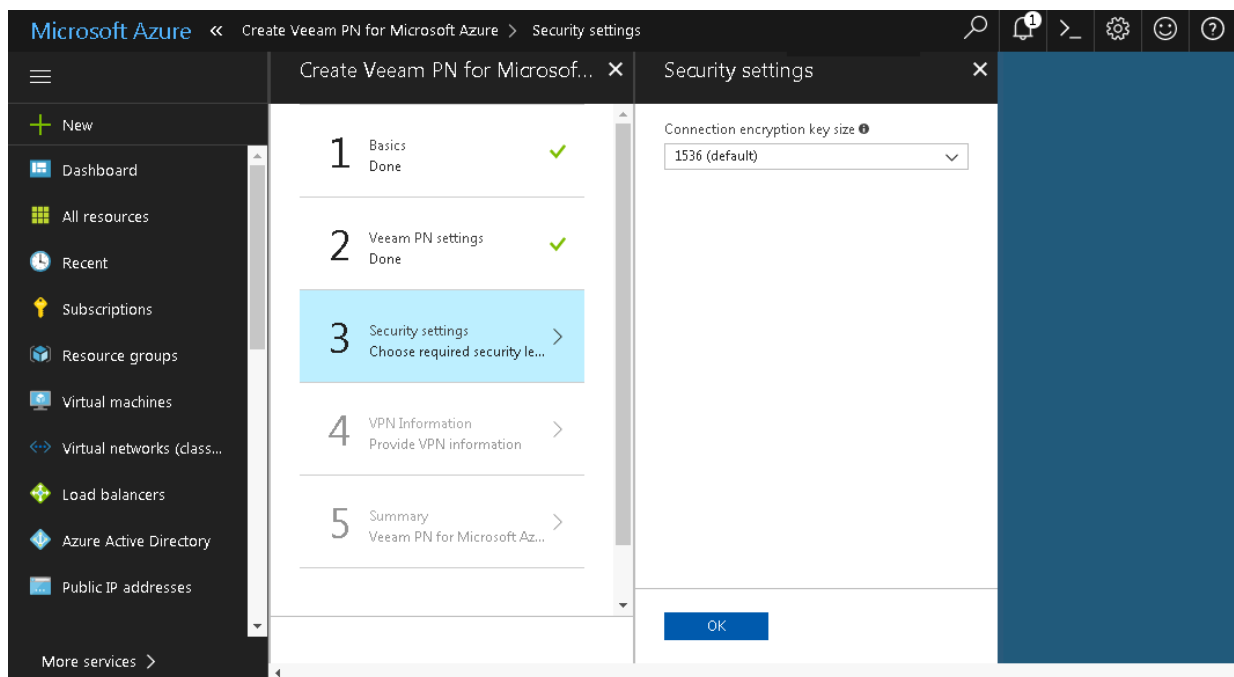
5. On the **Basics** blade, specify basic VM settings: VM name, user credentials for the network hub administrator account, subscription, resource group and location.
6. Click **OK**.



7. On the **Veeam PN Settings** blade, specify settings for the network hub:
  - In the **Virtual machine size** section, select the VM size. Make sure that the VM configuration meets minimal requirements to the network hub. For details, see [System Requirements](#).
  - In the **Storage account** section, select a storage account whose resources you want to use to store disks of the network hub appliance.
  - In the **Public IP address** section, enter a public IP address for the network hub appliance. The network hub appliance will be accessible by this IP address.
  - In the **Domain name for VeeamPN** section, enter a domain name for the network hub appliance. The network hub appliance will be accessible by this domain name.
  - In the **Virtual network** section, specify to which Microsoft Azure network the network hub appliance must be connected.
  - In the **Subnet** section, specify a subnet to which the network hub appliance must be connected.
8. Click **OK**.



9. Veeam PN uses a self-signed SSL certificate to enable secure data communication in the VPN. On the **Security settings** blade, specify the certificate key length.



10. On the **VPN Information** blade, specify VPN settings for the network hub:
- To implement the site-to-site scenario, in the **Enable Site-to-Site** field, click **Yes**. In the **Specify a protocol** field, specify a protocol that you want to use for communication between VPN components: UDP or TCP. In the **Specify a port** field, specify a port on which the network hub must listen for site gateway connections. By default, port 1194 is used.
  - To implement the point-to-site scenario, in the **Enable Point-to-Site** field, click **Yes**. In the **Specify a protocol** field, specify a protocol that you want to use for communication between VPN components: UDP or TCP. In the **Specify a port** field, specify a port on which the network hub must listen for standalone computer connections. By default, port 6179 is used.

#### NOTE

It is recommended that you use the UDP protocol. While TCP guarantees delivery of data packets, UDP ensures faster data transmission since it does not require any data flow control.

11. Click **OK**.

Microsoft Azure << Create Veeam PN for Microsoft Azure > VPN Information

Create Veeam PN for Microsoft Azure x VPN Information x

1 Basics Done ✓

2 Veeam PN settings Done ✓

3 Security settings Done ✓

4 VPN Information Provide VPN information >

5 Summary Veeam PN for Microsoft Az... >

Enable Site-to-Site ⓘ

Yes No

Specify a protocol ⓘ

UDP TCP

\* Specify a port ⓘ

1194

Enable Point-to-Site ⓘ

Yes No

Specify a protocol ⓘ

UDP TCP

\* Specify a port ⓘ

6179

OK

12. On the **Summary** blade, review details of the network hub and click **OK**.

13. On the **Buy** blade, review the terms of use and privacy policy information and click **Purchase**.

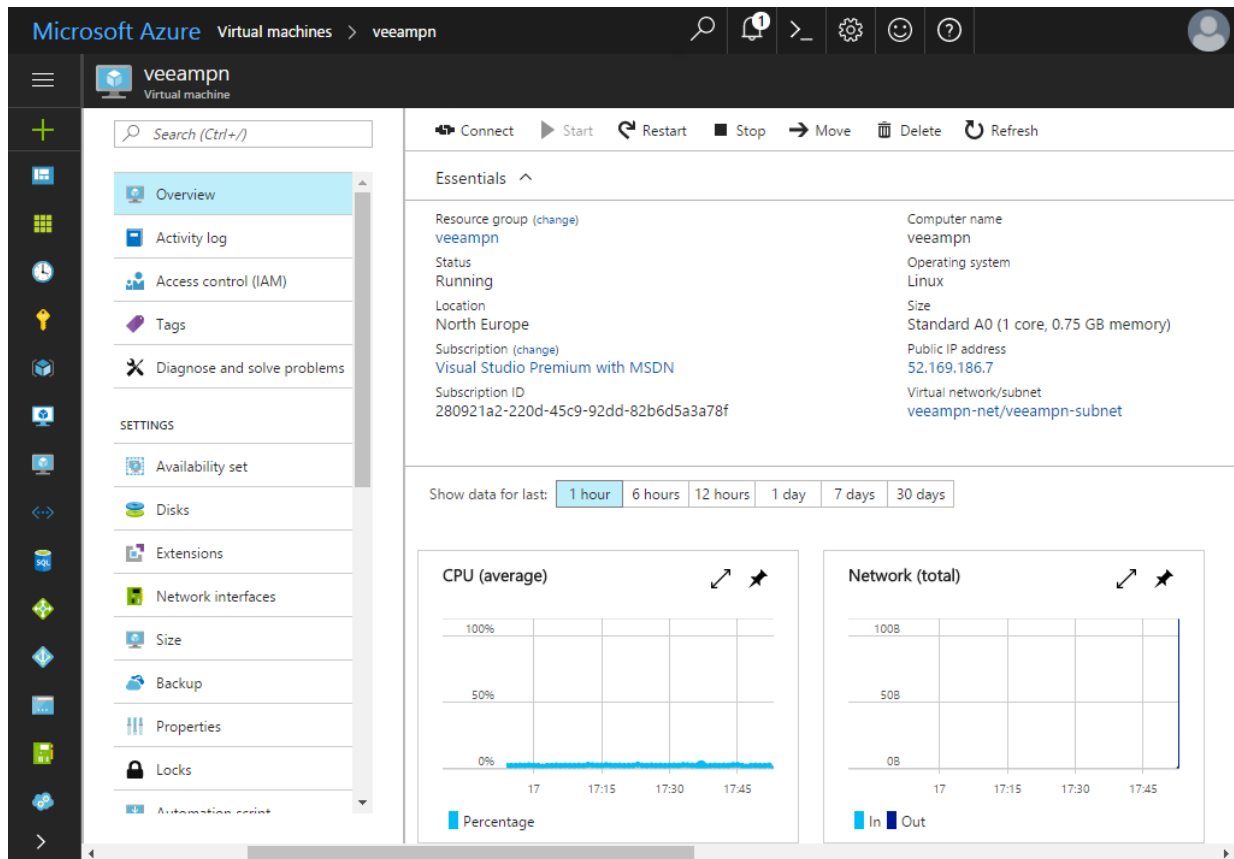
Veeam PN will deploy the network hub from the Microsoft Azure template. The deployment process typically takes several minutes. Wait for this process to complete and proceed to the network hub configuration.

## Step 2. Configure Network Hub Settings

After you deploy the network hub from the Microsoft Azure template, you must configure initial settings for the network hub.

To configure initial network hub settings:

1. In the Microsoft Azure portal, open properties of the newly deployed appliance and get an IP address of the appliance.

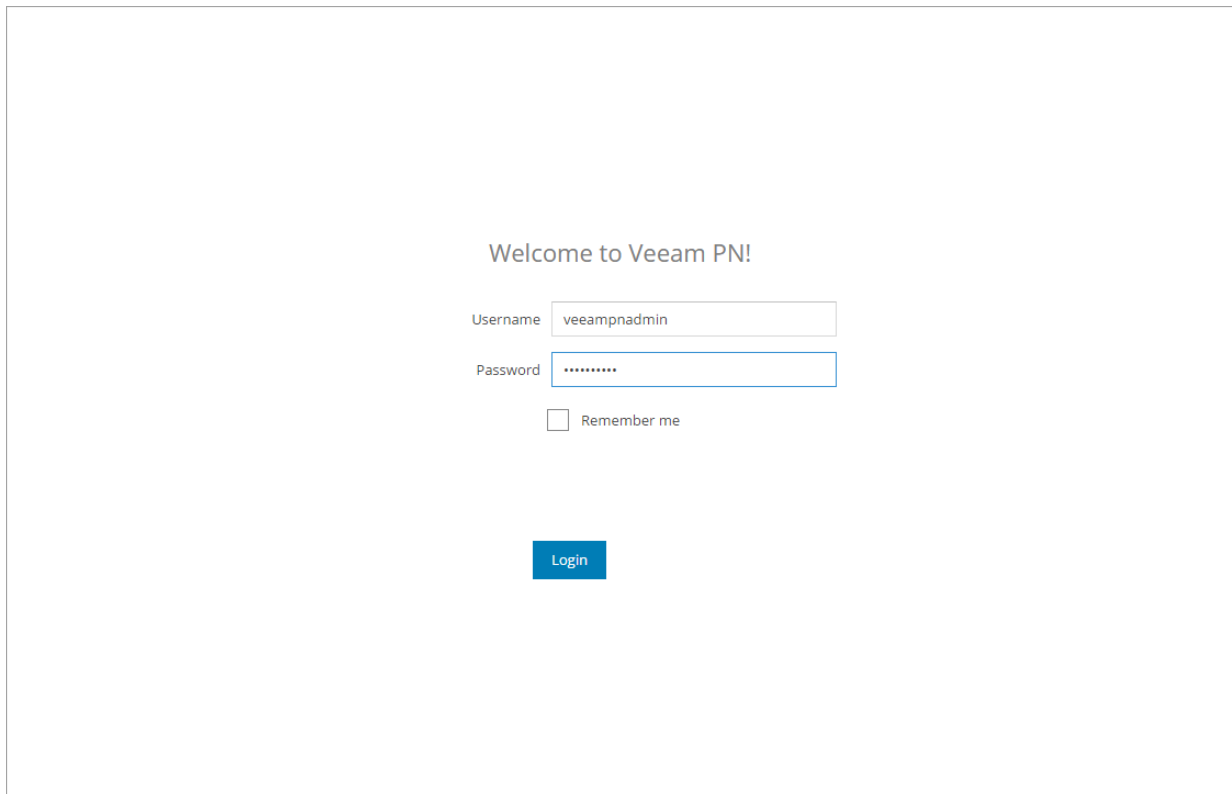


2. In a web browser, access the network hub portal by the following address: `https://<networkhubIP>`, where `<networkhubIP>` is the IP address of the network hub deployed in Microsoft Azure.

When you access the network hub portal in the web browser, the browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.

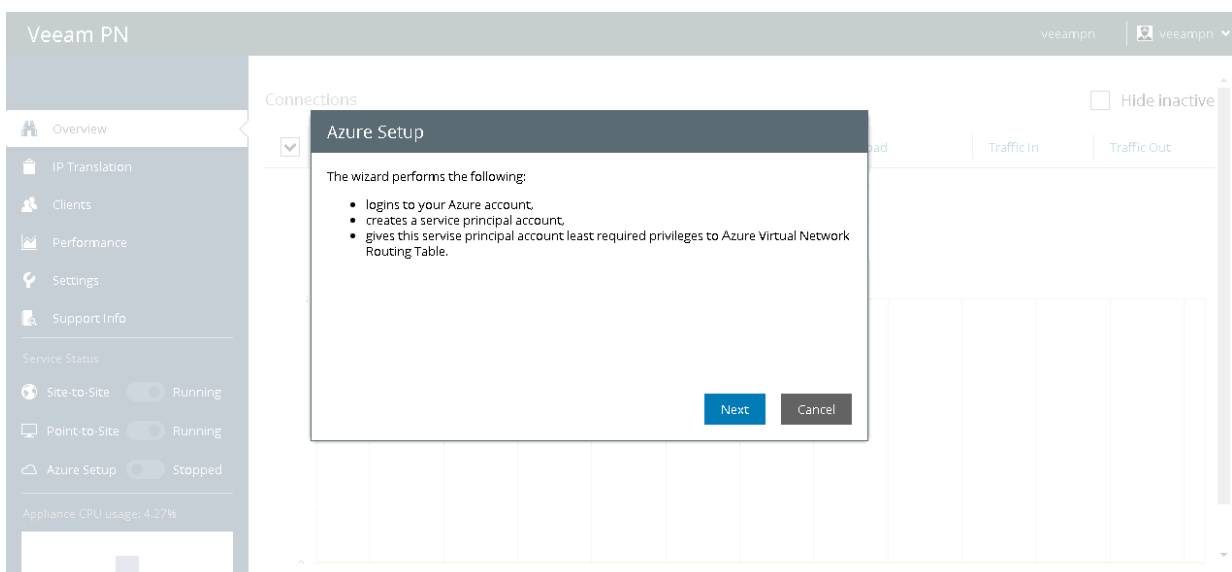
3. At the **Welcome** screen of the portal, log in to the network hub portal under the network hub administrator account. You specified credentials for the network hub administrator account on the **Basic** blade when you deployed the network hub appliance from the Microsoft Azure template.

4. Click **Login**.



The image shows the 'Welcome to Veeam PN!' login screen. It features a central form with the following elements: a title 'Welcome to Veeam PN!', a 'Username' field containing 'veeamnadmin', a 'Password' field with masked characters '\*\*\*\*\*', a 'Remember me' checkbox, and a blue 'Login' button at the bottom.

5. On the welcome screen of the **Azure Setup** wizard, click **Next**.



6. Veeam PN requires that you authenticate in Microsoft Azure Active Directory. The **Azure Setup** wizard will display the <https://aka.ms/devicelogin> link and an authentication code. Copy the code to the Clipboard, open the <https://aka.ms/devicelogin> link in a web browser and enter the code in the code field.
7. Click **Next**.
8. Veeam PN will proceed with configuring the network hub settings and assign the Network Contributor role on the routing table in the Microsoft Azure network to the network hub administrator account. Wait for the process to complete and click **Finish**.

#### TIP

To pass through the **Azure Setup** wizard once again, in the Veeam PN portal open the **Settings** view, click the **Azure** tab and click **Apply** at the bottom of the page.

## Step 3. Configure Clients

After you configure the network hub, do the following:

1. Log in to the network hub portal using the following address: <https://<networkhub>> .
2. Configure settings for clients — on-premises networks (site-to-site scenario) and standalone computers (point-to-site scenario). For more information, see [Configuring Clients](#).

If necessary, you can change the network hub settings: configure alerts, enable SSH access to the network hub appliance and so on. For more information, see [Configuring Network Hub Settings](#).



# Deploying Network Hub in Amazon Web Services

If you want to place the network hub in Amazon Web Services (AWS), you must deploy the network hub in AWS Marketplace.

When you launch deploy of Veeam PN in AWS Marketplace, AWS CloudFormation deploys a 64-bit Linux virtual appliance on which Veeam PN components are set up.

To deploy and set up the network hub, perform the following steps:

[Step 1. Deploy Network Hub Appliance in AWS](#)

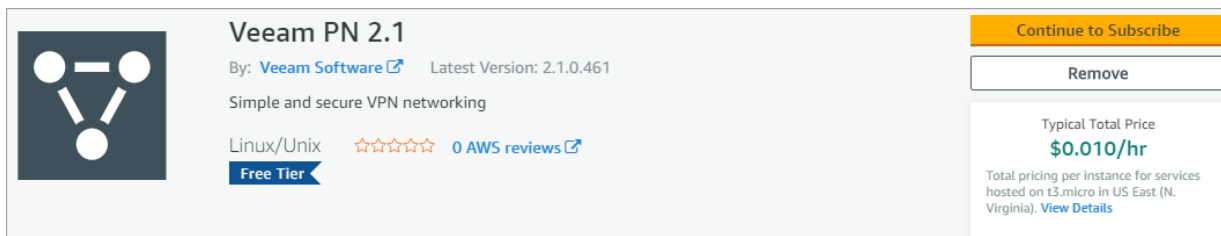
[Step 2. Log in to Veeam PN Console](#)

[Step 3. Configure Clients](#)

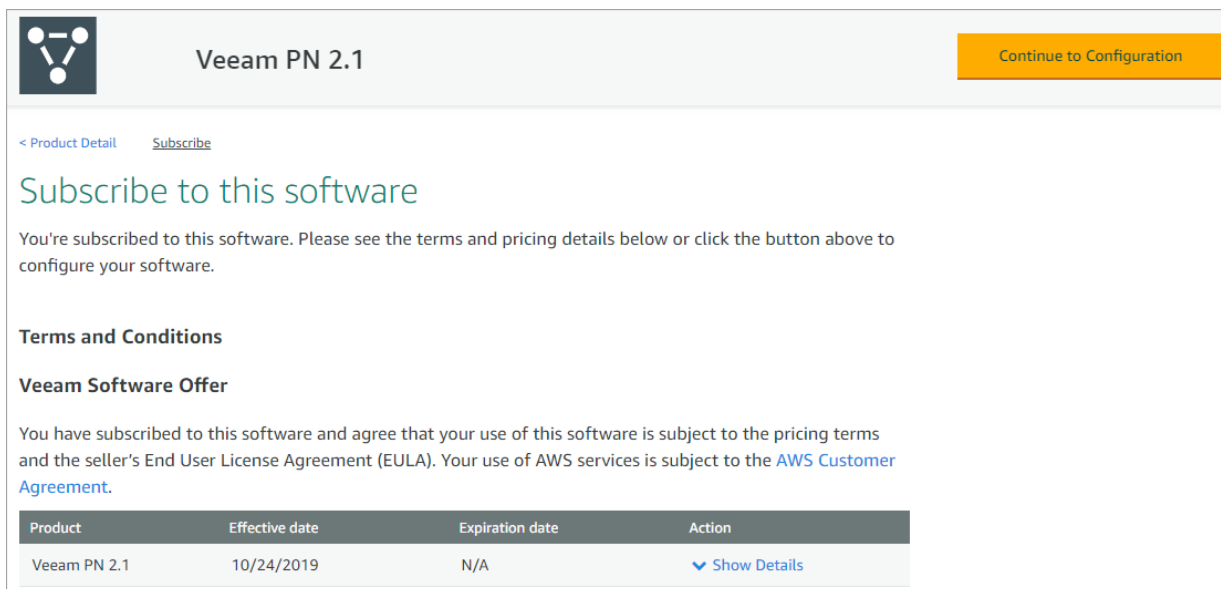
# Step 1. Deploy Network Hub Appliance in AWS

To deploy a network hub appliance in AWS, do the following:

1. Open the Veeam PN 2.1 product page on the AWS marketplace:  
<https://aws.amazon.com/marketplace/pp/B07ZDL12SM>.
2. At the Veeam PN product page, click **Continue to Subscribe**.



3. At the subscription page, click **Show Details** and click **End User License Agreement** to read the Veeam End User License Agreement.
4. Read the AWS Customer Agreement and click **Continue to Configuration**.



Product	Effective date	Expiration date	Action
Veeam PN 2.1	10/24/2019	N/A	<a href="#">Show Details</a>

5. At the configuration page, select the deployment options:
  - a. In the **Fulfillment Option** drop-down list, leave the default selection **Veeam PN Deployment**.
  - b. In the **Software Version** drop-down list, select the latest version of Veeam PN.

- c. In the **Region** drop-down list, select an Amazon EC2 region where you want to place the stack resources. For details, see the [Regions and Availability Zones](#) section of the Amazon Elastic Compute Cloud User Guide.

The screenshot shows the 'Configure this software' page for Veeam PN 2.1. The page has a header with the Veeam logo, the product name 'Veeam PN 2.1', and a 'Continue to Launch' button. Below the header, there are navigation links: '< Product Detail', 'Subscribe', and 'Configure'. The main heading is 'Configure this software'. Below this, a text block says: 'Choose a fulfillment option below to select how you wish to deploy the software, then enter the information required to configure the deployment.'

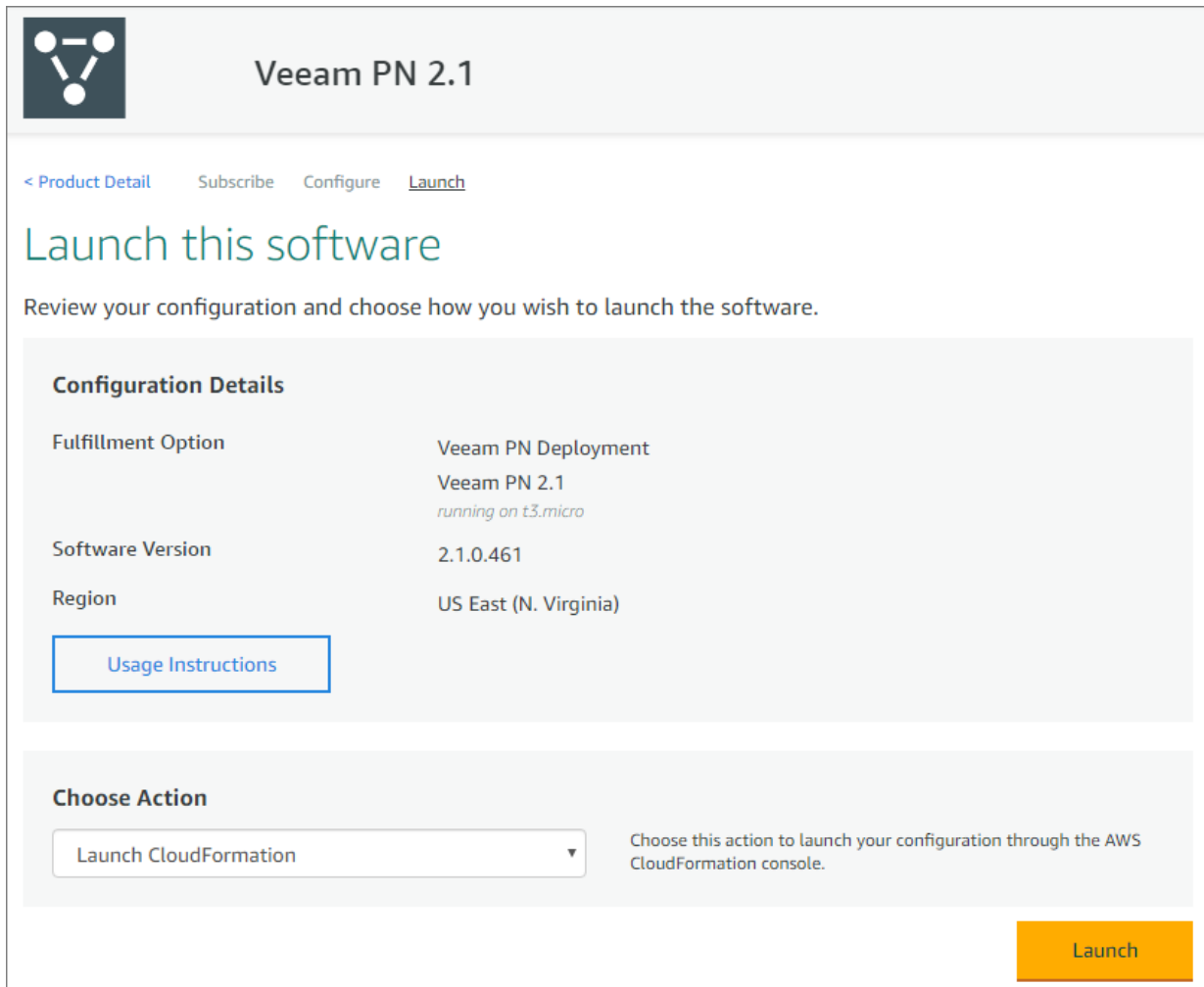
The configuration section contains three main fields:

- Fulfillment Option:** A dropdown menu with 'Veeam PN Deployment' selected.
- Software Version:** A dropdown menu with '2.1.0.461 (Nov 21, 2019)' selected. To the right of this dropdown, there is a section titled 'Whats in This Version' containing the text 'Veeam PN 2.1 running on t3.micro' and a 'Learn more' link.
- Region:** A dropdown menu with 'US East (N. Virginia)' selected.

On the right side of the configuration area, there is a 'Pricing information' sidebar. It contains a disclaimer: 'This is an estimate of typical software and infrastructure costs based on your configuration. Your actual charges for each statement period may differ from this estimate.' Below this, it shows 'Software Pricing' for 'Veeam PN 2.1' running on 't3.micro' at a price of '\$0/hr'.

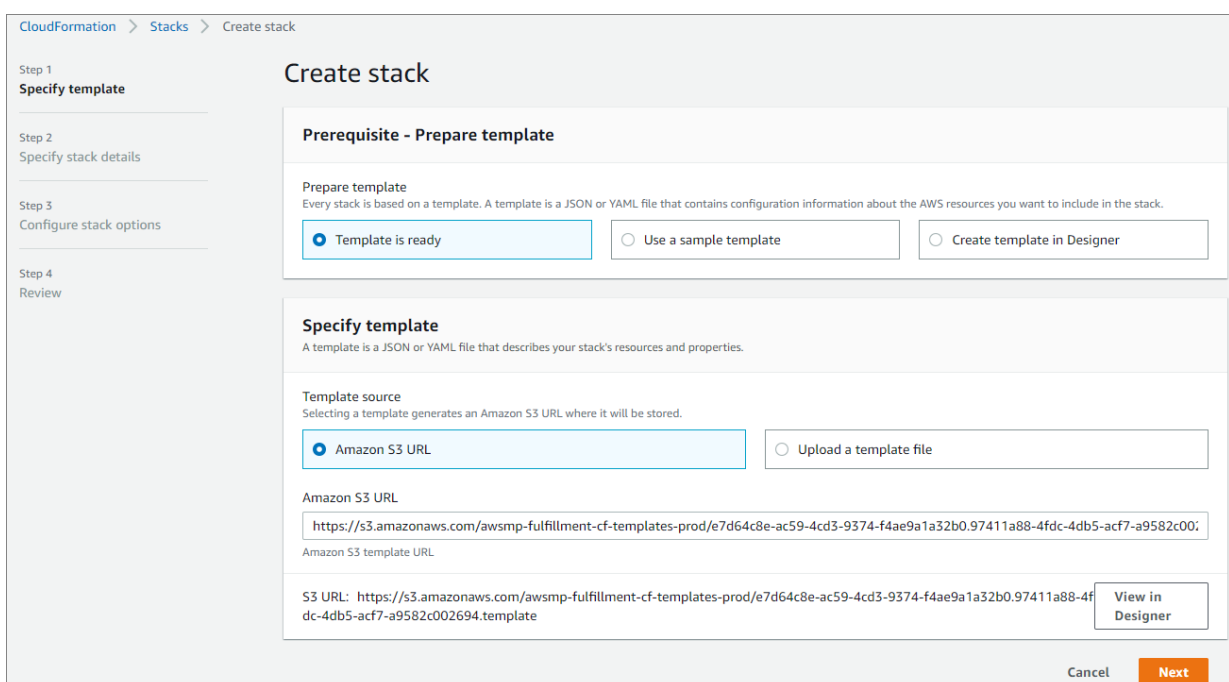
6. At the launching page, review the configuration:
- Click **Usage Instructions** to see the list of resources which will be created by CloudFormation. Usage Instructions also include the list of parameters which you will need to specify before creating the resources.
  - At the **Choose Action** field, leave the default selection: **Launch CloudFormation**.

c. Click **Launch** to start the **Create Stack** wizard.



The screenshot shows the 'Veeam PN 2.1' Launch page. At the top, there's a navigation bar with links: '< Product Detail', 'Subscribe', 'Configure', and 'Launch'. The main heading is 'Launch this software'. Below it, a sub-heading says 'Review your configuration and choose how you wish to launch the software.' The 'Configuration Details' section lists: 'Fulfillment Option' as 'Veeam PN Deployment Veeam PN 2.1 running on t3.micro', 'Software Version' as '2.1.0.461', and 'Region' as 'US East (N. Virginia)'. There's a 'Usage Instructions' button. The 'Choose Action' section has a dropdown menu set to 'Launch CloudFormation' and a descriptive text: 'Choose this action to launch your configuration through the AWS CloudFormation console.' A large orange 'Launch' button is at the bottom right.

7. At the **Specify template** step of the wizard, you can specify the stack template settings. If you launch deployment of Veeam PN from the AWS marketplace, the stack template settings are already configured. Thus, you can leave the default settings as shown below and click **Next**.



The screenshot shows the 'Create stack' wizard in the AWS CloudFormation console. The left sidebar shows the progress: 'Step 1: Specify template', 'Step 2: Specify stack details', 'Step 3: Configure stack options', and 'Step 4: Review'. The main area is titled 'Create stack'. Under 'Prerequisite - Prepare template', there are three radio buttons: 'Template is ready' (selected), 'Use a sample template', and 'Create template in Designer'. The 'Specify template' section explains that a template is a JSON or YAML file. Under 'Template source', there are two radio buttons: 'Amazon S3 URL' (selected) and 'Upload a template file'. The 'Amazon S3 URL' field contains the URL: 'https://s3.amazonaws.com/awsmp-fulfillment-cf-templates-prod/e7d64c8e-ac59-4cd3-9374-f4ae9a1a32b0.97411a88-4fdc-4db5-acf7-a9582c00dc-4db5-acf7-a9582c002694.template'. Below this, the 'S3 URL' is repeated. At the bottom right, there are 'Cancel' and 'Next' buttons.

8. At the **Specify stack details** step, do the following:

- At the **Stack name** field, specify a name for the stack.
- Recommended instance type is *t3.micro*. You can leave the default selection.
- From the **Key Pair** list, select an existing EC2 key pair. For details on how to create EC2 key pairs, see the [Amazon EC2 Key Pairs](#) section of the Amazon Elastic Compute Cloud User Guide.
- At the **Create Elastic IP** setting, leave the default value to prevent changing of public IP and DNS name.
- At the **SSH Location** field, specify a range of IP addresses that you will use to connect via SSH to your EC2 instances.

If you don't know the IP addresses which will be used to connect via SSH, you can enter *0.0.0.0/0* and add the addresses later in the setting of the EC2 security groups. For instructions on how to add security group rules, see the [Security Groups](#) section of the Amazon Virtual Private Cloud User Guide.

## IMPORTANT

In the **SSH Location** field, you can add only one IP range. If you want to add additional IP ranges after deploying the network hub, you can go to the EC2 security group settings and edit inbound rules for SSH connections. You can add multiple rules for all required IP addresses.

CloudFormation > Stacks > Create stack

Step 1  
Specify template

Step 2  
**Specify stack details**

Step 3  
Configure stack options

Step 4  
Review

### Specify stack details

**Stack name**

Stack name

veeam-pn-tw4

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

**Parameters**

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

**Instance Configuration**

**Instance Name**  
Veeam PN instance name.

Veeam PN

**Instance Type**  
VeeamPN EC2 instance type.

t3.micro

**Key Pair**  
Name of an existing EC2 KeyPair to enable SSH access to the instance.

Linux-md-veeam-pn

**Create Elastic IP**  
Elastic IP creation for an EC2 instance prevents public ip and DNS name changing when the instance restarts.

true

**SSH Location**  
The IP address range that can be used for SSH connection to the instance.

XXX.XXX.XXX.XXX/XX

- At the **VeeamPN Site-To-Site Configuration** and **VeeamPN Endpoint-To-Site Configuration** sections, you can leave the default settings for the ports, protocols and Diffie-Hellman Key Size which will be used when creating a VPN tunnel between sites and endpoints.
- When you launch the stack deployment, AWS CloudFormation will create a virtual private cloud (VPC). VPC is a virtual network dedicated to your AWS account. You can leave the default settings or specify the required IP range as a CIDR block.

For details on CIDR blocks of VPC, see the [VPCs and Subnets](#) section of the Amazon Virtual Private Cloud User Guide.

h. Click **Next**.

VeeamPN Site-To-Site Configuration

Enable Site-To-Site  
Enable Site-To-Site service.

true▼

Site-To-Site Protocol  
Site-To-Site protocol type.

udp▼

Site-To-Site Port  
Site-To-Site service port.

1194

VeeamPN Endpoint-To-Site Configuration

Enable Endpoint-To-Site  
Enable Endpoint-To-Site service.

true▼

Endpoint-To-Site Protocol  
Endpoint-To-Site protocol type.

udp▼

Endpoint-To-Site Port  
Endpoint-To-Site service port.

6179

DhBits

Choose Diffie-Hellman Key Size (bits).

1536▼

Network Configuration

VPC CIDR Block  
Specify the IPv4 address range as a Classless Inter-Domain Routing (CIDR) block; for example, 10.0.0.0/16. You cannot specify an IPv4 CIDR block larger than /16.

10.0.0.0/16

Subnet CIDR  
Primary Public Subnet CIDR (Must be within VPC CIDR range).

10.0.1.0/24

Cancel

Previous

Next

9. At the **Configure stack options** step of the wizard, specify required tags, IAM role permissions and other additional settings for the stack. For more information about stack options, see the Setting [AWS CloudFormation Stack Options](#) section of the AWS CloudFormation User Guide.

CloudFormation > Stacks > Create stack

Step 1  
Specify template

Step 2  
Specify stack details

Step 3  
**Configure stack options**

Step 4  
Review

### Configure stack options

**Tags**  
You can specify tags (key-value pairs) to apply to resources in your stack. You can add up to 50 unique tags for each stack. [Learn more](#)

Key Value Remove

Add tag

**Permissions**  
Choose an IAM role to explicitly define how CloudFormation can create, modify, or delete resources in the stack. If you don't choose a role, CloudFormation uses permissions based on your user credentials. [Learn more](#)

IAM role - optional  
Choose the IAM role for CloudFormation to use for all operations performed on the stack.

IAM role name Sample-role-name Remove

### Advanced options

You can set additional options for your stack, like notification options and a stack policy. [Learn more](#)

► **Stack policy**  
Defines the resources that you want to protect from unintentional updates during a stack update.

► **Rollback configuration**  
Specify alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back. [Learn more](#)

► **Notification options**

► **Stack creation options**

Cancel Previous Next

10. At the **Review** step of the wizard, you will see the configuration summary of the stack that will be created for Veeam PN.
- a. Review the Veeam PN stack settings.

CloudFormation > Stacks > Create stack

Step 1  
Specify template

Step 2  
Specify stack details

Step 3  
Configure stack options

Step 4  
**Review**

### Review veeampn-tw4

Step 1: Specify template Edit

**Template**

Template URL  
https://s3-external-1.amazonaws.com/cf-templates-eg789ka09933-us-east-1/2019324D00-configure\_ami\_template.json

Stack description  
AWS CloudFormation VeeamPN Template: Configure Veeam PN instance. Sample template that can be used to test EC2 updates. **\*\*WARNING\*\*** This template creates an Amazon EC2 Instance. You will be billed for the AWS resources used if you create a stack from this template.


Estimate cost not available

- b. Check the **I acknowledge that AWS CloudFormation might create IAM resources** check box.

c. Click **Create stack**.

[▶ Quick-create link](#)

Capabilities

 **The following resource(s) require capabilities: [AWS::IAM::Role]**

This template contains Identity and Access Management (IAM) resources that might provide entities access to make changes to your AWS account. Check that you want to create each of these resources and that they have the minimum required permissions. [Learn more](#)

☒ I acknowledge that AWS CloudFormation might create IAM resources.

Cancel

Previous

Create change set

Create stack

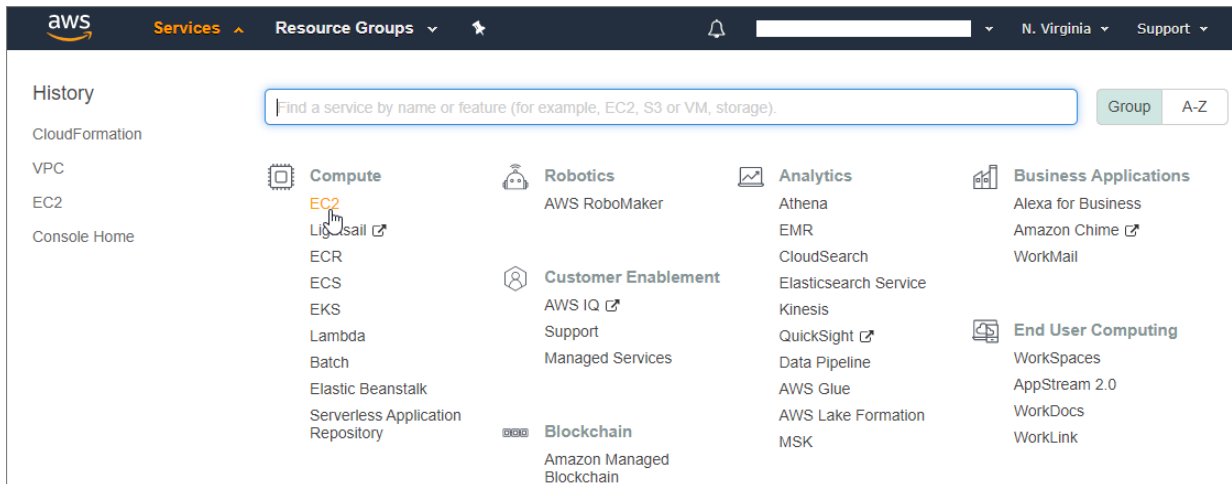


## Step 2. Log in to Veeam PN Console

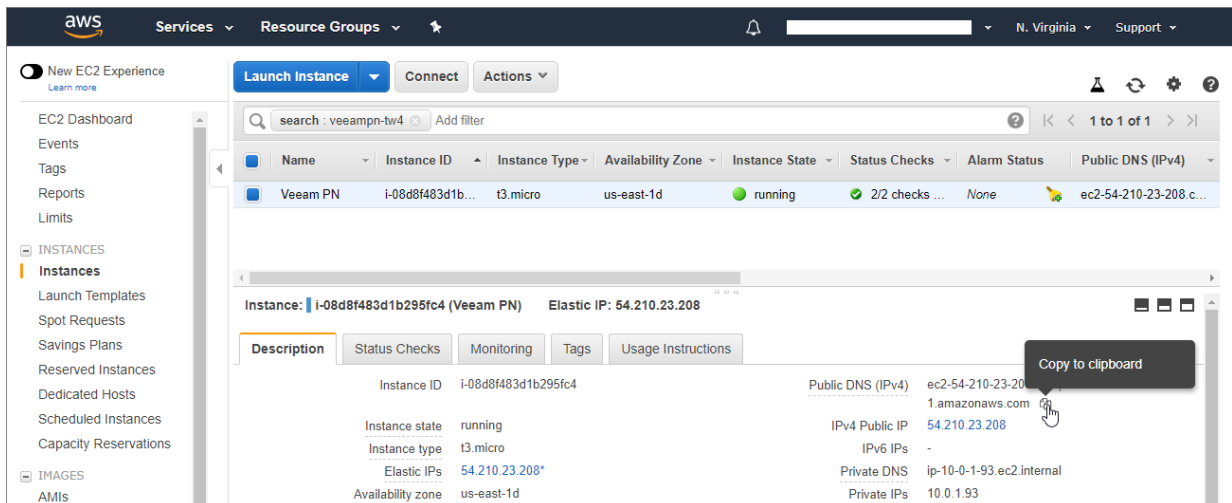
After you create an AWS CloudFormation stack for Veeam PN, you can log in to the Veeam PN web console and configure network hub settings.

To log in to the Veeam PN web console, do the following:

1. In the AWS console, click **Services** and select **EC2**.



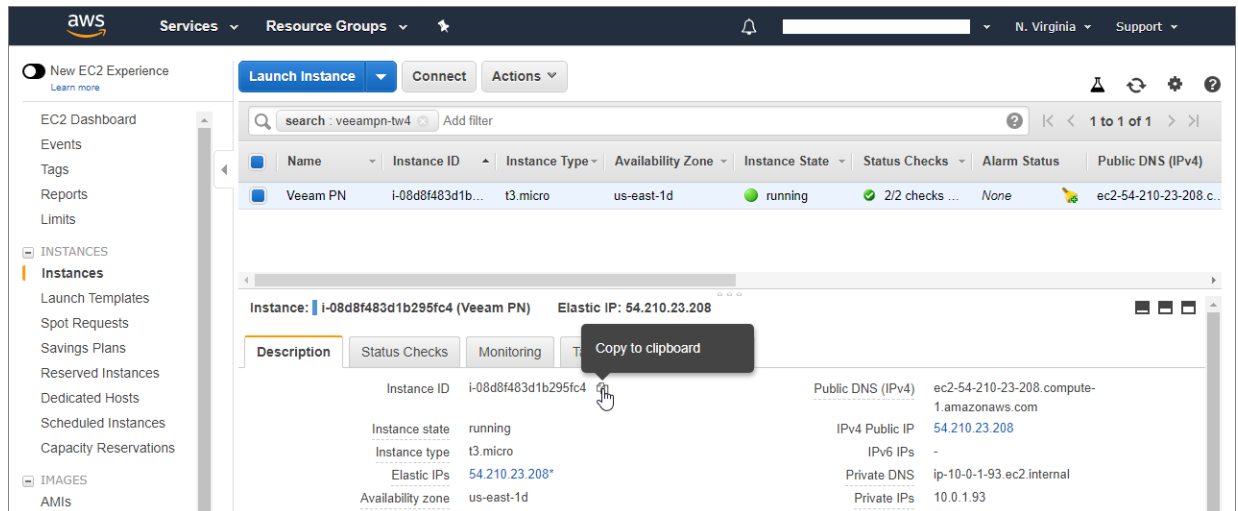
2. From the list on the left of AWS console, select **Instances**.
3. From the list of instances, select the instance you have created on [Step 3. Configure Network Hub Settings](#).
4. At the **Description** tab of the instance settings, copy the public DNS name of the instance.



5. In a web browser, access the network hub portal by the following address: `https://publicDNS`, where `<publicDNS>` is the public DNS address of the stack deployed in Amazon AWS.

When you access the network hub portal, the browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.

6. At the welcome screen of the network hub portal, you will be asked to provide an instance ID. Do the following:
  - a. Go back to AWS console and copy the instance ID of the created stack.



- b. At the welcome screen of the network hub, paste the instance ID and click **Next**.

### Check instance ID

Instance ID

**Next**

7. When you open the network hub for the first time, you need to create a user account.
  - a. Specify a name and a password for the network hub user account.
  - b. Click **Create**.

### Create User

Username

Password

Confirm password

**Create**

8. Enter the username and password for the account created at the previous step and click **Login**.

### Welcome to Veeam PN!

Username

veeam-pn-admin

Password

.....

☐ Remember me

Login

## Step 3. Configure Clients

After you log in to the network hub console, you can configure settings for clients — on-premises networks (site-to-site scenario) and standalone computers (point-to-site scenario). For more information, see [Configuring Clients](#).

If necessary, you can change the network hub settings: configure alerts, enable SSH access to the network hub appliance and so on. For more information, see [Configuring Network Hub Settings](#).

# Deploying Network Hub in On-Premises Network

If you want to place the network hub in an on-premises network, you must deploy a Veeam PN appliance in the VMware vSphere environment. The Veeam PN appliance is distributed as an OVA package. The package contains a pre-configured 64-bit Linux virtual appliance on which Veeam PN components are set up.

To deploy and set up the network hub, you must perform the following steps:

[Step 1. Deploy Hub Appliance](#)

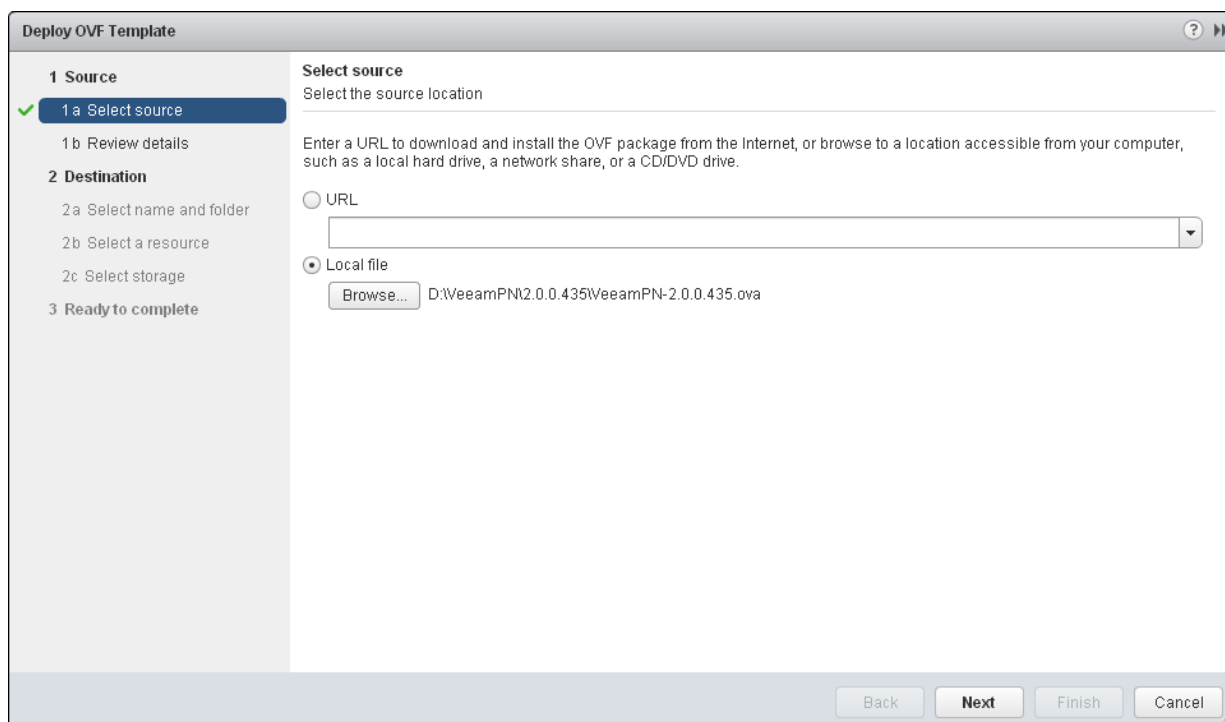
[Step 2. Configure Network Hub](#)

[Step 3. Configure Clients](#)

# Step 1. Deploy Hub Appliance

To deploy the network hub from the OVA package:

1. Download the Veeam PN OVA package from: <https://www.veeam.com/downloads.html> and save it in a network shared folder.
2. In VMware vSphere Web Client, open the hosts and clusters inventory list and select a host on which you want to register the appliance.
3. From the menu at the top of the working area, select **Actions > Deploy OVF Template**.
4. At the **Select source** step of the wizard, select **Local file**, click **Browse** and browse to the Veeam PN OVA package.



5. Follow the next steps of the wizard and specify appliance deployment settings: datastore on which the appliance disk must be placed, disk format, network to which the appliance must be connected and so on.

6. At the last step of the wizard, select the **Power on after deployment** check box and click **Finish**.

The screenshot shows the 'Deploy OVF Template' wizard in VMware vSphere. The left sidebar lists the steps: 1 Source, 2 Destination, and 3 Ready to complete. Step 3 is highlighted. The main area displays the 'Ready to complete' summary, listing the OVF file path, download size, size on disk, name, datastore, target, folder, disk storage, network mapping, and IP allocation. At the bottom, the 'Power on after deployment' checkbox is checked. The 'Finish' button is visible in the bottom right corner.

Ready to complete	
Review your settings selections before finishing the wizard.	
OVF file	D:\VeeamPN\2.0.0.435\VeeamPN-2.0.0.435.ova
Download size	1.2 GB
Size on disk	16.0 GB
Name	veeamprn-template
Datastore	esx02-ds1
Target	Customer Service
Folder	Atlanta
Disk storage	Thick Provision Lazy Zeroed
Network mapping	DM - VM Network to VM Network
IP allocation	Static - Manual, IPv4

☒ Power on after deployment

Back Next Finish Cancel

VMware vSphere will deploy the Veeam PN appliance on the selected host. The deployment process typically takes several minutes. Wait for this process to complete and proceed to the network hub configuration.

## Step 2. Configure Network Hub

Right after deployment, the Veeam PN virtual appliance is impersonalized. To set up the network hub, you must customize the appliance – configure the network hub settings on it.

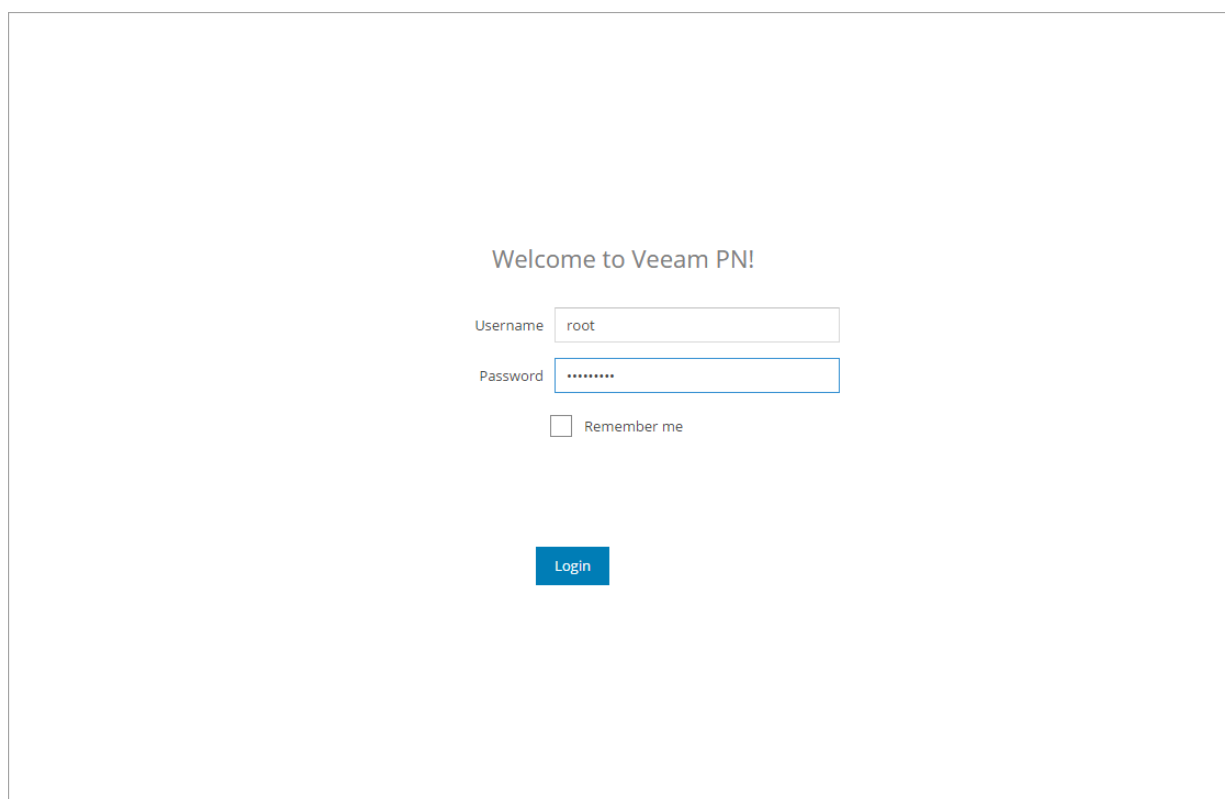
To configure initial settings for the network hub:

1. In VMware vSphere Web Client, navigate to the **Summary** tab and get an IP address of the appliance.
2. In a web browser, access the network hub portal by the following address: `https://<applianceIP>`, where `<applianceIP>` is the IP address of the deployed appliance.

When you access the network hub portal in the web browser, the browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.

3. At the **Welcome to Veeam PN** screen of the portal, log in to the network hub portal under the in-built Administrator account. The Administrator account has the following credentials:
  - Username: *root*
  - Password: *VeeamPN*

Click **Login**.

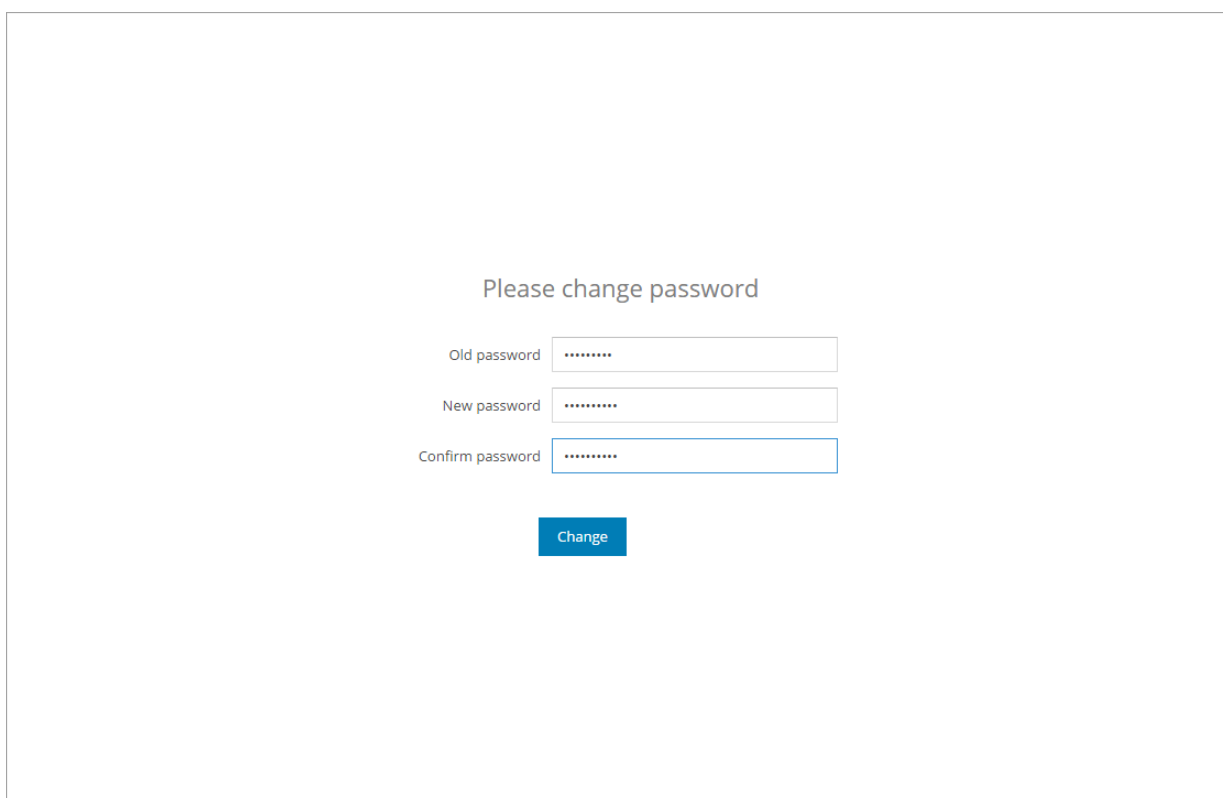


The screenshot shows the 'Welcome to Veeam PN!' login page. It features a central form with the following elements:

- Title: 'Welcome to Veeam PN!'
- Username field: Labeled 'Username', containing the text 'root'.
- Password field: Labeled 'Password', containing masked characters '\*\*\*\*\*'.
- Remember me: A checkbox followed by the text 'Remember me'.
- Login button: A blue rectangular button with the text 'Login' in white.



4. After you log in to the portal for the first time, Veeam PN will offer you to change the password for the built-in account. On the displayed screen, enter the old and new password and click **Change**.



Please change password

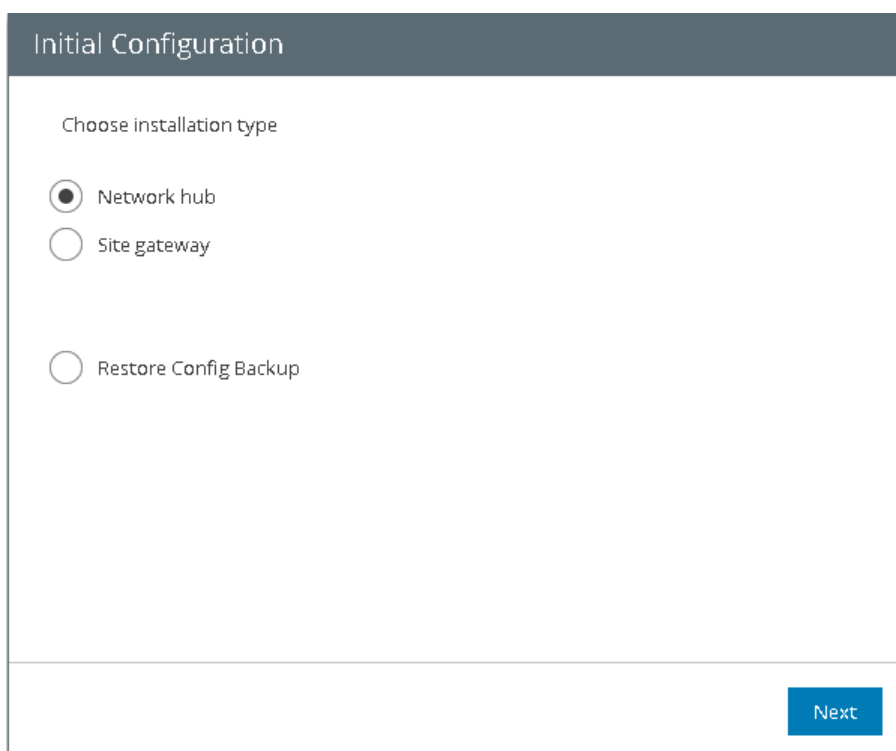
Old password

New password

Confirm password

**Change**

5. At the first step of the **Initial Configuration** wizard, select **Network hub**.
6. Click **Next**.



Initial Configuration

Choose installation type

☒ Network hub

☐ Site gateway

☐ Restore Config Backup

**Next**

7. Veeam PN uses a self-signed SSL certificate to ensure secure data communication in the VPN. Specify the certificate key length.

8. Click **Next**.

#### NOTE

By default, Veeam PN generates a 2048-bit certificate. If you select a key of a greater size, the process of certificate generation may take a long time.

### Initial Configuration

Specify the required information for the self-signed certificate generation

Name:

Encryption level:


9. Veeam PN will generate a self-signed SSL certificate with the specified parameters. After the certificate is generated, click **OK**, then click **Next** to proceed to the network hub setup.

### Initial Configuration

Certificate generation progress

51%

Self-signed certificate generation started...  
Self-signed certificate has been generated.  
Encryption keys generation started...

  
Please wait...

10. Specify VPN settings for the network hub:

- In the **Network hub public IP or DNS name** field, specify an IP address or full DNS name for the network hub. The IP address or DNS name must be public and accessible from all networks that you add to the VPN, and by all remote users who must have access to the VPN.
- Select the **Enable site-to-site VPN** check box if you want to implement the site-to-site VPN scenario. In the **Protocol** field, specify the protocol that must be used for communication between VPN components: UDP or TCP. In the **Port** field, specify a port on which the network hub must listen for site gateway connections. By default, port 1194 is used.
- Select the **Enable point-to-site VPN** check box if you want to implement the point-to-site VPN scenario. In the **Protocol** field, specify the protocol that must be used for communication between VPN components: UDP or TCP. In the **Port** field, specify a port on which the network hub must listen for standalone computer connections. By default, port 6179 is used.

**NOTE**

It is recommended that you use the UDP protocol. While TCP guarantees delivery of data packets, UDP ensures faster data transmission since it does not require any data flow control.

The screenshot shows a window titled "Initial Configuration" with a dark header. Below the header, the text "Specify VPN settings" is displayed. The form contains the following fields and controls:

- Network hub public IP or DNS name:** A text input field containing the value "52.169.168.8".
- Enable site-to-site VPN:** A checked checkbox.
- Protocol:** A dropdown menu with "UDP" selected.
- Port:** A spinner control with "1194" selected.
- Enable point-to-site VPN:** A checked checkbox.
- Protocol:** A dropdown menu with "UDP" selected.
- Port:** A spinner control with "6179" selected.

At the bottom right of the window, there are two buttons: "Previous" (disabled, light gray) and "Finish" (active, blue).

11. Click **Finish**.

## Step 3. Configure Clients

After you configure the network hub, you must perform the following steps:

- You must log in to the network hub portal and configure settings for clients — on-premises networks (site-to-site scenario) and standalone computers (point-to-site scenario). For more information, see [Configuring Clients](#).
- If necessary, you can change the network hub settings, for example, configure alerts, enable SSH access to the network hub appliance and so on. For more information, see [Configuring Network Hub Settings](#).

# Configuring Network Hub Settings

You can configure the following settings for the network hub:

- [Enable and disable Veeam PN services](#)
- [Configure VPN settings](#)
- [Enable and disable DNS](#)
- [Configure Microsoft Azure settings](#)
- [Configure Amazon AWS settings](#)
- [Enable and disable SSH access](#)
- [Reset network hub settings](#)
- [Set the network hub reboot time](#)

## Enabling and Disabling Veeam PN Services

Veeam PN provides the following services:

- Site-to-Site — this service enables site-to-site communication between remote networks.
- Point-to-Site — this service enables remote users to access the VPN.
- Azure Setup — this service enables the network hub to run in Microsoft Azure and provide on-premises networks and remote users with access to resources and services in Microsoft Azure.
- AWS Setup — this service enables the network hub to run in Amazon AWS and provide on-premises networks and remote users with access to resources and services in Amazon AWS.

If you do not plan to use some services, for example, do not want to provide standalone computers with access to the VPN, you can disable this service.

To disable a Veeam PN service:

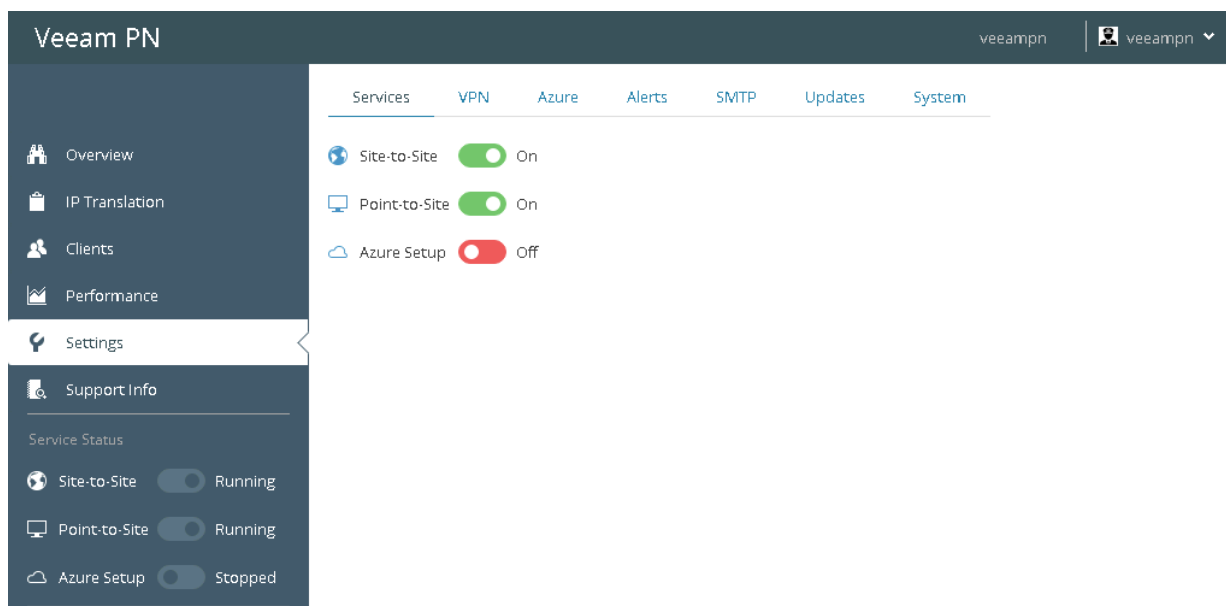
1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. In the **Services** list, set the toggle of the service to the **Off** position.

To enable a previously disabled service:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. In the **Services** list, set the toggle of the service to the **On** position.

## NOTE

Before you enable the Azure service, you must configure Azure settings in the network hub portal. For more information, see [Configuring Microsoft Azure Settings](#).



## Configuring VPN Settings

When you deploy the network hub, you configure network hub settings. If necessary, you can modify these settings.

### IMPORTANT

If you modify network hub settings, you must download configuration files for all Veeam PN clients and re-deploy them on site gateways and standalone computers. If you do not download and re-deploy configuration files, clients will lose a connection to the VPN. For more information, see [Modifying Clients Settings](#).

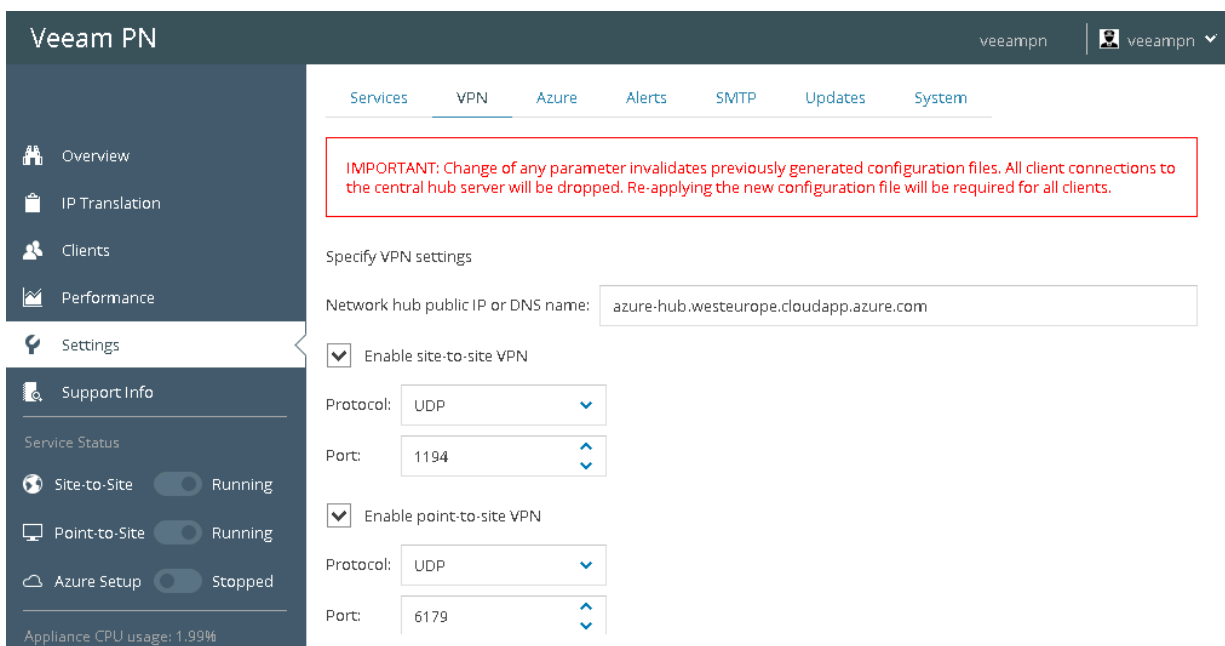
To configure network hub settings:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **VPN** tab.
4. In the **Network hub public IP or DNS name** field, enter an IP address or full DNS name of the network hub. The IP address or DNS name must be public.
5. Select the **Enable site-to-site VPN** check box to enable site-to-site communication between remote networks. In the fields below, specify settings for the site-to-site scenario:
  - From the **Protocol** list, select a protocol over which sites will communicate with each other: UDP or TCP.
  - In the **Port** list, specify a port on which the network hub must listen for site gateway connections. By default, port 1194 is used.

6. Select the **Enable point-to-site VPN** check box to enable point-to-site communication for standalone computers. In the fields below, specify settings for the point-to-site scenario:
  - From the **Protocol** list, select a protocol over which standalone computers will communicate with the network hub: UDP or TCP.
  - In the **Port** list, specify a port on which the network hub must listen for standalone computers connections. By default, port 6179 is used.
7. Click **Apply** to save modified settings.

## NOTE

It is recommended that you use the UDP protocol. While TCP guarantees delivery of data packets, UDP ensures faster data transmission since it does not require any data flow control.



## Changing Advanced VPN Server Settings

In some cases, you may need to change advanced VPN settings. To do this, you can edit VPN configuration files manually.

### IMPORTANT

You must edit VPN configuration files only after you configure the network hub appliance with Veeam PN Web UI.

To change advanced VPN settings:

1. Enable SSH access to the network hub appliance. For more information, see [Enabling and Disabling SSH Access](#).
2. Connect to the network hub appliance over an SSH client.
3. Edit the following configuration files:
  - `/etc/veeam/pn/StaticOVPN.cfg` – site-to-site VPN configuration files.
  - `/etc/veeam/pn/EndpointOVPN.cfg` – VPN configuration files for standalone clients.

4. After you edit configuration files, disable and re-enable the site-to-site and/or point-to-site services. For more information, see [Enabling and Disabling Veeam PN Services](#).
5. Disable SSH access to the network hub appliance if you no longer need it.

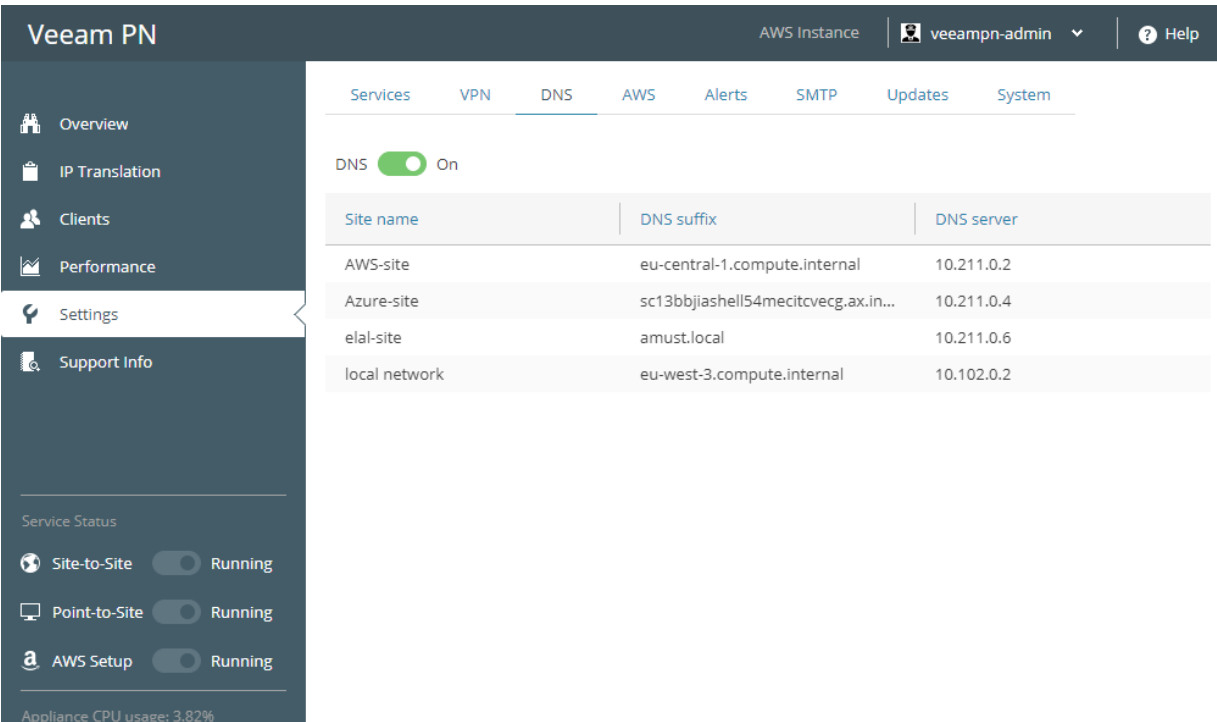
The most popular example of advanced VPN settings is pushing DHCP options to standalone clients, like DNS/WINS server configuration. For more information, see <https://openvpn.net/index.php/open-source/documentation/howto.html#dhcp>.

## Enabling and Disabling DNS

In the network hub portal, you can see the list of configured sites, DNS suffixes and DNS servers.

If you want to disable DNS on a network hub, do the following:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **DNS** tab.
4. Click the **DNS** toggle to switch it to the **Off** state.



The screenshot shows the Veeam PN network hub portal interface. The left sidebar contains navigation links: Overview, IP Translation, Clients, Performance, Settings (highlighted), and Support Info. The main content area has tabs for Services, VPN, DNS (selected), AWS, Alerts, SMTP, Updates, and System. The DNS section shows a toggle switch set to 'On'. Below this is a table with three columns: Site name, DNS suffix, and DNS server.

Site name	DNS suffix	DNS server
AWS-site	eu-central-1.compute.internal	10.211.0.2
Azure-site	sc13bbjiashell54mecitvecg.ax.in...	10.211.0.4
elal-site	amust.local	10.211.0.6
local network	eu-west-3.compute.internal	10.102.0.2

Below the table, the 'Service Status' section shows three services: Site-to-Site (Running), Point-to-Site (Running), and AWS Setup (Running). At the bottom, it indicates 'Appliance CPU usage: 3.82%'.

## Configuring Microsoft Azure Settings

When you deploy the network hub in Microsoft Azure, you configure general network hub settings. If necessary, you can modify these settings.

To configure Microsoft Azure settings for the network hub, do the following:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Azure** tab.



4. In the **Azure subnet prefix** field, specify an address of the Microsoft Azure network to which the network hub must be connected. To specify the address, use the CIDR notation.
5. In the **Resource group name** field, specify a name of the resource group that you specified when you deployed the network hub in Microsoft Azure.
6. In the **User-defined routing table name** field, specify a name of the routing table. Veeam PN will add to this table routes describing how traffic must travel in the VPN.
7. Click **Apply** to save modified Microsoft Azure settings.

## Configuring Amazon AWS Settings

When you deploy the network hub on Amazon AWS, you configure general network hub settings. If necessary, you can modify these settings.

To configure Amazon AWS settings for the network hub, do the following:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **AWS** tab.
4. In the **Region** field, specify a code of the Amazon EC2 region where you want to place your stack resources. For details, see the [Regions and Availability Zones](#) section of the Amazon Elastic Compute Cloud User Guide.
5. In the **Routing Table** field, specify the route table which defines where network traffic from your subnet is directed. For details, see the [Route Table](#) section of the Amazon Virtual Private Cloud User Guide.
6. In the **AWS subnet address** field, specify an address of the Amazon AWS network to which the network hub must be connected. To specify the address, use the CIDR notation.
7. In the **Security group** field, specify a security group for your VPC. A security group acts as a firewall for your instance to control inbound and outbound traffic. For details, see the [Security Groups](#) section of the Amazon Virtual Private Cloud User Guide.

8. Click **Apply** to save modified AWS settings.

The screenshot shows the Veeam PN configuration interface. The top bar includes 'Veeam PN', 'AWS Instance', a user profile 'veeampr-admin', and a 'Help' icon. The left sidebar contains navigation links: Overview, IP Translation, Clients, Performance, Settings (highlighted), and Support Info. Below the sidebar, the 'Service Status' section shows 'Site-to-Site', 'Point-to-Site', and 'AWS Setup' all as 'Running'. At the bottom of the sidebar, it shows 'Appliance CPU usage: 0.49%'. The main content area has tabs for Services, VPN, DNS, AWS (selected), Alerts, SMTP, Updates, and System. Under the 'AWS' tab, the heading is 'Specify AWS Settings' with a note: 'Enable and modify these settings, only if network hub is installed in AWS. Otherwise, leave them disabled'. The settings are: Region (eu-west-3), Routing table (rtb-09071a95e6128a018), AWS subnet address (10.102.55.0/24), and Security group (sg-0ff8a947fd4562dd7). A blue 'Apply' button is at the bottom left of the settings area.

## Enabling and Disabling SSH Access

By default, you cannot access the network hub appliance over SSH. If necessary, you can enable SSH access to the appliance.

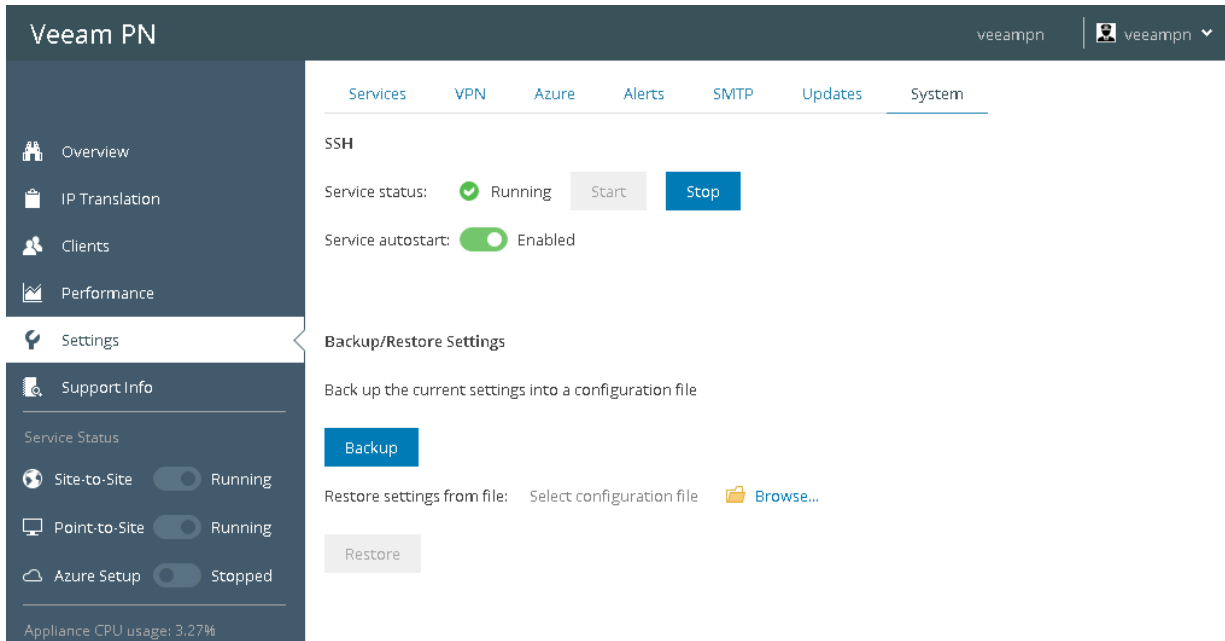
To enable SSH access to the network hub appliance:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.
4. In the **Service autostart** field, set the toggle to the **On** position. The SSH service will be automatically started when the network hub appliance is powered on.
5. To start the SSH service and provide SSH access to the network hub appliance during the current work session, click **Start**.

To disable SSH access to the network hub appliance:

1. In the **Service autostart** field, set the toggle to the **Off** position.

2. To disable SSH access to the network hub appliance during the current work session, click **Stop**.



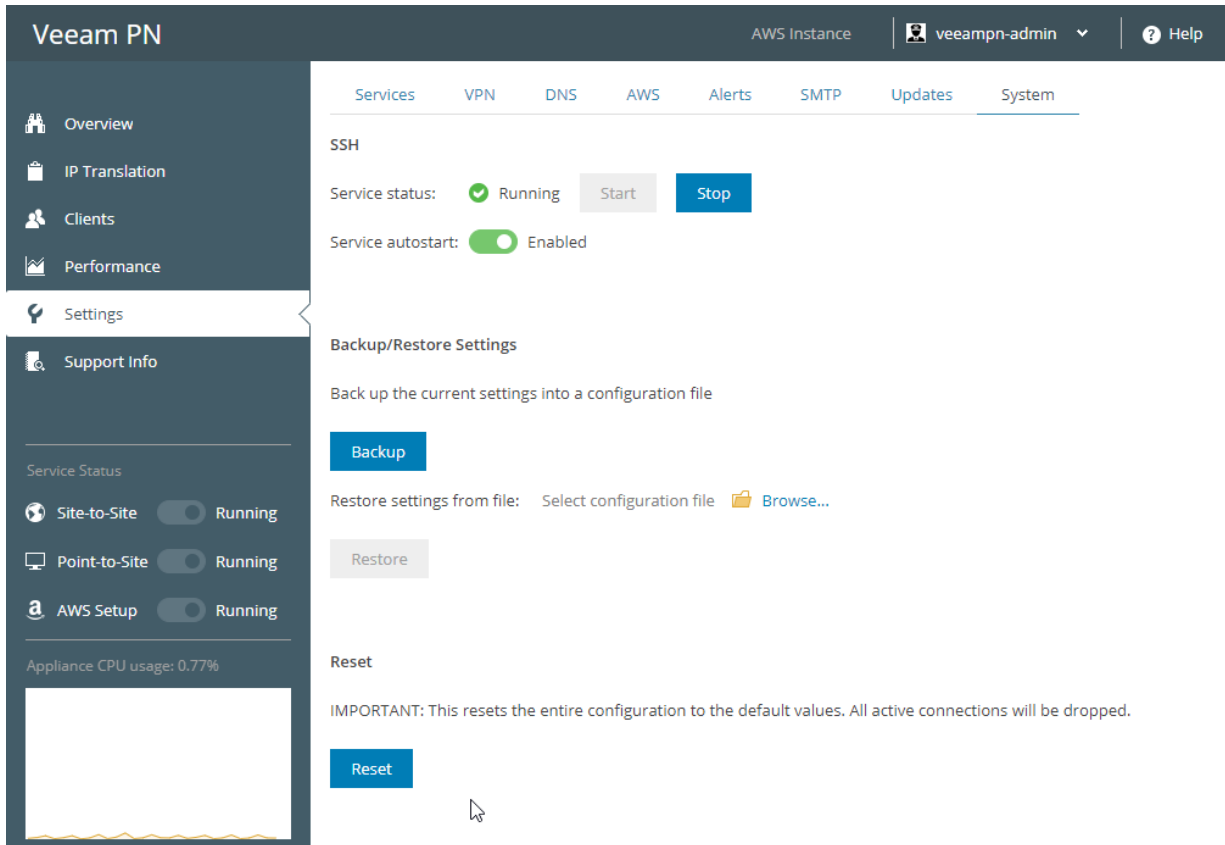
## Resetting Network Hub Settings

If necessary, you can reset network hub settings. When you reset the network hub settings, you discard all changes that you have made since you deployed the network hub appliance. The appliance is rolled back to the impersonalized state, and you can configure network hub settings anew with the **Initial Configuration** wizard.

To reset network hub settings:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.

#### 4. Click **Reset**.



## Setting Network Hub Reboot Time

By default, the network hub appliance is configured to apply security updates automatically, and is rebooted at 2:00 AM UTC after updates installation, if needed. You can change the default reboot time for the appliance.

To change the default reboot time:

1. Enable SSH access to the network hub appliance. For more information, see [Enabling and Disabling SSH Access](#).
2. Connect to the network hub appliance over an SSH client.
3. Open the `/etc/apt/apt.conf.d/50unattended-upgrades` configuration file for editing.
4. Modify the following line as required (keep in mind that the reboot time is provided in UTC):

```
Unattended-Upgrade::Automatic-Reboot-Time "02:00"
```

# Configuring Clients

After you deploy the network hub, you must register clients that must have access to the VPN in the network hub portal. Veeam PN lets you register the following types of clients:

- [Entire sites](#) — if you want to implement the site-to-site scenario, you must specify settings for all on-premises networks that you want to add to the VPN.
- [Standalone computers](#) — if you want to implement the point-to-site scenario, you must configure VPN settings for all standalone computers that must have access to the VPN.
- [HUB site](#) — if the network hub is deployed on a local site and you want to provide connectivity to machines on this site, you must specify settings for this site.

When you register a client, Veeam PN generates a configuration file that contains VPN connection settings for the client. You must use the configuration file to set up a site gateway in the on-premises network, configure a VPN connection on a standalone computer. For more information, [Deploying Site Gateways](#) and [Configuring Standalone Computers](#).

## Related Topics

- [Modifying Clients Settings](#)
- [Disabling and Enabling Clients](#)
- [Removing Clients](#)

# Registering Clients

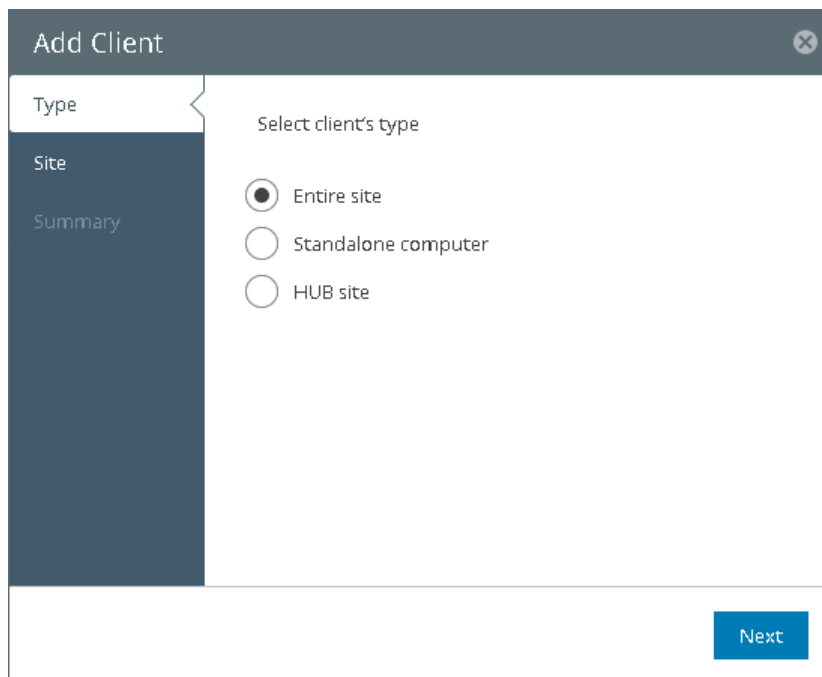
You can register 3 types of clients in the network hub portal:

- [Entire sites](#)
- [Standalone computers](#)
- [Hub site](#) (only for on-premises deployment)

## Registering Entire Sites

To register an entire site:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Clients**.
3. At the top of the clients list, click **Add**.
4. At the **Type** step of the wizard, select **Entire site**.



The screenshot shows a web-based wizard titled "Add Client" with a close button in the top right corner. On the left is a dark sidebar with three tabs: "Type" (active), "Site", and "Summary". The main content area is titled "Select client's type" and contains three radio button options: "Entire site" (which is selected), "Standalone computer", and "HUB site". A blue "Next" button is located at the bottom right of the main content area.

5. At the **Site** step of the wizard, enter details for the on-premises site:
  - In the **Name** field, enter a name for the site. The site name will be displayed in the list of clients.
  - In the **Network address** field, enter the address of the remote network using the CIDR notation.

## IMPORTANT

The site name must not contain space characters.

The screenshot shows the 'Add Client' wizard with the 'Site' step selected. The wizard has a sidebar with 'Type', 'Site', and 'Summary'. The main area is titled 'Specify name and network address for on-premises site'. It contains two input fields: 'Name' with the value 'Melbourne' and 'Network address' with the value '172.17.53.0/24'. At the bottom, there are 'Previous' and 'Next' buttons.

- At the **Summary** step of the wizard, review details of the site and click **Finish** to close the wizard.

After you click **Finish**, Veeam PN will generate an XML file with VPN settings for the on-premises site. The XML file will be automatically downloaded to the default downloads folder. Do not delete the downloaded file: you will need it to configure a site gateway in the on-premises network.

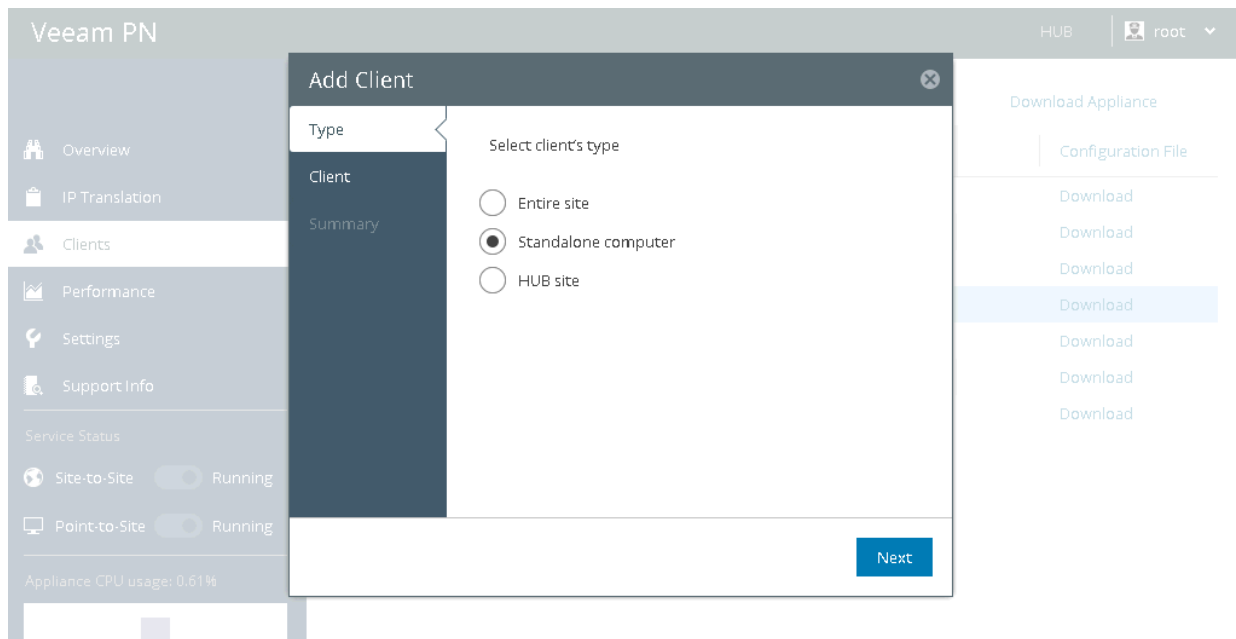
The screenshot shows the Veeam PN interface with the 'Add Client' wizard open. The wizard is at the 'Summary' step, showing a review of the configuration: Type: Entire site, Name: Melburn, IP address: 172.17.53.0/23. It lists steps to complete deployment: download Veeam PN open virtual appliance (OVA), in the site, deploy Veeam PN open virtual appliance, and apply configuration file corresponding to the site. The background shows the Veeam PN dashboard with a sidebar menu (Overview, IP Translation, Clients, Performance, Settings, Support Info) and a right-hand pane with 'Download Appliance' and 'Configuration File' sections, each containing multiple 'Download' links. The top of the dashboard shows 'HUB' and a user profile 'root'.

## Registering Standalone Computers

To register a standalone computer:

- Log in to the network hub portal as a Portal Administrator.

2. In the configuration menu on the left, click **Clients**.
3. At the top of the clients list, click **Add**.
4. At the **Type** step of the wizard, select **Standalone computer**.

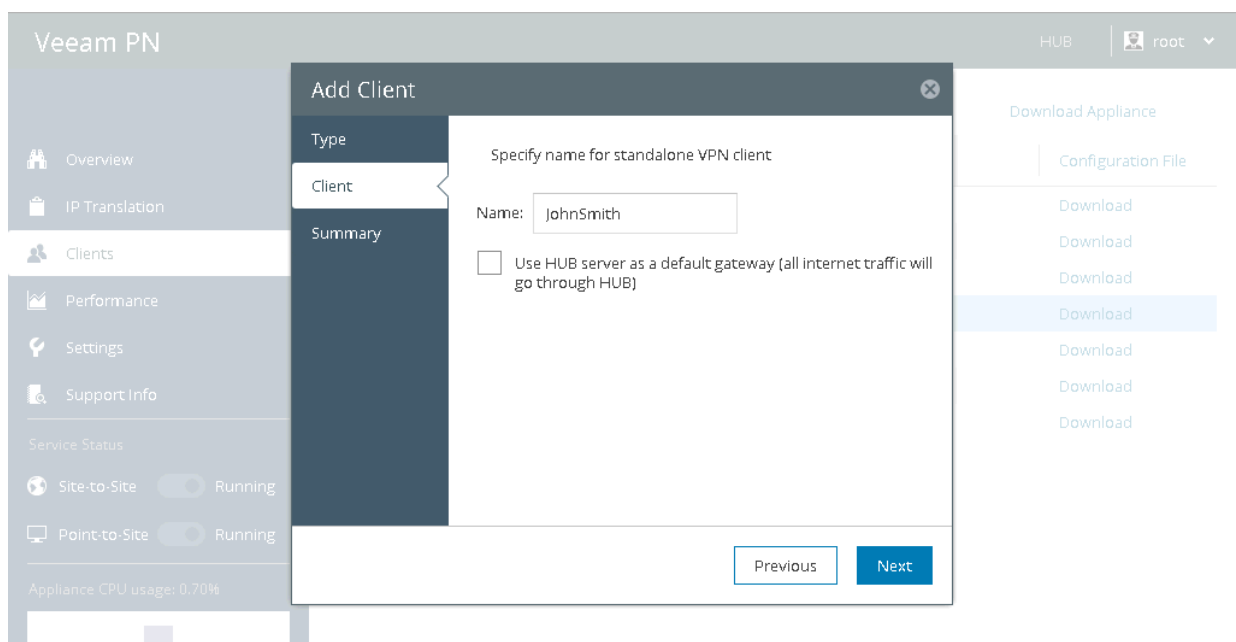


5. At the **Client** step of the wizard, enter a name for the standalone computer. The computer name will be displayed in the list of clients.

## IMPORTANT

The client name must not contain space characters.

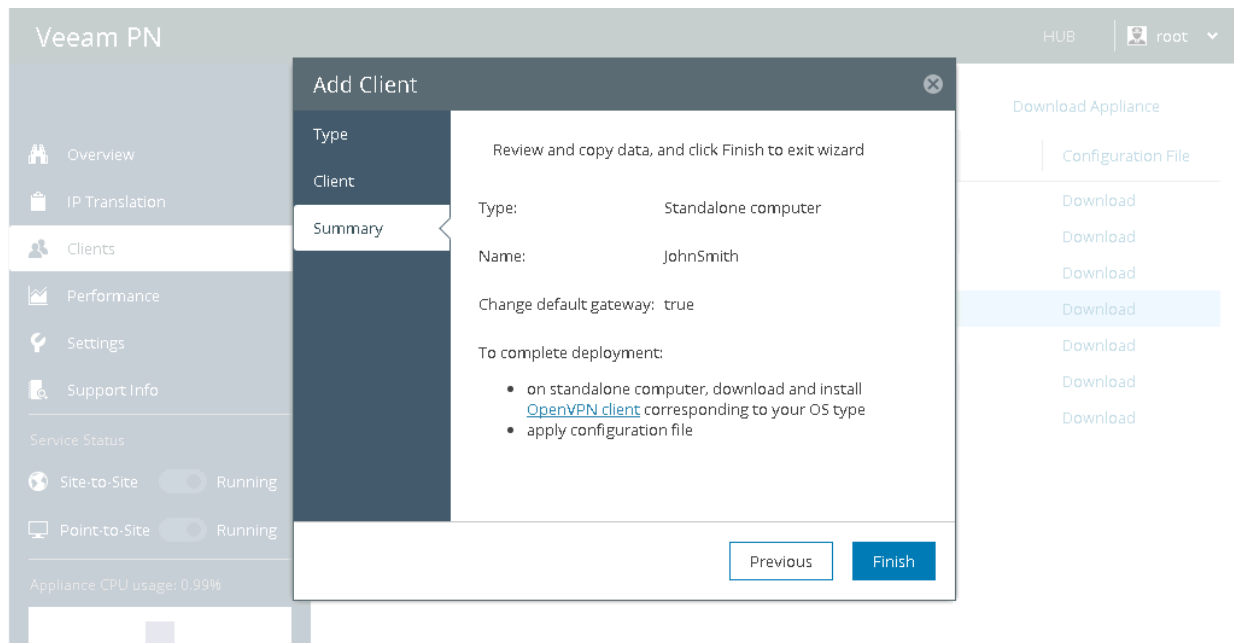
6. Select the **Use HUB server as a default gateway** check box. With this option enabled, Veeam PN will use the network hub as a default gateway and route all Internet traffic for the client over the network hub.





- At the **Summary** step of the wizard, review details of the client and click **Finish** to close the wizard.

After you click **Finish**, Veeam PN will generate an OVPN file with VPN settings for the registered client. The OVPN file will be automatically downloaded to the default downloads folder. Do not delete the downloaded file: you will need it to configure VPN connection settings on the standalone computer.



## Registering Hub Site

If you set up the network hub in a local site and want to make machines in this site accessible over the VPN, you must register this local site as a client in the network hub portal.

For example, you want to unite 3 sites over the VPN: *Site A*, *Site B* and *Site C*. In *Site A*, you deploy the network hub. If you do not add *Site A* as a client to the network hub portal, machines from *Site B* and *Site C* will not be able to communicate with machines in *Site A*; they will only be able to communicate with each other, routing traffic over the network hub deployed in *Site A*. If you add *Site A* as a client, machines from *Site A*, *Site B* and *Site C* will be able to communicate with each other, routing traffic over the network hub in *Site A*.

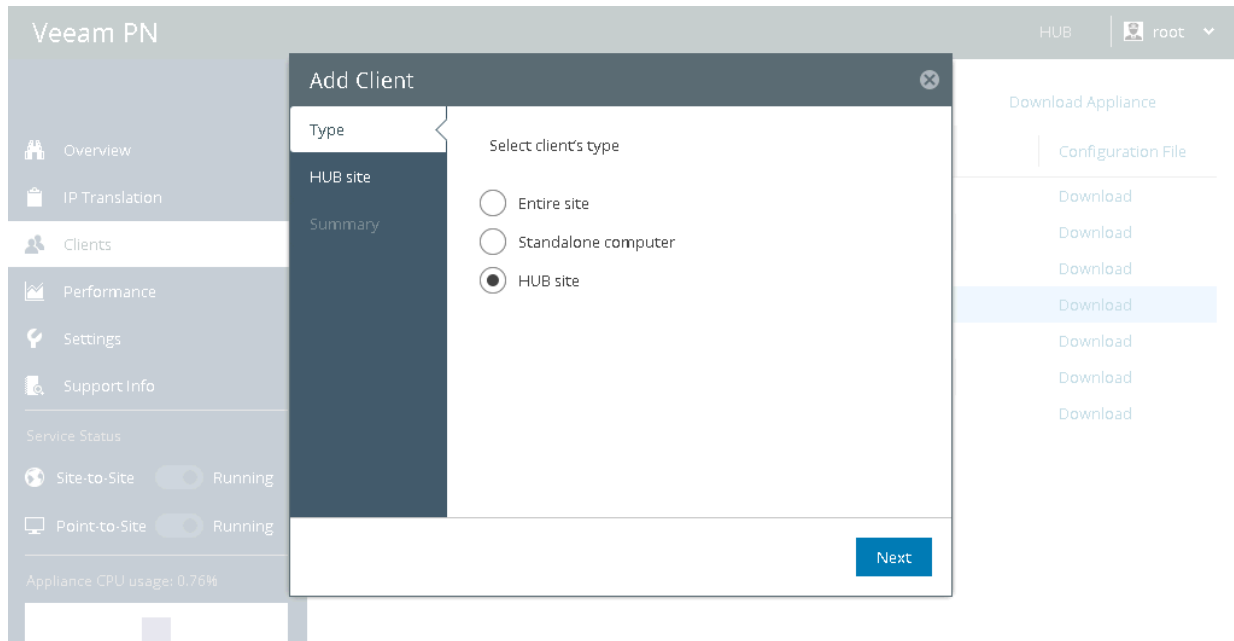
### IMPORTANT

After you register a hub site as a client, you do not need to perform additional configuration actions: download a configuration file and set it up (as for entire site and standalone computer clients). Bear in mind that the hub site client always remains in the *Disconnected* state, which is an expected behaviour.

To register a hub site client:

- Log in to the network hub portal as a Portal Administrator.
- In the configuration menu on the left, click **Clients**.
- At the top of the clients list, click **Add**.

4. At the **Type** step of the wizard, select **HUB site**.

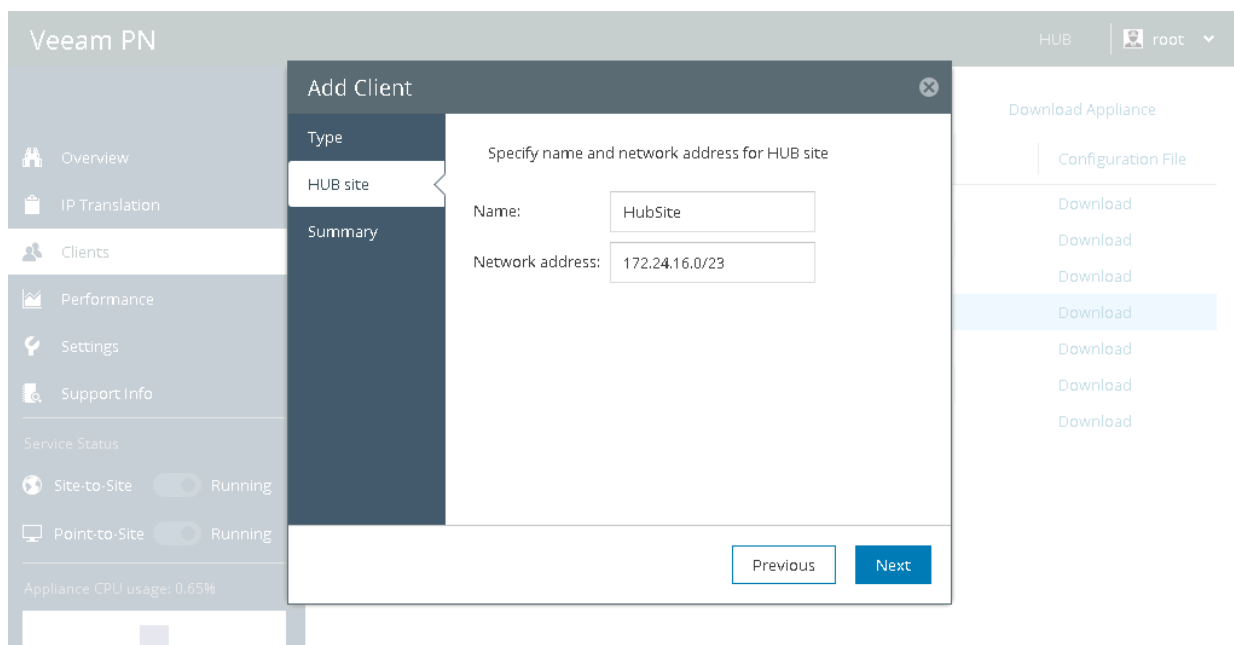


5. At the **Site** step of the wizard, enter details for the site where the network hub is deployed:

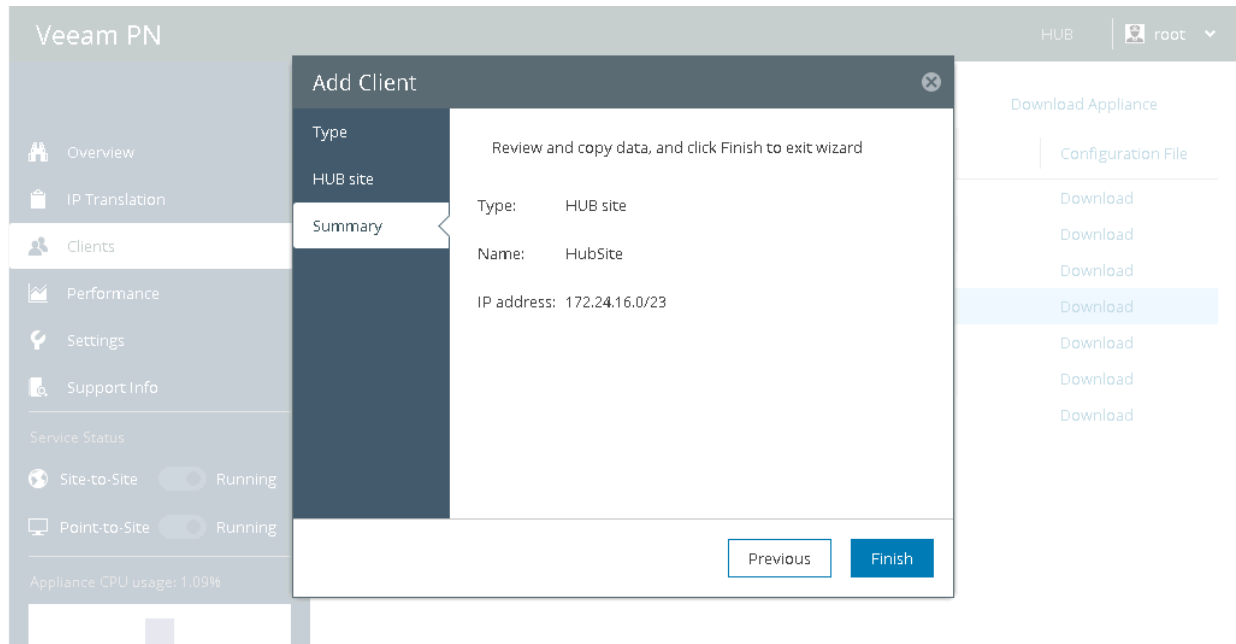
- In the **Name** field, enter a name for the site. The site name will be displayed in the list of clients.
- In the **Network address** field, enter the address of the network where the network hub is deployed using the CIDR notation.

**IMPORTANT**

The site name must not contain space characters.



6. At the **Summary** step of the wizard, review details of the site and click **Finish** to close the wizard.



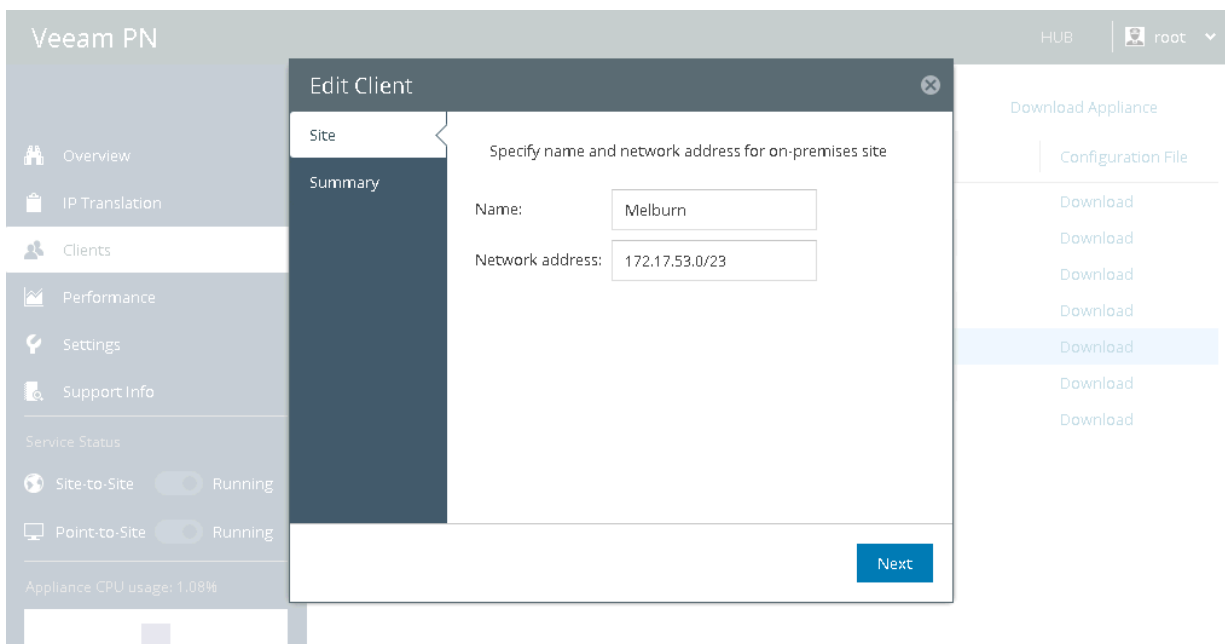
# Modifying Clients Settings

If necessary, you can modify settings of a client registered in the Veeam PN portal. For example, you may want to change the network address of an on-premises site.

When you modify client settings, Veeam PN generates a new configuration file. You must download a new version of the configuration file and set it up on the site gateway or standalone computer. If you do not re-deploy the configuration file, the client will lose a connection to the VPN.

To modify client settings:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Clients**.
3. In the clients list, select the client and click **Edit** at the top of the list.
4. Modify client settings as required and save the modified settings.
5. In the **Configuration File** column of the clients list, click **Download** to get a configuration file for the client.
6. Use the configuration file to update VPN connection settings on the client side. For more information, see [Re-Deploying Configuration Files](#) and [Configuring Standalone Computers](#).



# Disabling and Enabling Clients

You can disable Veeam PN clients, for example, if you want to temporary prevent a standalone computer from accessing the VPN.

To disable a client:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Clients**.
3. In the clients list, select the client and click **Disable** at the top of the list.

To enable a previously disabled client:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Clients**.
3. In the clients list, select the client and click **Enable** at the top of the list.

Veeam PN

HUB | root

+ Add Edit Remove Enable Disable Download Appliance

Name	Net IP Address	Status	Configuration File
Melburn	172.17.53.0/23	Enabled	<a href="#">Download</a>
Atlanta	10.0.4.0/24	Enabled	<a href="#">Download</a>
JohnSmith	-	Enabled	<a href="#">Download</a>
hub	10.0.1.0/24	Enabled	<a href="#">Download</a>

Overview  
IP Translation  
Clients  
Performance  
Settings  
Support Info

Service Status

Site-to-Site ☒ Running

Point-to-Site ☒ Running

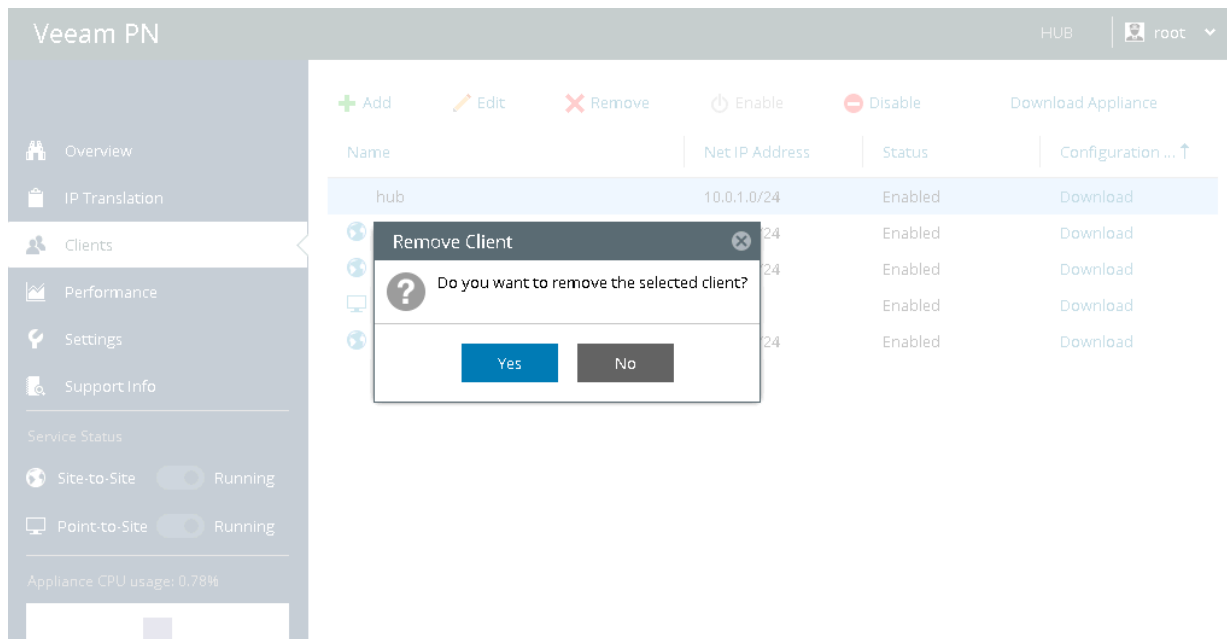
Appliance CPU usage: 0.83%

# Removing Clients

If a client no longer requires accessing the VPN, you can remove the client from the network hub portal.

To remove a client:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Clients**.
3. In the clients list, select the client and click **Remove** at the top of the list.



# Deploying Site Gateways

To implement the site-to-site scenario, you must deploy one site gateway in every remote network that you plan to add to the VPN (except the network where the network hub is deployed). The site gateway is a virtual appliance that establishes a VPN tunnel with the network hub, which lets the VPN traffic travel securely between sites.

## In This Section

- [Setting Up Site Gateways](#)
- [Adding Static Routes on Default Gateways](#)
- [Configuring Site Gateway Settings](#)

# Setting Up Site Gateways

To set up a site gateway, you must deploy a Veeam PN appliance in the VMware vSphere environment. The Veeam PN appliance is distributed as an OVA package. The package contains a pre-configured 64-bit Linux virtual appliance on which Veeam PN components are set up.

To deploy a site gateway, you must perform the following steps:

1. [Deploy a Veeam PN appliance from the OVA package.](#)
2. [Configure initial site gateway settings.](#)

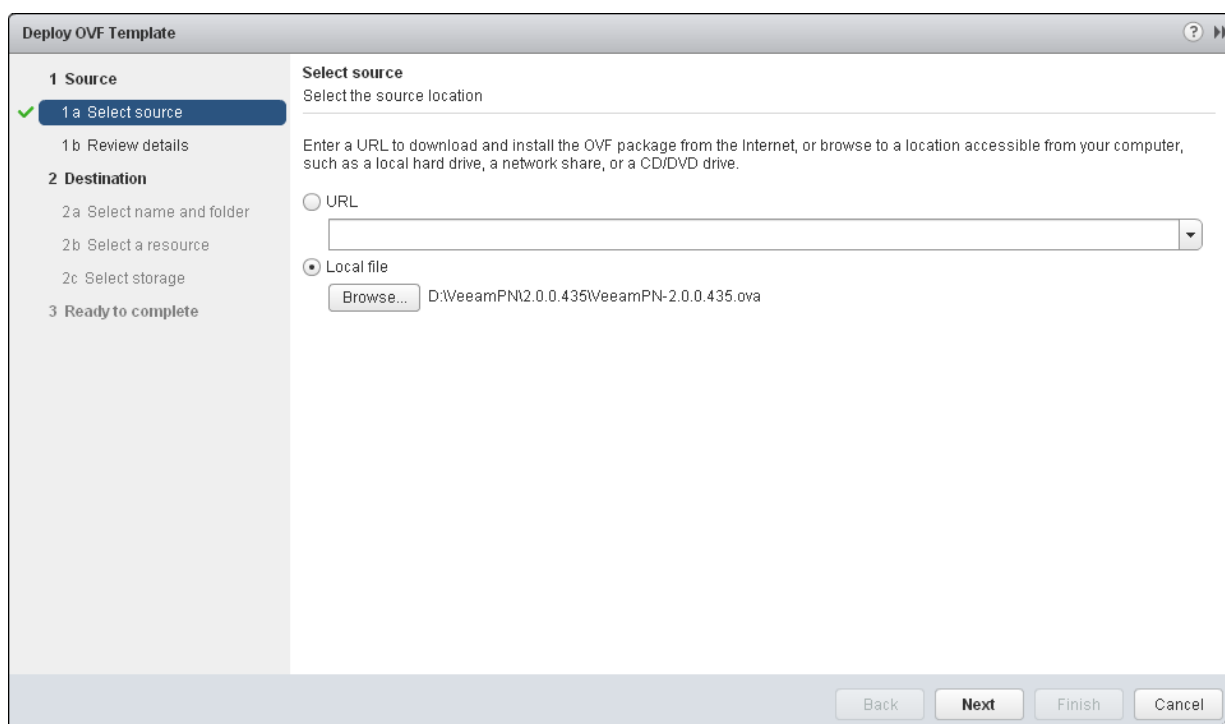
## Before You Begin

Before you deploy a site gateway, you must register the on-premises network, in which the gateway will reside, in the network hub portal, and obtain a configuration file for this network. For more information, see [Registering Clients](#).

## Deploying Veeam PN Appliance

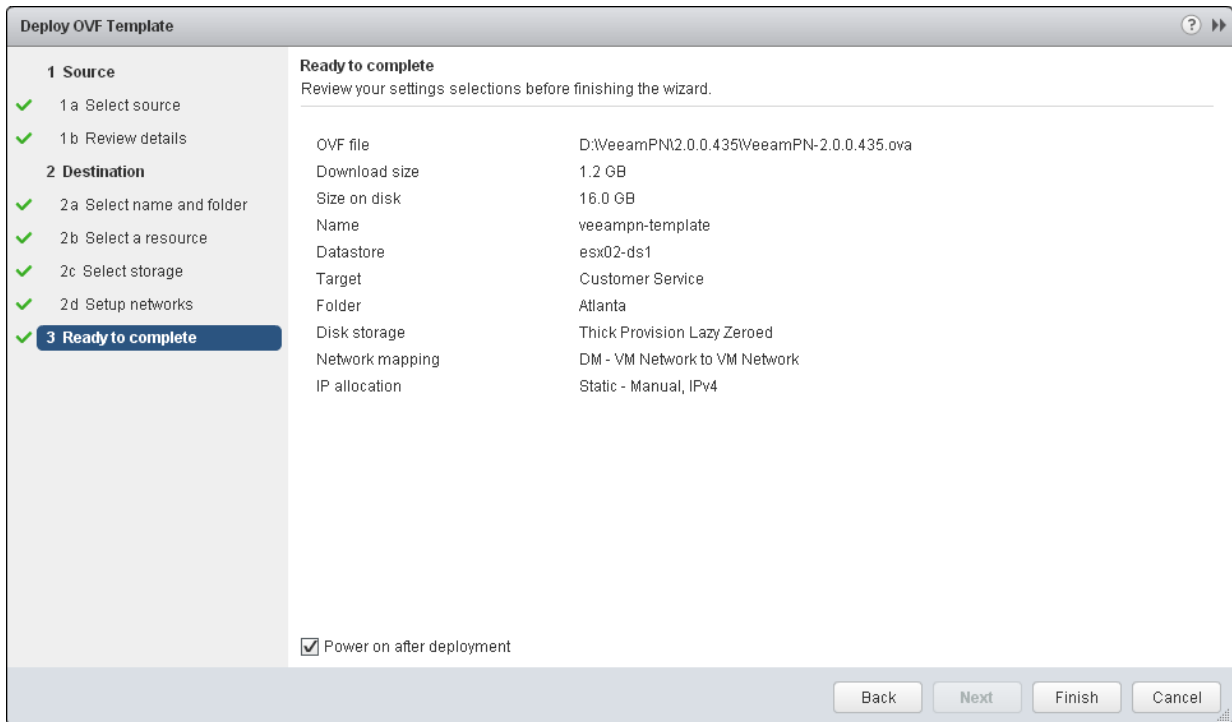
To deploy a Veeam PN appliance from the OVA package:

1. Download the Veeam PN OVA package from: <https://www.veeam.com/downloads.html> and save it in a network shared folder.
2. In VMware vSphere Web Client, open the hosts and clusters inventory list and select a host on which you want to deploy the appliance.
3. From the menu at the top of the working area, select **Actions > Deploy OVF Template**.
4. At the **Select source** step of the wizard, select **Local file**, click **Browse** and browse to the Veeam PN OVA package.





- Follow the next steps of the wizard and specify appliance deployment settings: datastore on which the appliance VM disk must be placed, disk format, network to which the appliance must be connected and so on.
- At the last step of the wizard, select the **Power on after deployment** check box and click **Finish**.



VMware vSphere will deploy the Veeam PN appliance on the selected host. The deployment process typically takes several minutes. Wait for the process to complete and proceed to the site gateway configuration.

## Configuring Initial Site Gateway Settings

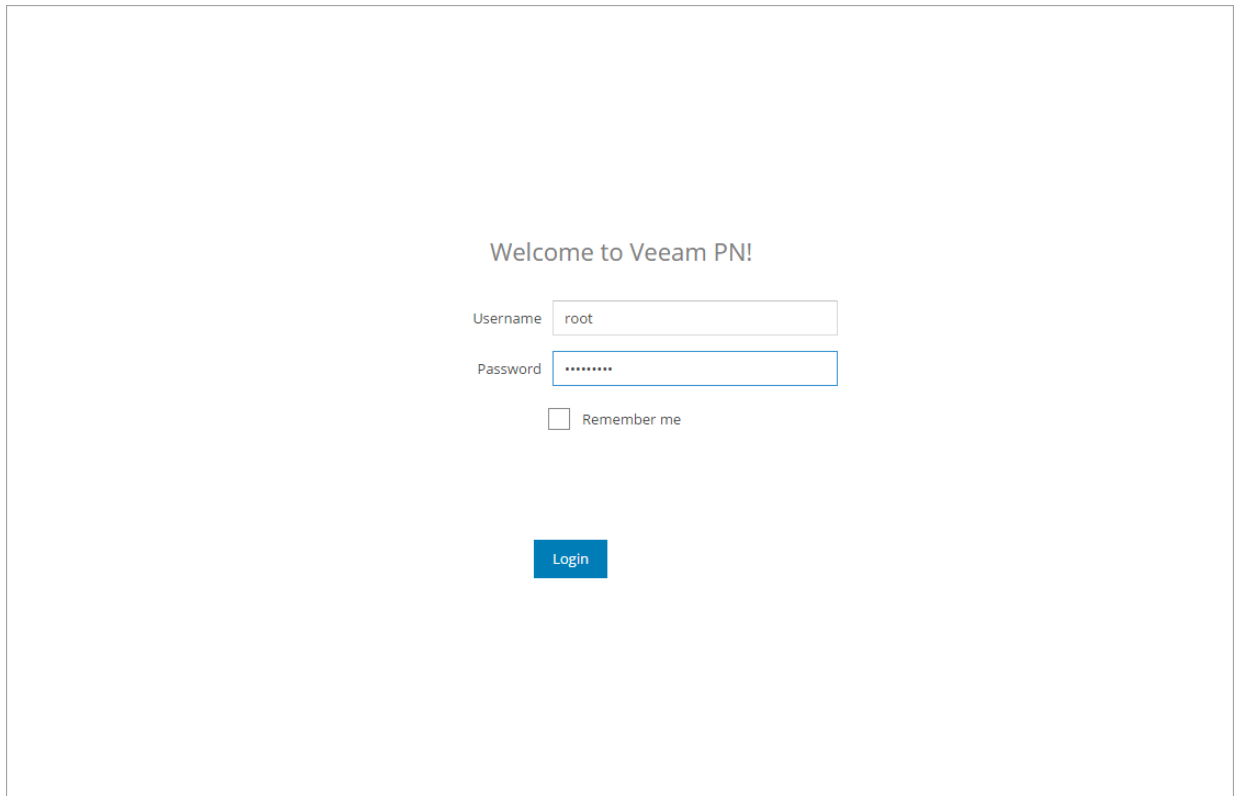
Right after deployment, the virtual appliance is impersonalized. To configure a site gateway, you must customize the appliance and configure initial gateway settings on it.

To configure a site gateway:

- In VMware vSphere Web Client, navigate to the **Summary** tab and get an IP address of the deployed appliance.
- In a web browser, access the site gateway portal by the following address:  
`https://<applianceIPaddress>`, where `applianceIPaddress` is the IP address of the deployed appliance.  
  
When you access the site gateway portal in the web browser, the browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.
- At the **Welcome to Veeam PN** screen of the portal, log in to the site gateway portal under the in-built Administrator account. The Administrator account has the following credentials:
  - Username: *root*

- Password: *VeeamPN*

Click **Login**.



>Welcome to Veeam PN!

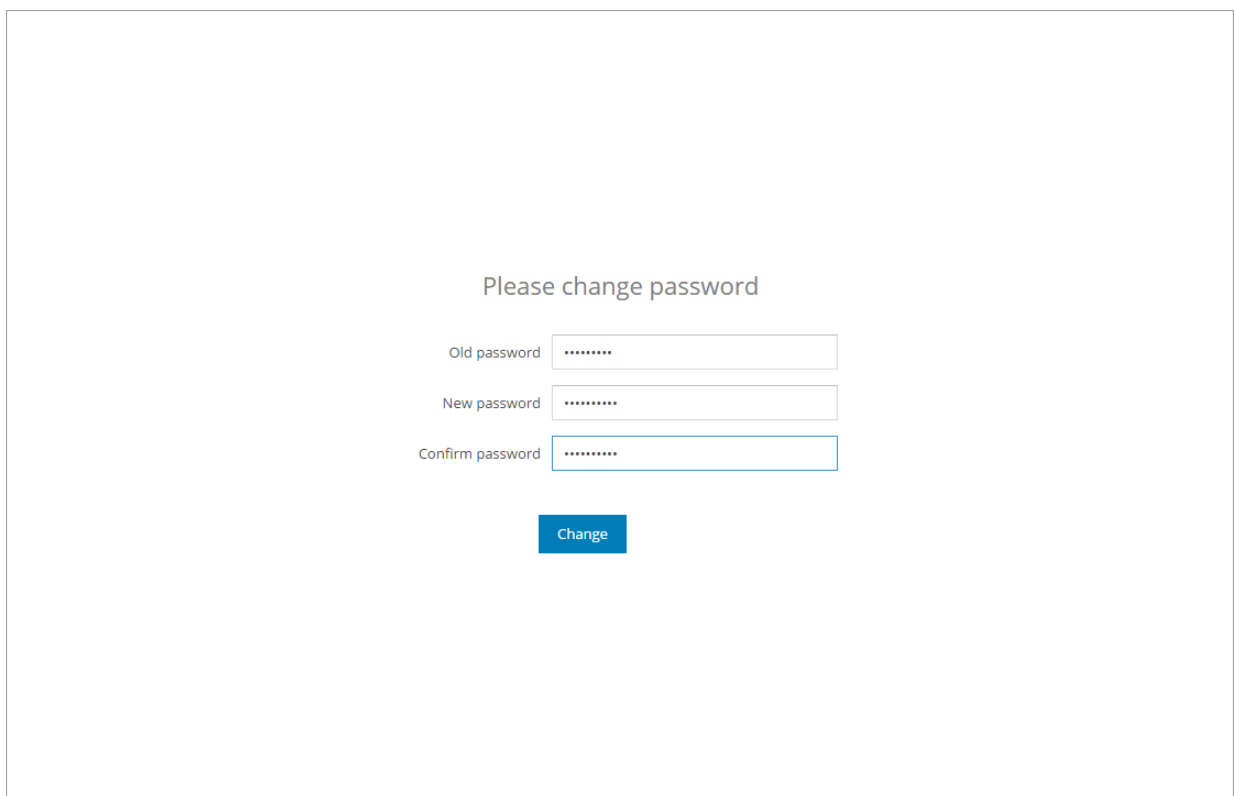
Username

Password

☐ Remember me

**Login**

4. After you log in to the portal for the first time, Veeam PN will offer you to change a password for the built-in account. On the displayed screen, enter the old and new passwords and click **Change**.



Please change password

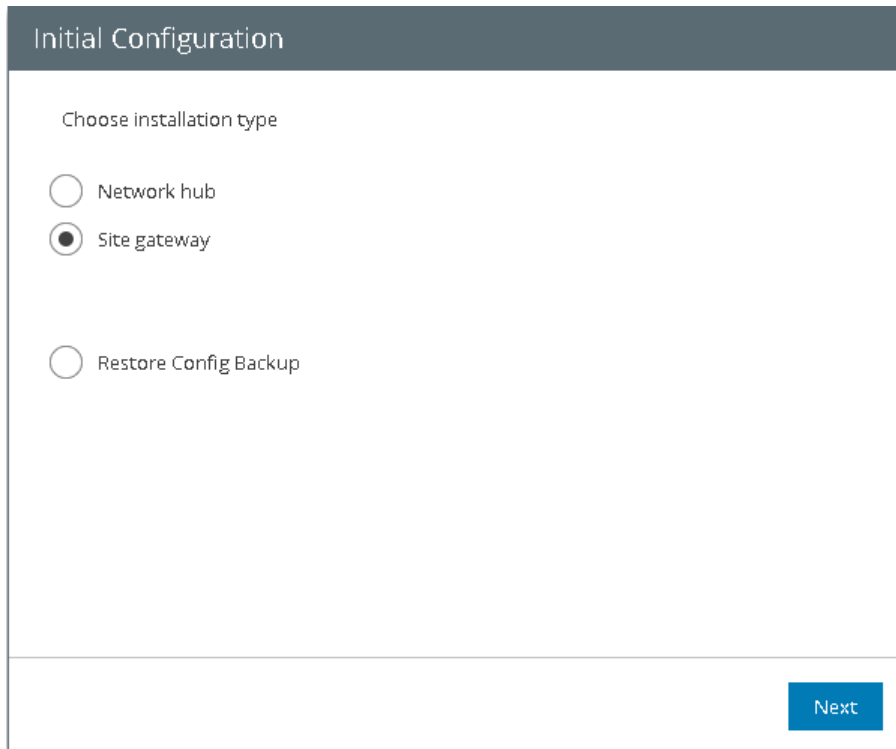
Old password

New password

Confirm password

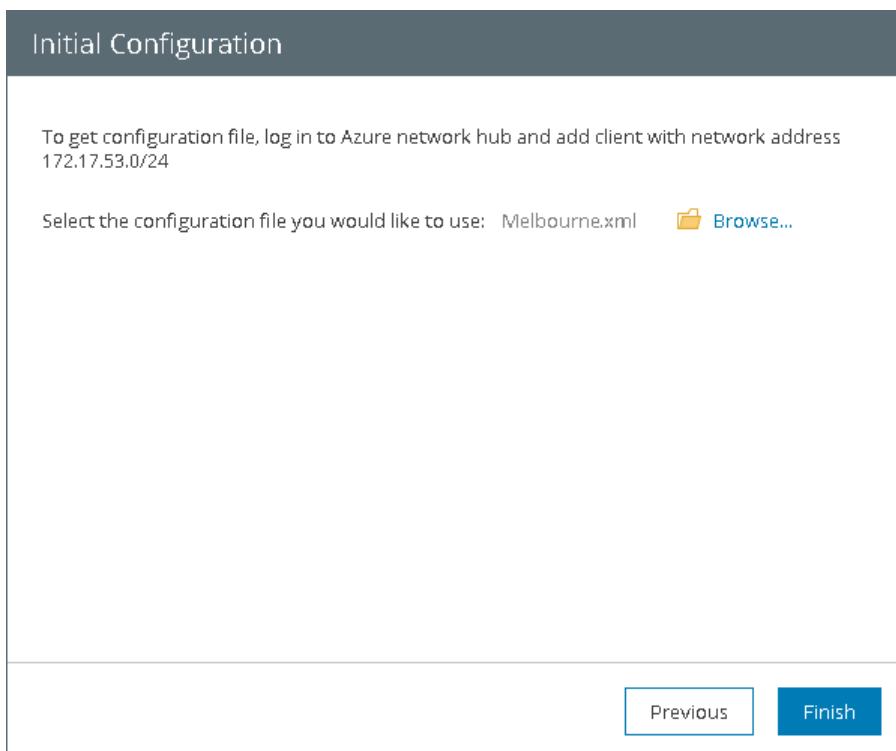
**Change**

5. At the first step of the **Initial Configuration** wizard, select **Site gateway**.



The screenshot shows the 'Initial Configuration' wizard. At the top, there's a dark header with the title 'Initial Configuration'. Below it, the text 'Choose installation type' is displayed. There are three radio button options: 'Network hub', 'Site gateway' (which is selected), and 'Restore Config Backup'. At the bottom right, there is a blue 'Next' button.

6. Click **Browse** and browse to the configuration file generated in the network hub portal.



The screenshot shows the 'Initial Configuration' wizard at a later step. The header 'Initial Configuration' is still present. The main text reads: 'To get configuration file, log in to Azure network hub and add client with network address 172.17.53.0/24'. Below this, it says 'Select the configuration file you would like to use: Melbourne.xml' followed by a folder icon and a 'Browse...' link. At the bottom right, there are two buttons: 'Previous' and 'Finish'.

7. Click **Finish**. Veeam PN will configure the gateway appliance and display the site gateway portal.

## What You Do Next

After you deploy a site gateway, you must perform the following steps:

- [For network hub deployed in on-premises network] You must add a new route on the default gateway in the on-premises network where you set up the site gateway. The route must destine all outgoing traffic to the site gateway. For more information, see [Adding Static Routes on Default Gateways](#).
- If necessary, you can change gateway settings, for example, configure alerts, enable SSH access to the gateway appliance and so on. For more information, see [Configuring Site Gateway Settings](#).

# Adding Static Routes on Default Gateways

In the VPN, Veeam PN routes traffic through a site-to-site VPN tunnel. To make sure that the traffic goes to a proper destination, you need to let both sides of the VPN tunnel know how to route traffic between each other.

When you register an on-premises network in the network hub portal and deploy a site gateway in this on-premises network, you 'tell' Veeam PN that this site gateway will be responsible for this on-premises network. As soon as the network hub receives traffic designated for this network, it forwards this traffic through the VPN tunnel established between the network hub and the site gateway.

However, machines in on-premises networks also need to know where they must send traffic so that it is routed over the VPN tunnel. Since machines in one remote network use default gateways to communicate with machines in other networks, you need to add static routes on default gateways. These static routes will destine the traffic to the Veeam PN appliance – the network hub or site gateway, that, in their turn, will route traffic through the VPN tunnel established between two remote sites.

For example, you want to add two sites to the VPN. The network hub is deployed in *Site A* and a site gateway is deployed in *Site B*.

- **Site A:** 10.1.0.0/24  
Network mask: 255.255.255.0/24  
Network hub IP address: 10.1.0.2  
Default gateway IP address: 10.1.0.1  
Client machine IP address: 10.1.0.12
- **Site B:** 192.168.0.1/24  
Network mask: 255.255.255.0/24  
Site gateway IP address: 192.168.0.2  
Default gateway IP address: 192.168.0.1  
Client machine IP address: 192.168.0.14

In such configuration, if a client machine in *Site A* needs to communicate with a client machine in *Site B*, the traffic will first be sent to the default gateway 10.1.0.1 in *Site A*. The default gateway must then route the traffic to the network hub that, in its turn, will route the traffic through the VPN tunnel between remote networks. For this reason, you must add the following route on the default gateway 10.1.0.1: if the traffic is designated for 192.168.0.0, the next hop must be the network hub 10.1.0.2.

```
route add 192.168.0.0 mask 255.255.255.0 10.1.0.2
```

In a similar manner, you must add a route on the default gateway 192.168.0.1 in *Site B*. If the traffic is designated for 10.1.0.0, the next hop must be the site gateway 192.168.0.2:

```
route add 10.1.0.0 mask 255.255.255.0 192.168.0.2
```

## NOTE

If the network hub is deployed in Microsoft Azure, Veeam PN automatically adds all necessary routes for machines in remote networks to the user-defined routing table.

# Configuring Site Gateway Settings

After you deploy a site gateway, you can configure the following settings for it:

- [Enable and disable the site-to-site service](#)
- [Re-deploy the configuration file](#)
- [Enable and disable SSH access](#)
- [Modify site gateway settings](#)
- [Reset site gateway settings](#)

## Enabling and Disabling Site Service

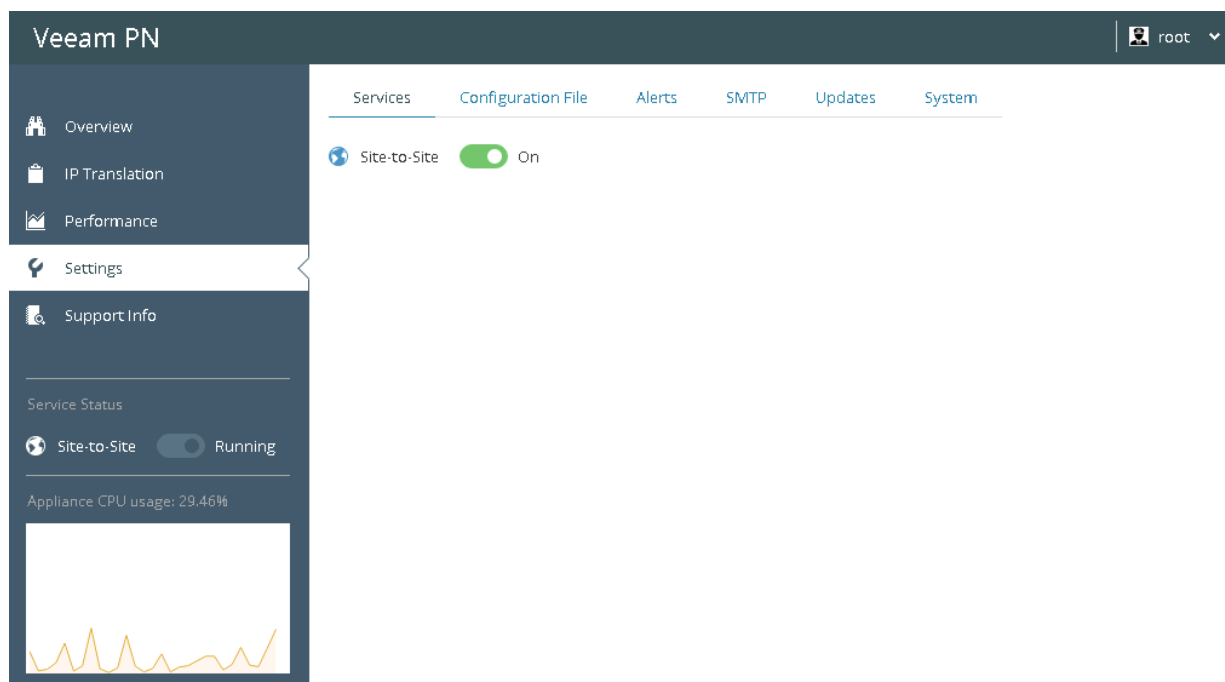
If necessary, you can disable the site-to-site service for a site gateway. When you disable the site-to-site service, the network in which the site gateway is deployed gets disconnected from the network hub, and all machines residing in this network lose access to the VPN.

To disable the site-to-site service:

1. Log in to the site gateway portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. In the **Services** list, set the toggle of the Site-to-Site service to the **Off** position.

To enable the previously disabled service:

1. Log in to the site gateway portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. In the **Services** list, set the toggle of the Site-to-Site service to the **On** position.



# Re-Deploying Configuration Files

To set up a site gateway, you need a configuration file generated by the network hub. The configuration file contains VPN settings and lets you easily configure the site gateway in the remote network.

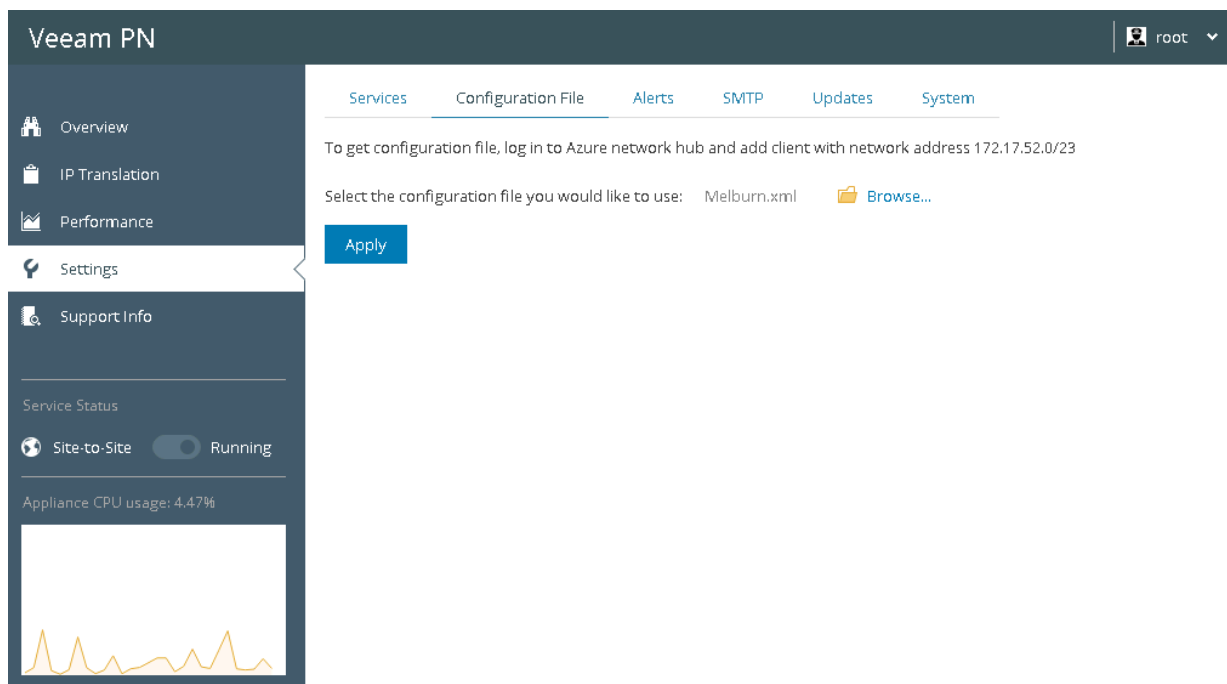
In some situations, you may need to re-deploy configuration files on the site gateway side. This can happen if you change network hub settings. In this case, you will need to re-generate configuration files for all clients registered in the Veeam PN portal and re-deploy these configuration files on site gateway appliances.

## NOTE

You do not need to re-deploy configuration files when you add new remote networks to the VPN. You must re-deploy configuration files only when you change settings of the network hub such as IP address, communication ports, protocol and so on.

To re-deploy the configuration file on a site gateway appliance:

1. Log in to the site gateway portal.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Configuration File** tab.
4. Click **Browse** and browse to the configuration file.
5. Click **Apply**.



# Enabling and Disabling SSH Access

By default, you cannot access a site gateway appliance over SSH. If necessary, you can enable SSH access to the appliance.

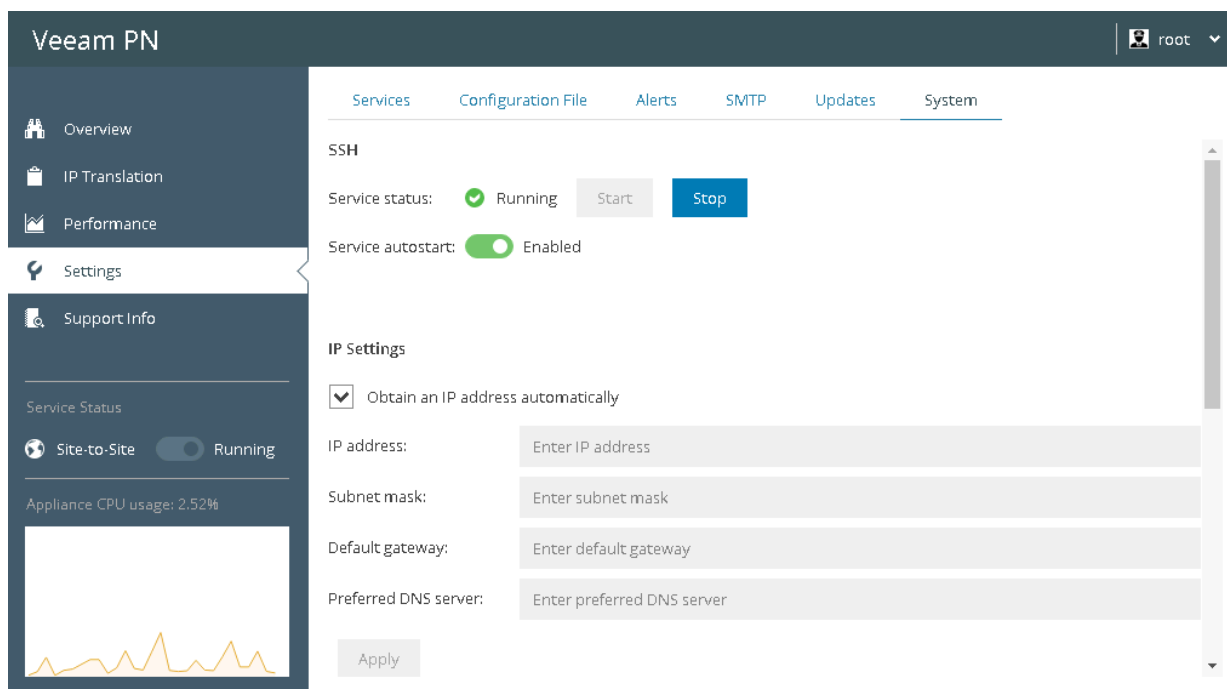
To enable SSH access:

1. Log in to the site gateway portal.

2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.
4. In the **Service autostart** field, set the toggle to the **On** position. The SSH service will be automatically started when the site gateway appliance is powered on.
5. To start the SSH service and provide SSH access to the appliance during the current work session, click **Start**.

To disable SSH access to the site gateway appliance:

1. In the **Service autostart** field, set the toggle to the **Off** position.
2. To disable SSH access to the appliance during the current work session, click **Stop**.



## Modifying Site Gateway Settings

If necessary, you can modify site gateway settings, for example, change an IP address of the appliance.

To modify site gateway settings:

1. Log in to the site gateway portal.
2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.
4. By default, a site gateway appliance automatically obtains networking information from DHCP. If there is no DHCP server in the network where the appliance resides or you want to manually configure IP settings for the appliance, clear the **Obtain an IP address automatically** check box and configure IP settings:
  - a. In the **IP address** field, specify an IP address of the site gateway appliance.
  - b. In the **Subnet mask** field, specify a mask of the network where the appliance resides.
  - c. In the **Default gateway** field, specify an IP address of the default gateway in the network where the appliance resides.



d. In the **Preferred DNS server** field, specify an IP address of the DNS server in the network where the appliance resides.

5. Click **Apply**.

The screenshot shows the Veeam PN configuration interface. On the left is a dark sidebar with a menu containing 'Overview', 'IP Translation', 'Performance', 'Settings' (highlighted), and 'Support Info'. Below the menu, 'Service Status' shows 'Site-to-Site' as 'Running' with a toggle switch. A graph shows 'Appliance CPU usage: 16.60%'. The main area has tabs: 'Services', 'Configuration File', 'Alerts', 'SMTP', 'Updates', and 'System' (selected). Under 'IP Settings', there is a checkbox 'Obtain an IP address automatically' which is unchecked. Below it are four input fields: 'IP address' (172.17.53.7), 'Subnet mask' (255.255.255.0), 'Default gateway' (172.17.53.1), and 'Preferred DNS server' (172.17.53.2). A blue 'Apply' button is below these fields. At the bottom, 'Backup/Restore Settings' includes a link to 'Back up the current settings into a configuration file'.

## Resetting Site Gateway Settings

If necessary, you can reset site gateway settings. When you reset gateway settings, you discard all changes that you have made since you deployed the site gateway appliance. The appliance is rolled back to the impersonalized state, and you can configure site gateway settings anew with the **Initial Configuration** wizard.

To reset site gateway settings:

1. Log in to the site gateway portal.
2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.

4. In the **Reset** field, click **Reset**.

The screenshot shows the Veeam PN web interface. The left sidebar contains navigation links: Overview, IP Translation, Performance, Settings (highlighted), and Support Info. Below these is a 'Service Status' section showing 'Site-to-Site' as 'Running' and 'Appliance CPU usage: 2.83%' with a corresponding line graph. The main content area is titled 'Configuration File' and has tabs for Services, Configuration File, Alerts, SMTP, Updates, and System. Under the 'Configuration File' tab, there is a 'Backup/Restore Settings' section with a 'Backup' button and a 'Restore' button. Below this is a 'Reset' section with a warning message: 'IMPORTANT: This resets the entire configuration to the default values. All active connections will be dropped.' and a 'Reset' button.

Veeam PN

root

Services Configuration File Alerts SMTP Updates System

Backup/Restore Settings

Back up the current settings into a configuration file

Backup

Restore settings from file: Select configuration file [Browse...](#)

Restore

Reset

IMPORTANT: This resets the entire configuration to the default values. All active connections will be dropped.

Reset

# Configuring Standalone Computers

After you set up the network hub, you can configure standalone computers (for the point-to-site scenario). A standalone computer is a machine that is able to connect to the VPN and use its resources.

To allow a standalone computer to access the VPN, Veeam PN utilizes OpenVPN. You must install OpenVPN client software on the computer, and use an OVPN file configured by the network hub to set up the VPN connection settings.

## NOTE

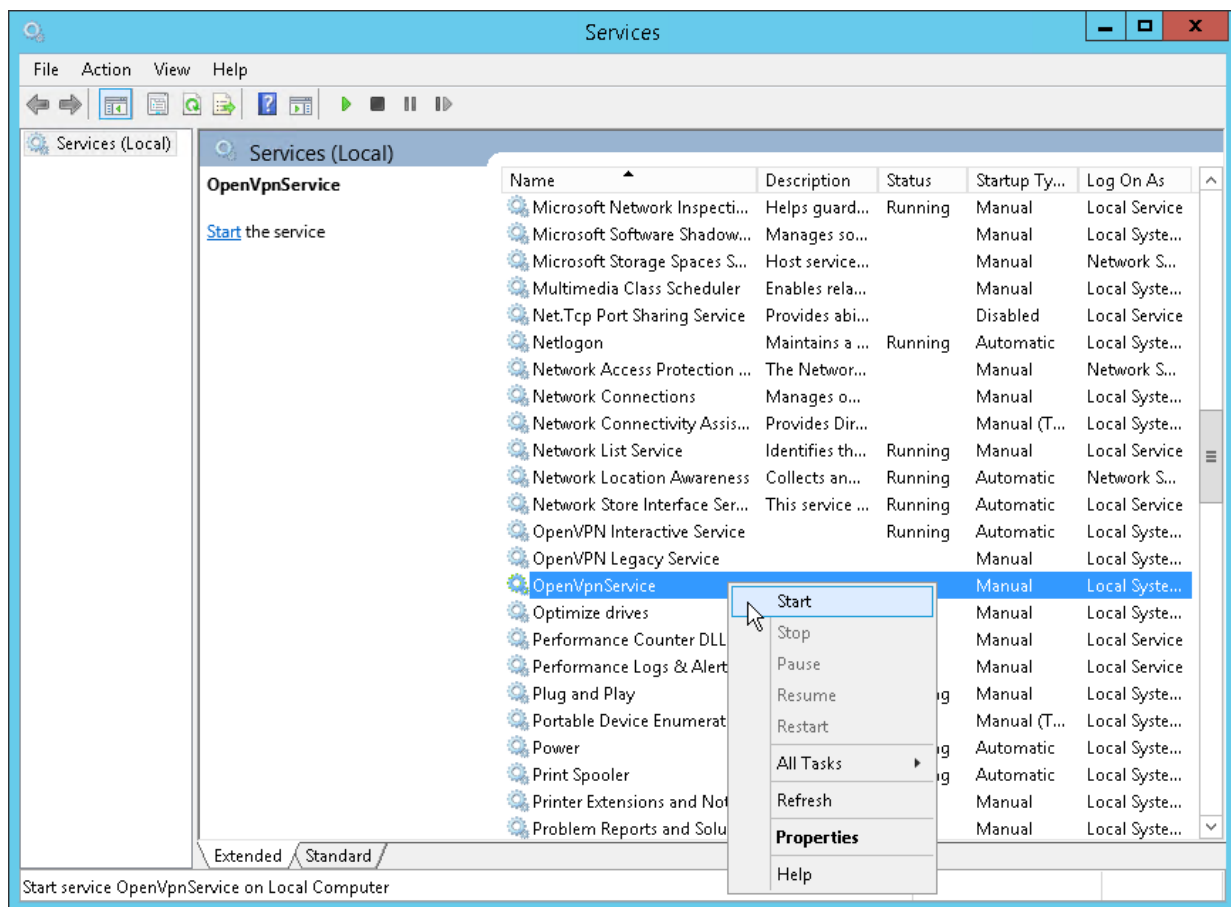
Veeam PN lets you set up VPN access from any OS supported by OpenVPN. This section demonstrates OpenVPN client setup for Microsoft Windows OS. For information about OpenVPN setup for other OSes, see <https://openvpn.net/index.php/access-server/docs/admin-guides-sp-859543150/howto-connect-client-configuration.html>.

Before you configure VPN settings on a standalone computer, you must register the standalone computer in the network hub portal and obtain a configuration file for the computer. For more information, see [Registering Clients](#).

To configure a standalone computer:

1. Download the OpenVPN setup file for the necessary OS from: <https://openvpn.net/index.php/open-source/downloads.html>.
2. Run the OpenVPN setup file and install the product on the computer with default installation settings.
3. On the standalone computer, place the client configuration file generated by the network hub in a folder where OpenVPN configuration files are stored (by default, C:\Program Files\OpenVPN\config).

4. From the Microsoft Windows start menu, select **Control Panel > Administrative Tools > Services** and start the OpenVPN Service.



## Establishing VPN Connection

By default, the OpenVPN Service is set up to start manually. To easily establish a VPN connection for the standalone computer in future, you can do one of the following:

- [Connect to the VPN using openVPN GUI](#)
- [Create a shortcut for the VPN connection](#)
- [Create a script file for the VPN connection](#)
- [Configure the openVPN service to start automatically](#)

### Connecting to VPN Using openVPN GUI

You can connect to the VPN using the openVPN GUI. Keep in mind that you must run the OpenVPN GUI with administrator privileges so that it can add routes to the routing table that are pulled from the OpenVPN server.

To connect to the VPN, right-click the **OpenVPN** shortcut on the Desktop and select **Run as administrator**.

## Creating Shortcut for VPN Connection

You can create a shortcut for the VPN connection. To do this, right-click the **OpenVPN** shortcut on the Desktop. In the **Target** field of the **OpenVPN GUI Properties** window, specify the following string:

```
"C:\Program Files\OpenVPN\bin\openvpn-gui.exe" --connect "C:\Program Files\OpenVPN\config\client.ovpn"
```

where:

- C:\Program Files\OpenVPN\bin\openvpn-gui.exe is a path to the OpenVPN GUI executable file
- C:\Program Files\OpenVPN\config\client.ovpn is a path to the configuration file generated by the network hub

To establish a VPN connection, double-click the shortcut.

### IMPORTANT

The OpenVPN command must be run with the *'Run as Administrator'* privileges. If you have created a shortcut for the OpenVPN connection, right-click the shortcut and select **Properties**. On the **Shortcut** tab, click **Advanced** and select the **Run as administrator** check box.

## Creating Script File for VPN Connection

You can create a batch file with the following command:

```
"openvpn-gui.exe" --connect "C:\Program Files\OpenVPN\config\client.ovpn"
```

where:

- C:\Program Files\OpenVPN\bin\openvpn-gui.exe is a path to the OpenVPN GUI executable file
- C:\Program Files\OpenVPN\config\client.ovpn is a path to the configuration file generated by the network hub

To establish a VPN connection, execute the script.

### IMPORTANT

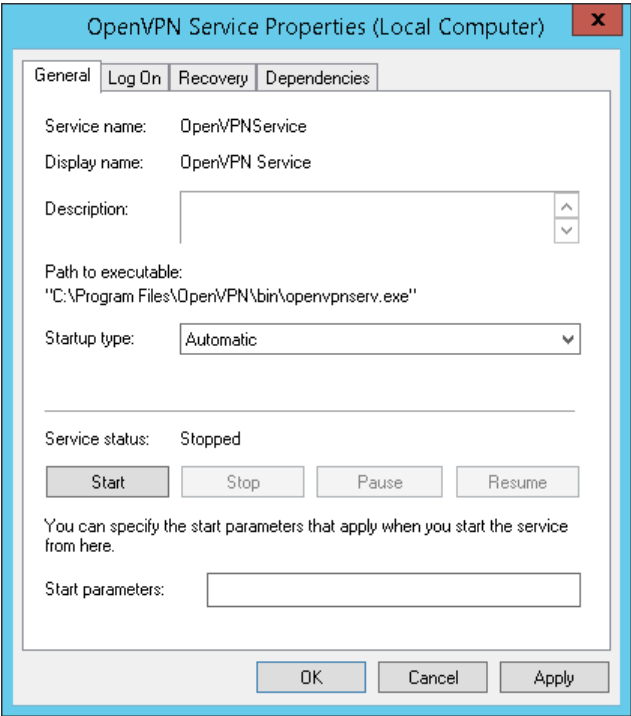
The OpenVPN command must be run with the *'Run as Administrator'* privileges. If you have created a batch file, you must use the Run as administrator command to execute the file.

## Configuring openVPN Service to Start Automatically

You can configure the openVPN service to start automatically so that it runs on Microsoft Windows startup. To do this:

1. In the Microsoft Windows **Start** menu, click in the **Start Search** box, type `services.msc` and press **[ENTER]**.
2. In the details pane, right-click the openVPN service and select **Properties**.
3. On the **General** tab, in the **Startup type** list, select *Automatic*.

For more information, see the Running OpenVPN as a Windows Service section at <https://openvpn.net/index.php/open-source/documentation/install.html?start=1>.



# Accessing Veeam PN Portal

Veeam PN offers two types of web-based portals:

- **Network hub portal** is an administrative console on the network hub. The network hub portal is intended for Veeam PN Administrators managing the VPN organized with the help of Veeam PN. Veeam PN Administrators can use the portal to register and manage clients, configure general application settings, set up alerts, monitor network activities and so on.
- **Site gateway portal** is an administrative console on a site gateway appliance. Administrators of networks in which site gateways are deployed can use the gateway portals to configure local network settings, set up alerts, monitor network activities and so on.

Veeam PN portals are deployed when you set up the network hub and site gateways. Veeam PN portals are accessible over HTTPS. You can use any supported web browser to work with portals remotely.

## NOTE

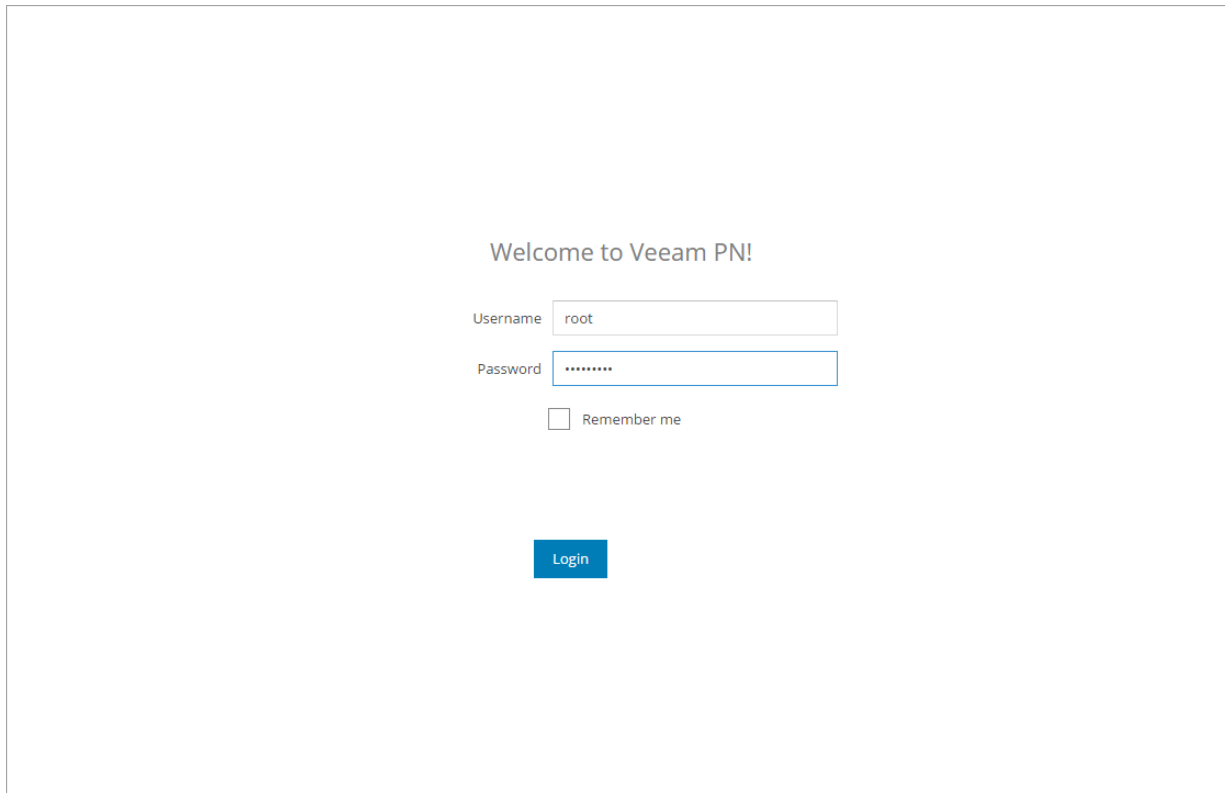
Veeam PN does not provide a portal for managing standalone computers (point-to-site scenario). Standalone computer settings are configured directly on these computers. For more information, see [Configuring Standalone Computers](#).

## Accessing Network Hub Portal

To access the network hub portal:

1. In the address bar of a web browser, enter the address of the network hub portal:
  - [For Microsoft Azure deployment] `https://<networkhub>/`  
where `<networkhub>` is the public IP address or full DNS name of the Microsoft Azure appliance hosting the network hub, for example: `https://veeam-pn.northeurope.cloudapp.azure.com/`.
  - [For on-premises deployment] `https://<networkhub>:443/`  
where `<networkhub>` is the public IP address or full DNS name of the network hub appliance and 443 is the default port for communication with the network hub portal, for example: `https://172.17.53.12:443/`.
2. In the **Username** and **Password** fields, specify credentials of a user account with Portal Administrator permissions.
3. Select the **Remember me** check box. If you enable this option, you will not have to re-log in to the portal (unless you perform manual logout). If you do not enable this option, you will have to re-log in to the portal if the work session remains idle for 10 minutes.

4. Click **Login**.

A screenshot of the Veeam PN login interface. At the top, it says "Welcome to Veeam PN!". Below this, there are two input fields: "Username" with the text "root" and "Password" with masked characters "\*\*\*\*\*". Under the password field is a checkbox labeled "Remember me". At the bottom center is a blue button labeled "Login".

Welcome to Veeam PN!

Username

Password

☐ Remember me

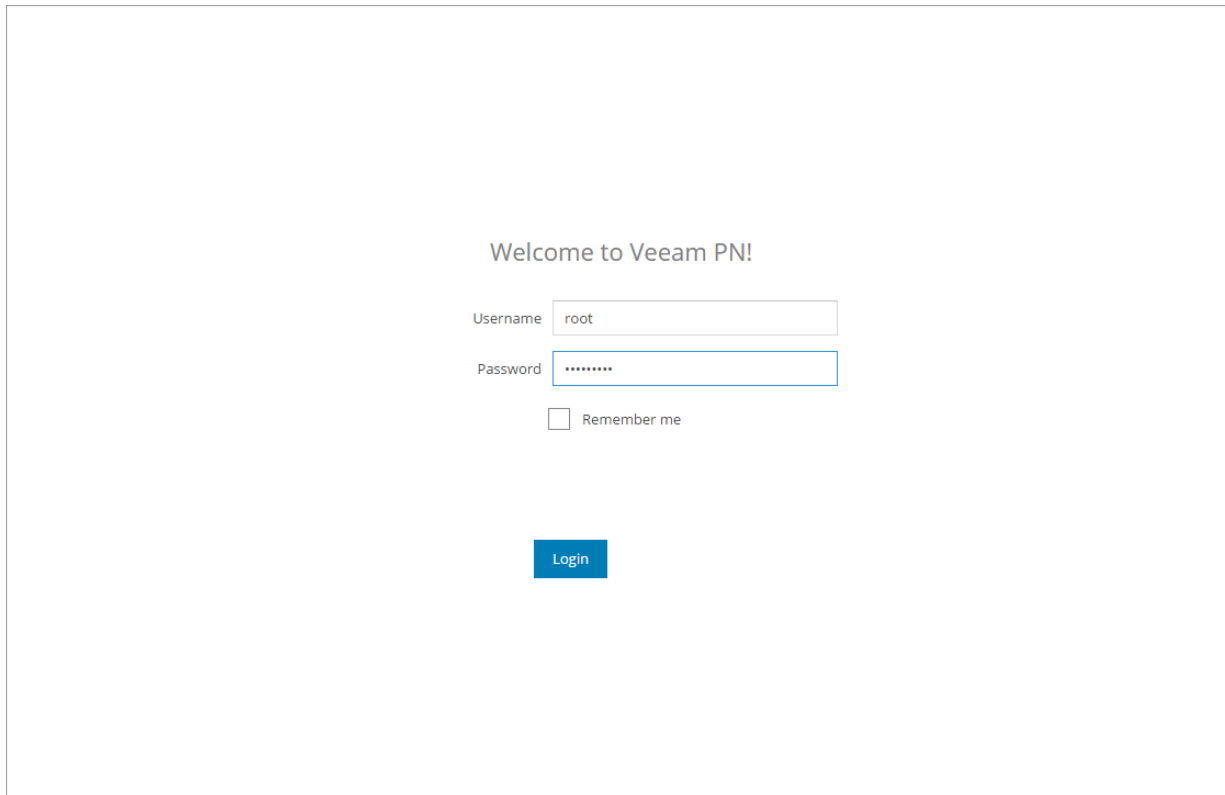
## Accessing Site Gateway Portal

To access the site gateway portal:

1. In the address bar of a web browser, enter the address of the site gateway portal:  
`https://<sitegateway>:443/`,  
where `<sitegateway>` is the public IP address or full DNS name of the site gateway appliance and 443 is the default port for communication with the site gateway portal, for example:  
`https://172.17.53.110:443`.
2. In the **Username** and **Password** fields, specify credentials of a user account with Portal Administrator permissions.
3. Select the **Remember me** check box. If you enable this option, you will not have to re-log in to the portal (unless you perform manual logout). If you do not enable this option, you will have to re-log in to the portal if the work session remains idle for 10 minutes.



4. Click **Login**.



The image shows a login interface for Veeam PN. It features a light gray background with a white rectangular area in the center. Inside this area, the text "Welcome to Veeam PN!" is displayed in a dark gray font. Below the welcome message, there are two input fields: "Username" with the value "root" and "Password" with masked characters "\*\*\*\*\*". A checkbox labeled "Remember me" is positioned below the password field. At the bottom of the form, there is a blue button with the text "Login" in white.

Welcome to Veeam PN!

Username

Password

☐ Remember me

# Configuring Alerts

To help you track important events and notify you about operational problems, Veeam PN uses alerts. Alerts are generated when a specific condition occurs, for example, the CPU usage is high, and you need take some action to resolve it. Alerts can also be generated if some state changes, and you need to be aware of it.

Veeam PN comes with the following predefined alerts:

<b>Client disconnected</b>	The client has disconnected from the VPN.
<b>Client connected</b>	The client has connected to the VPN.
<b>High CPU utilization</b>	The level of CPU utilization on the server is above normal.
<b>Fatal VPN failure</b>	The Veeam PN daemon has failed.
<b>VeeamPN update available</b>	A newer version of Veeam PN is available.

You can configure alerts in the network hub and site gateway portals.

## Response Actions

If you want to perform some operation in response to alerts, you can set up alert response actions. The response action is performed when a new alert of a specific type is generated. For example, you can instruct Veeam PN to send an email to a group of administrators if the level of CPU utilization is high.

For response actions, Veeam PN uses scripts of the SH format. You can use predefined scripts or create custom scripts for response actions. By default, Veeam PN comes with the following predefined scripts:

- `send_email.sh` — this script lets you send an email notification at the specified email address. To send email notifications, you must configure SMTP server settings. For more information, see [Configuring SMTP Settings](#).
- `sample_script.sh` — this script lets you display information about a generated alert in the shell on the network hub or site gateway.

To manage alerts and response actions, you can perform the following tasks:

- [Set response actions for alerts](#)
- [Create response actions](#)
- [Edit response actions](#)
- [Remove response actions](#)

# Configuring SMTP Settings

If you want to send notifications about generated alerts by email, you must configure SMTP server settings in the network hub or site gateway portal.

To configure SMTP server settings:

1. Log in to the Veeam PN portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **SMTP** tab.
4. In the **SMTP server name or address** field, specify a DNS name or IP address of the SMTP server.
5. If required, in the **Port** field change the SMTP communication port. By default, Veeam PN uses port 587 for communication with the SMTP server.
6. If you want to enable data encryption for the SMTP server with SSL support, select the **Use SSL** check box.
7. If the SMTP server requires authentication, select the **Require authentication** check box. In the **Username** and **Password** fields, specify the authentication credentials.
8. In the **From** field, specify an email address from which email notifications must be sent.
9. In the **To** field, specify an email address at which email notifications must be sent. To specify several email addresses, use semicolon.
10. Click **Apply**.

## TIP

To verify if you have configured SMTP server settings correctly, click **Test**. Veeam PN will send a test email at the specified email address(es).

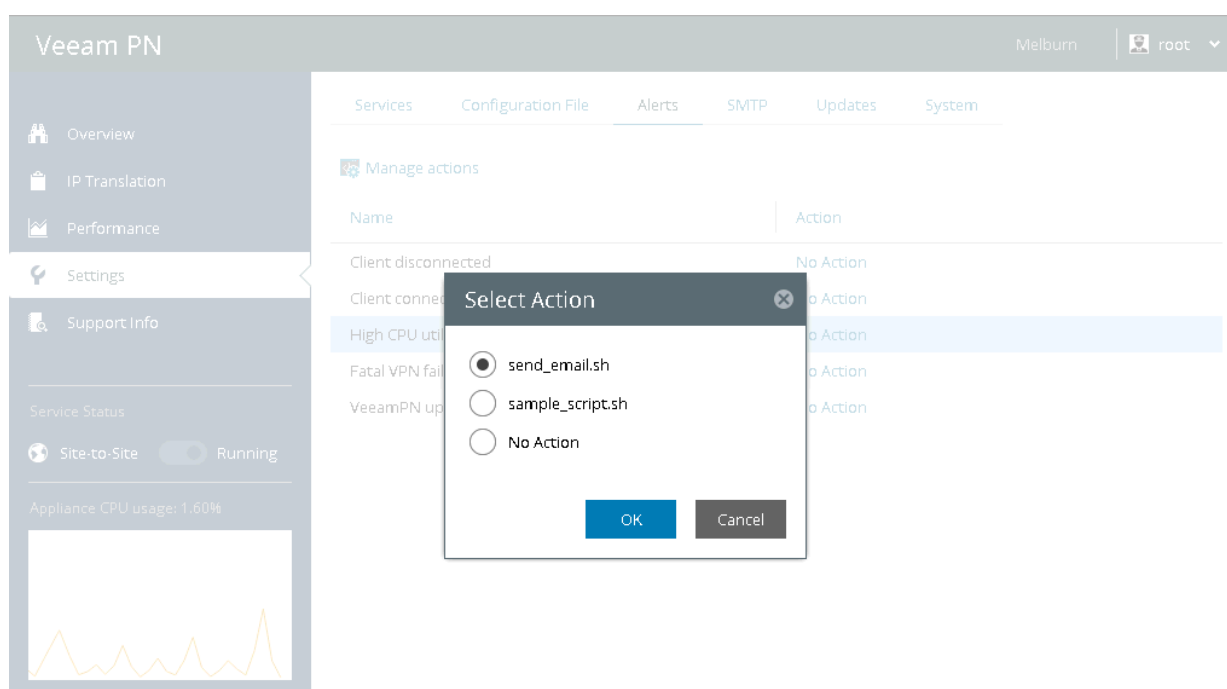
The screenshot shows the Veeam PN web interface. The top navigation bar includes the Veeam PN logo, the location 'Melburn', and a user profile 'root'. The left sidebar contains a menu with 'Overview', 'IP Translation', 'Performance', 'Settings' (highlighted), and 'Support Info'. Below the menu, there is a 'Service Status' section showing 'Site-to-Site' as 'Running' and 'Appliance CPU usage: 7.35%' with a corresponding line graph. The main content area is titled 'SMTP' and contains the following fields and controls:

- SMTP server name or address:** A text input field containing 'smtp.tech.local'.
- Port:** A dropdown menu showing '587'.
- Use SSL:** A checked checkbox.
- Require authentication:** A checked checkbox.
- Username:** A text input field containing 'TECH\Administrator'.
- Password:** A text input field with masked characters '.....'.
- Specify email address to send alert information:** A section with two text input fields:
  - From:** A text input field containing 'veeamprn@tech.com'.
  - To:** A text input field containing 'administrartor@tech.com'.
- Buttons:** Two buttons at the bottom, 'Apply' and 'Test'.

# Setting Response Actions for Alerts

By default, alerts in Veeam PN are not associated with any response actions. To set a response action for an alert:

1. Log in to the Veeam PN portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Alerts** tab.
4. In the **Action** column for the necessary alert, click **No Action**.
5. In the **Select Action** window, choose a script that Veeam PN must execute when the alert is generated. The list of scripts contains scripts that are currently used for response actions. If necessary, you can create custom scripts. For more information, see [Creating Response Actions](#).



# Creating Response Actions

You can create new response actions, for example, if you want to execute a custom script when some alert is generated.

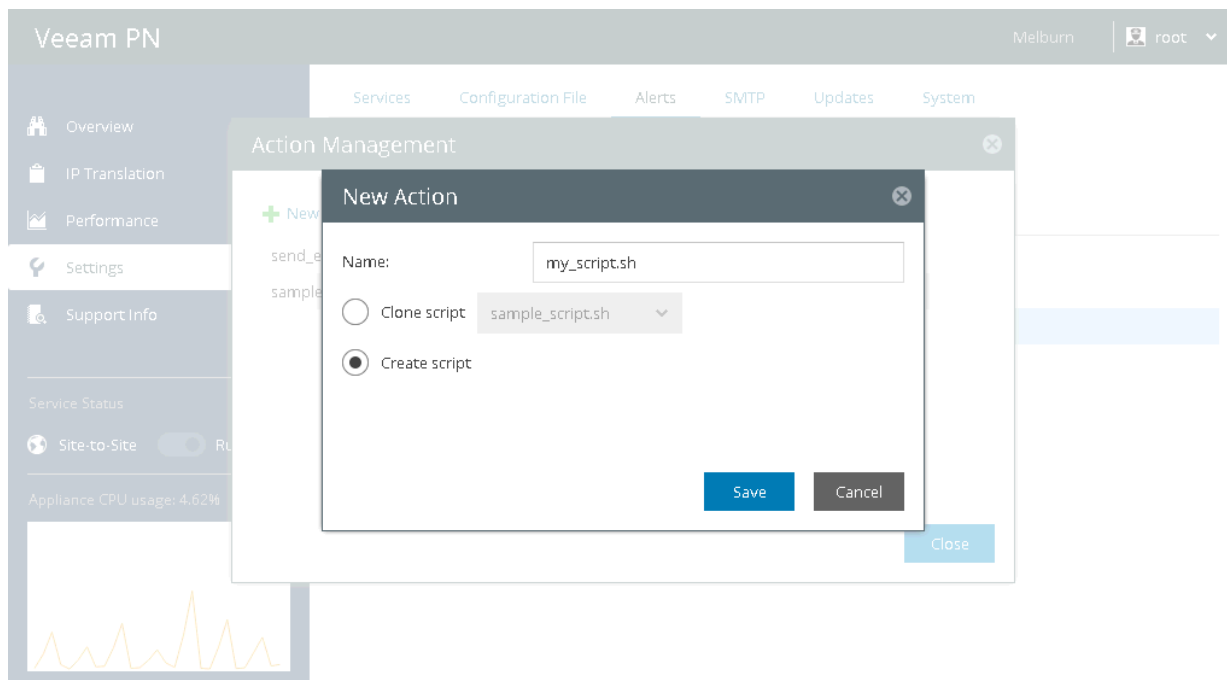
To create a new response action:

1. Log in to the Veeam PN portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Alerts** tab.
4. At the top of the alerts list, click **Manage actions**.
5. In the **Action Management** window, click **New**.
6. In the **New Action** window, specify settings for the new response action:
  - a. In the **Name** field, specify a name for the new script, for example, `my_script.sh`.
  - b. To create a new script on the basis of an existing one, select **Clone script** and choose an existing script from the list on the right. To create a new empty script file, select **Create script**. You can then edit the created script in Veeam PN. For more information, see [Editing Response Actions](#).
7. Click **Save**, then click **Close**.

## NOTE

Veeam PN uses the bash interpreter to execute scripts for response actions. For this reason, scripts must always start with the following heading line:

```
#!/bin/bash
```



# Editing Response Actions

You can edit response actions, for example, if you need to change some parameters in the script. You can also use the edit functionality to add content to scripts newly created in Veeam PN.

To edit a response action:

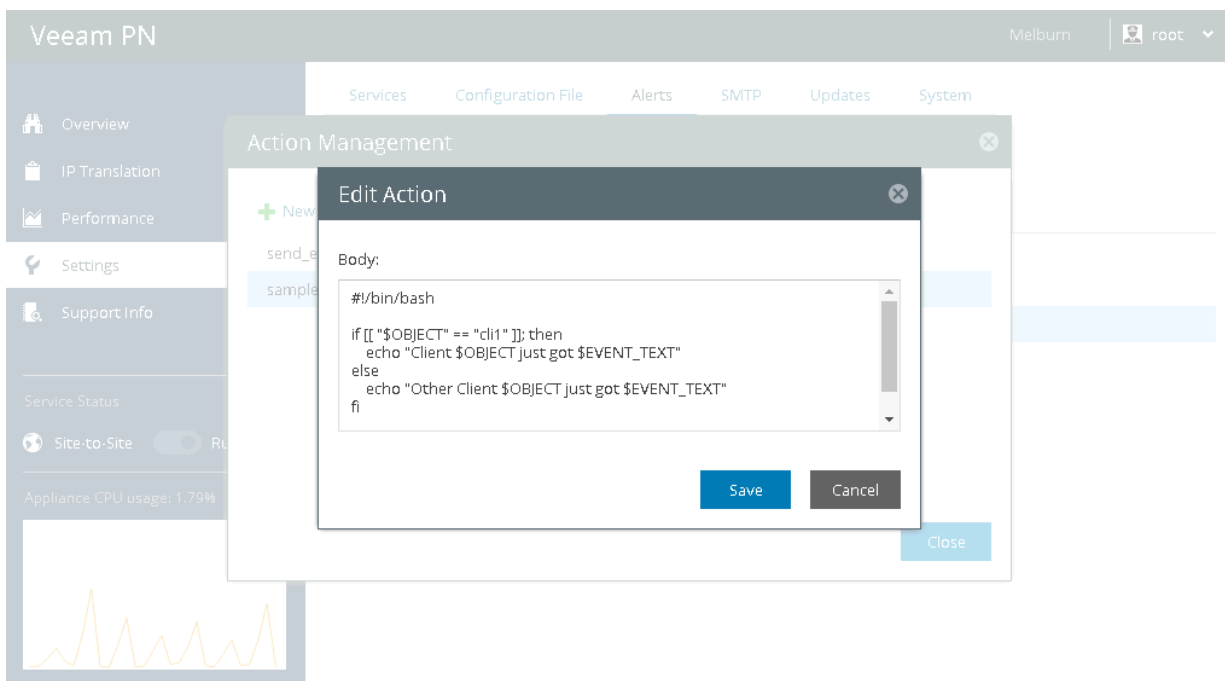
1. Log in to the Veeam PN portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Alerts** tab.
4. At the top of the alerts list, click **Manage actions**.
5. In the **Action Management** window, select an existing script and click **Edit**.
6. In the **Edit Action** window, edit the script content as required.
7. Click **Save**, then click **Close**.

To rename a response action, in the **Action Management** window click **Rename** and enter a new name for the response action.

## NOTE

Veeam PN uses the bash interpreter to run scripts for response actions. For this reason, scripts must always start with the following heading line:

```
#!/bin/bash
```

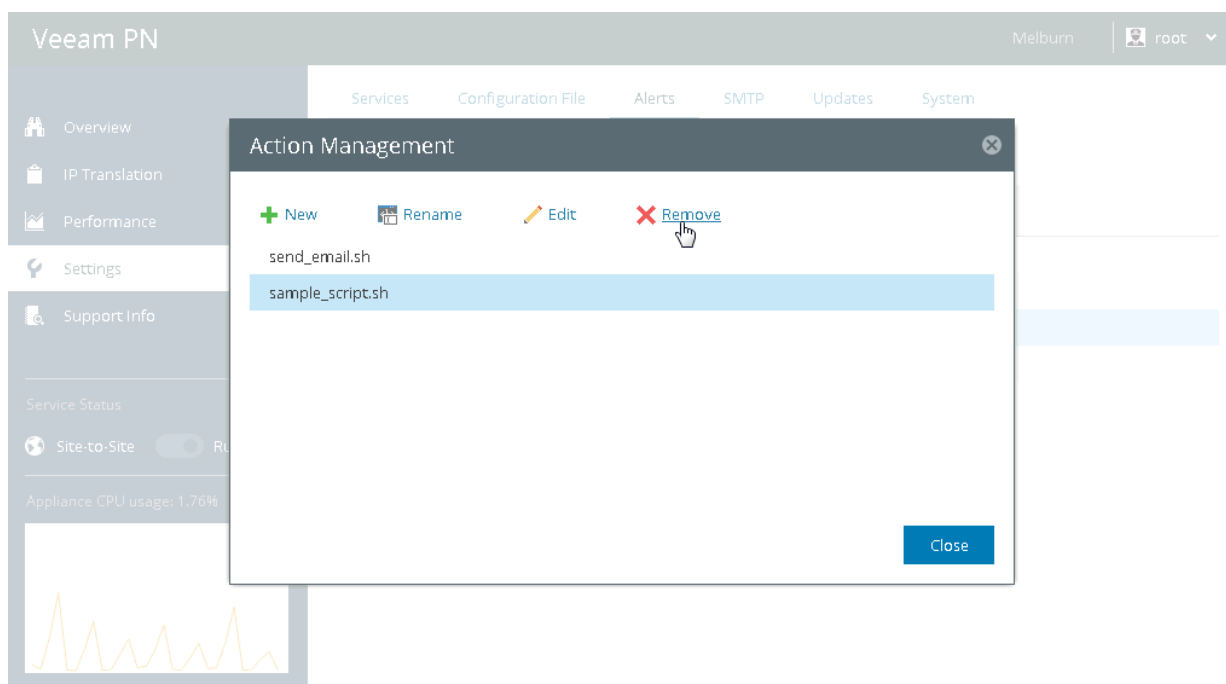


# Removing Response Actions

You can remove response actions that you do not plan to use.

To remove a response action:

1. Log in to the Veeam PN portal as a Portal Administrator.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Alerts** tab.
4. At the top of the alerts list, click **Manage actions**.
5. In the **Action Management** window, select the response action and click **Remove**.
6. Click **Close**.



# Monitoring Clients

You can monitor the state of clients connected to the VPN, get information about the amount of sent and received traffic and so on. Veeam PN provides the following monitoring views:

- **Veeam PN Overview** lets you get an at-a-glance view of the VPN infrastructure and clients.
- The **Performance** view lets you get granular information on specific clients and view specific network metrics.

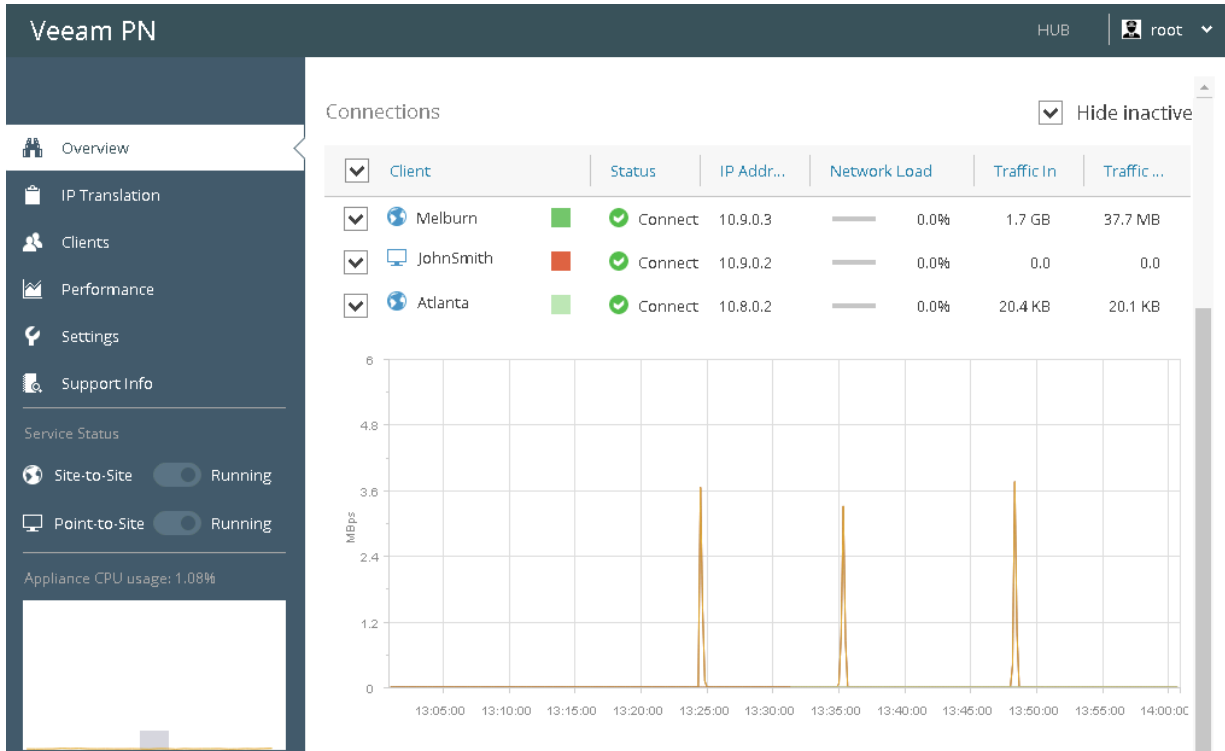
Monitoring views are available in the network hub and site gateway portals. The network hub portal provides monitoring data for all Veeam PN clients. The site gateway portal lets you monitor the state of the on-premises network where the site gateway resides.

## Veeam PN Overview

**Veeam PN Overview** is displayed when you access the Veeam PN portal. You can use this view to monitor the state of clients, network load, incoming and outgoing traffic and get information about events that have occurred in the VPN.

By default, Veeam PN displays information for all Veeam PN clients. If necessary, you can display information about specific clients or clients that are currently connected to the network hub:

- To display information about specific clients, select check boxes next to them in the clients list.
- To display information about currently connected clients, select the **Hide inactive** check box on the right of the clients list.





# Performance View

You can use the **Performance** view to get information about specific network metrics granularly for one or more Veeam PN clients.

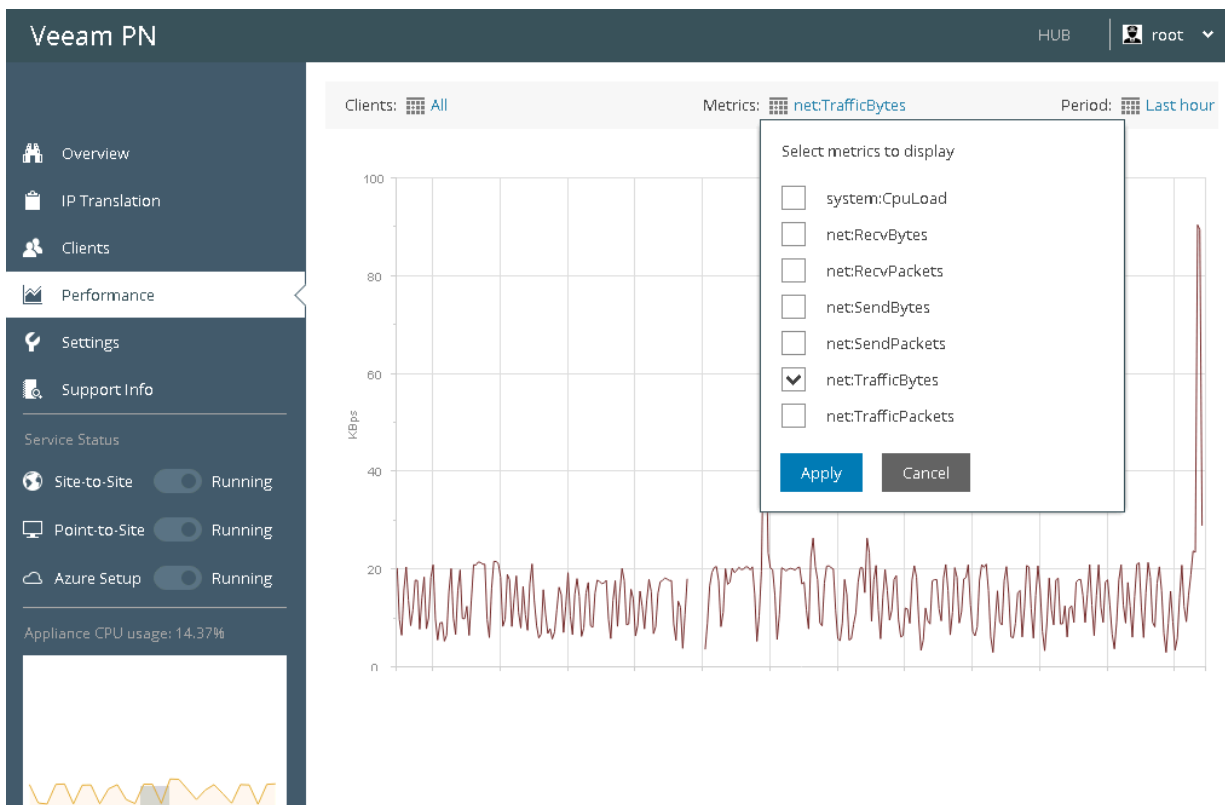
To display the **Performance** view:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **Performance**.
3. At the top of the chart, click the link next to the **Clients** field and select check boxes next to clients whose data you want to display in the chart.
4. At the top of the chart, click the link next to the **Metrics** field and select one or more network metrics that you want to display in the chart. Veeam PN tracks the following metrics:
  - *Received bytes* – amount of data (in bytes) received from the client through the VPN tunnel.
  - *Received packets* – number of packets received from the client through the VPN tunnel.
  - *Sent bytes* – amount of data (in bytes) sent to the client through the VPN tunnel.
  - *Sent packets* – number of packets sent to the client through the VPN tunnel.
  - *Traffic bytes* – total amount of traffic (in bytes) sent and received by the client through the VPN tunnel.
  - *Traffic packets* – total number of packets sent and received by the client through the VPN tunnel.

## NOTE

If you have chosen to chart network data for several clients, you will be able to select one network metric only.

- At the top of the chart, click the link next to the **Period** field and select a period for which you want to chart network data: *Last hour*, *Last 6 hours*, *Last 24 hours*, *Last week* or *Last month*.



# Configuring IP Translation Rules

When you migrate a machine to another site or restore/migrate a machine to Microsoft Azure or Amazon AWS, it gets a new IP address. If other machines and services communicate with this machine, you typically need to update connection settings for these machines and services so that they can work with the restored machine as before. To reduce administration overhead, you can create an IP translation rule for the restored machine.

An IP translation rule maps the IP address of the original machine to the IP address of the machine restored to Microsoft Azure or Amazon AWS. For example, a machine in a local network had an IP address 192.168.0.35, and the restored machine has an IP address 10.12.5.214. You can create an IP translation rule that will map the IP address 192.168.0.35 to the IP address 10.12.5.214. When machines in the local network need to communicate with the machine that had an IP address 192.168.0.35, Veeam PN will look up the IP translation rule record and forward the request to the machine that has the IP address 10.2.5.214 in Microsoft Azure/Amazon AWS.

IP translation rules can be configured in the network hub and site gateway portals. You can perform the following operations with IP translation rules:

- [Create IP translation rules](#)
- [Modify IP translation rules](#)
- [Disable and enable IP translation rules](#)
- [Remove IP translation rules](#)

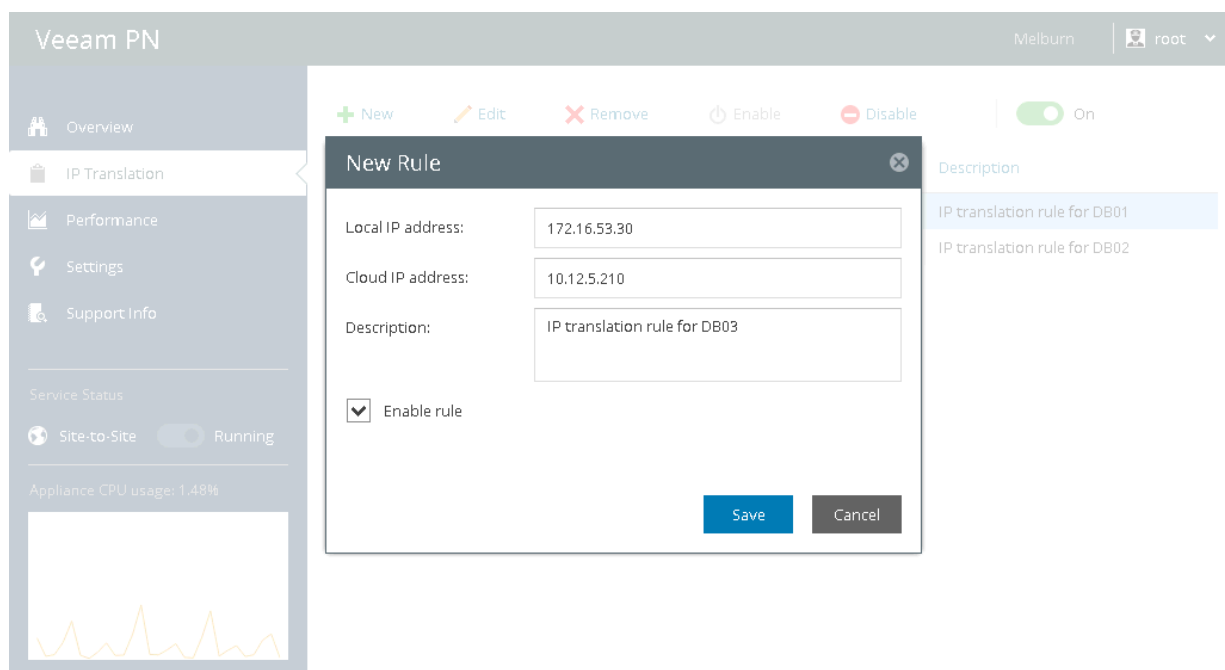
## IMPORTANT

By default, the IP translation rules functionality is disabled. To enable it, open the **IP Translation Rules** view; at the top right corner of the view set the toggle in the **Service State** field to the **On** position.

# Creating IP Translation Rules

To create a new IP translation rule:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **IP Translation**.
3. At the top of the IP translation rules list, click **New**.
4. In the **Local IP address** field, enter an IP address of the original machine.
5. In the **Cloud IP address** field, enter an IP address of the machine restored in Microsoft Azure.
6. In the **Description** field, provide a description for the IP translation rule.
7. Select the **Enable rule** check box to enable the created rule.
8. Click **Save**.

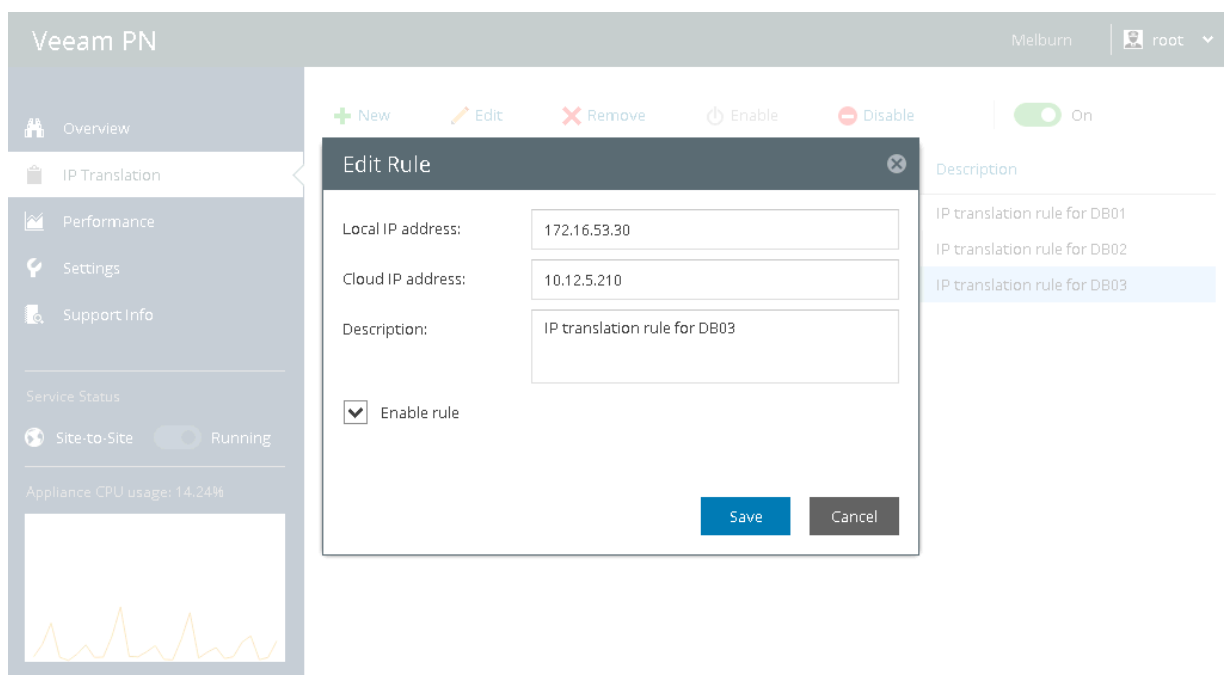


# Modifying IP Translation Rules

You can modify settings of IP translation rules, for example, if the IP address of the machine restored to Microsoft Azure or Amazon AWS has changed.

To modify an IP translation rule:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **IP Translation**.
3. In the IP translation rules list, select the rule.
4. At the top of the IP translation rules list, click **Edit** and modify the rule settings as required.



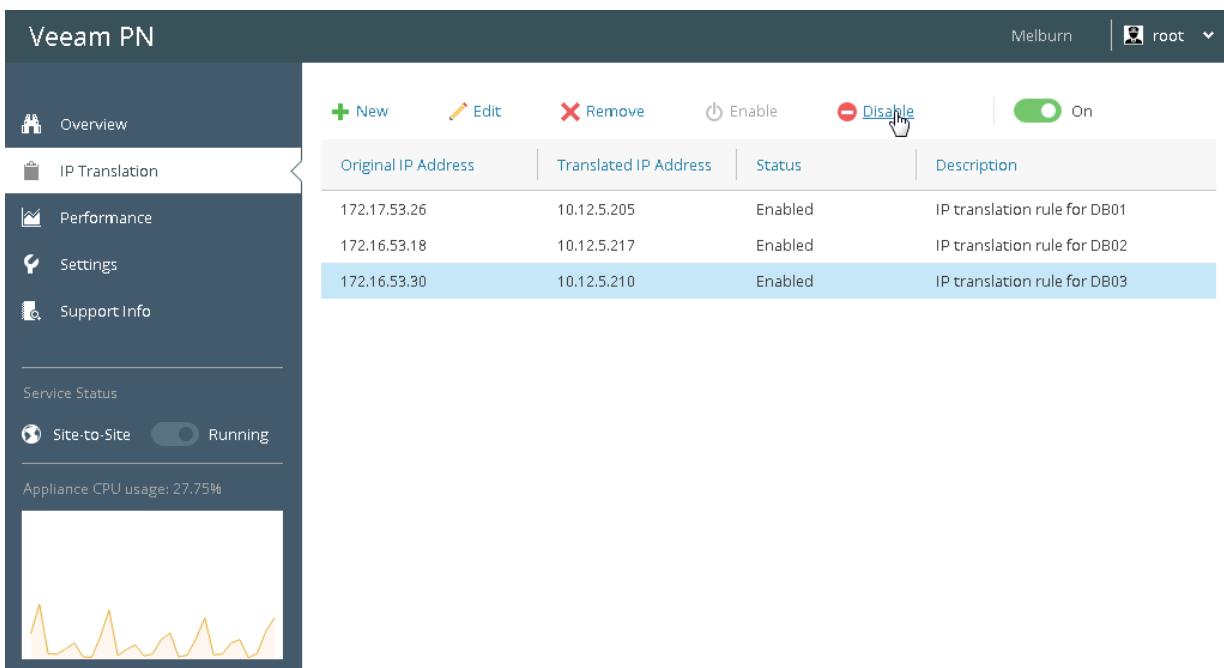
# Disabling and Enabling IP Translation Rules

In some cases, you may need to put an IP translation rule 'on hold' for some time. In such situation, you do not necessarily need to delete the IP translation rule and recreate it again later. Instead, you can disable the IP translation rule.

To disable an IP translation rule:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **IP Translation**.
3. In the IP translation rules list, select the rule.
4. At the top of the IP translation rules list, click **Disable**.

To enable a previously disabled IP translation rule, select it in the list and click **Enable**.



Veeam PN

Melburn | root

Overview

IP Translation

Performance

Settings

Support Info

Service Status

Site-to-Site ☒ Running

Appliance CPU usage: 27.75%

+ New Edit Remove Enable Disable On

Original IP Address	Translated IP Address	Status	Description
172.17.53.26	10.12.5.205	Enabled	IP translation rule for DB01
172.16.53.18	10.12.5.217	Enabled	IP translation rule for DB02
172.16.53.30	10.12.5.210	Enabled	IP translation rule for DB03

# Removing IP Translation Rules

You can remove an IP translation rule, for example, if you no longer need to access a machine restored to Microsoft Azure or Amazon AWS.

To remove an IP translation rule:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **IP Translation**.
3. In the IP translation rules list, select the rule.
4. At the top of the IP translation rules list, click **Remove**.

The screenshot shows the Veeam PN web interface. On the left is a dark sidebar with navigation links: Overview, IP Translation (selected), Performance, Settings, and Support Info. Below these is a 'Service Status' section showing 'Site-to-Site' as 'Running' and 'Appliance CPU usage: 13.21%' with a corresponding line graph. The main content area has a top bar with 'Veeam PN' and user info 'Melburn | root'. Below this is a toolbar with buttons: '+ New' (green), 'Edit' (pencil), 'Remove' (red X, highlighted with a mouse cursor), 'Enable' (power icon), 'Disable' (red minus), and a toggle switch for 'On'. Below the toolbar is a table with four columns: 'Original IP Address', 'Translated IP Address', 'Status', and 'Description'. The table contains three rows of IP translation rules, all with 'Enabled' status. The third row is highlighted in light blue.

Original IP Address	Translated IP Address	Status	Description
172.17.53.26	10.12.5.205	Enabled	IP translation rule for DB01
172.16.53.18	10.12.5.217	Enabled	IP translation rule for DB02
172.16.53.30	10.12.5.210	Enabled	IP translation rule for DB03

# Viewing and Exporting Logs

You can view information about Veeam PN events in the network hub and site gateway portals, or export it for troubleshooting purposes.

To view information about Veeam PN events:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **Support Info**.

Veeam PN stores event information to log files. The size of a log file cannot exceed the size of 2 MB. When the file size reaches the limit, Veeam PN creates a new log file. The maximum number of log files that can exist at the same time is 10. As soon as the number of files exceeds 10, Veeam PN automatically deletes the earliest log file from disk.

To export Veeam PN log files:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **Support Info**.
3. At the top of the events list, click **Download Logs**. Veeam PN will generate a ZIP archive with log files and download it to the default downloads folder.

## NOTE

When you download a ZIP archive with log files, Veeam PN does not remove this archive from disk. The archive remains on disk until you generate a new ZIP archive with log files.

The screenshot shows the Veeam PN portal interface. The top navigation bar includes 'Veeam PN', a user profile 'veeam-pn-admin', and a 'Help' icon. The left sidebar contains a menu with 'Overview', 'IP Translation', 'Clients', 'Performance', 'Settings', and 'Support Info'. The 'Support Info' section is expanded, showing a 'Service Status' area with three toggle switches: 'Site-to-Site' (Running), 'Point-to-Site' (Running), and 'AWS Setup' (Running). Below this, the 'Appliance CPU usage' is shown as 4.20%. The main content area displays a 'Download Logs' button and a table of events. The table has columns for 'Time', 'Severity', 'Source', and 'Description'. The events listed are:

Time	Severity	Source	Description
22.11.2019 12:23:25	Info	OpenVPN	Server EndpointOVPN has been started
22.11.2019 12:23:23	Info	OpenVPN	Initialized server: EndpointOVPN on udp:6179
22.11.2019 12:23:23	Info	WireGuard	Server SiteWireGuard has been started
22.11.2019 12:23:22	Info	WireGuard	Initialized server: SiteWireGuard (udp) on ec2-54-210-...
22.11.2019 12:23:21	Info	AWS	AWS service has been started.



# Performing Configuration Backup and Restore

With Veeam PN, you can back up and restore configuration of Veeam PN appliances: the network hub and site gateways.

When you perform configuration backup, Veeam PN creates a file of the BAK format that contains all configuration settings you have configured for the Veeam PN appliance. You can create a configuration backup manually to capture the Veeam PN appliance state at a specific point in time. Whenever you need to roll back the Veeam PN appliance to that specific point in time, you can restore its configuration from the configuration backup file.

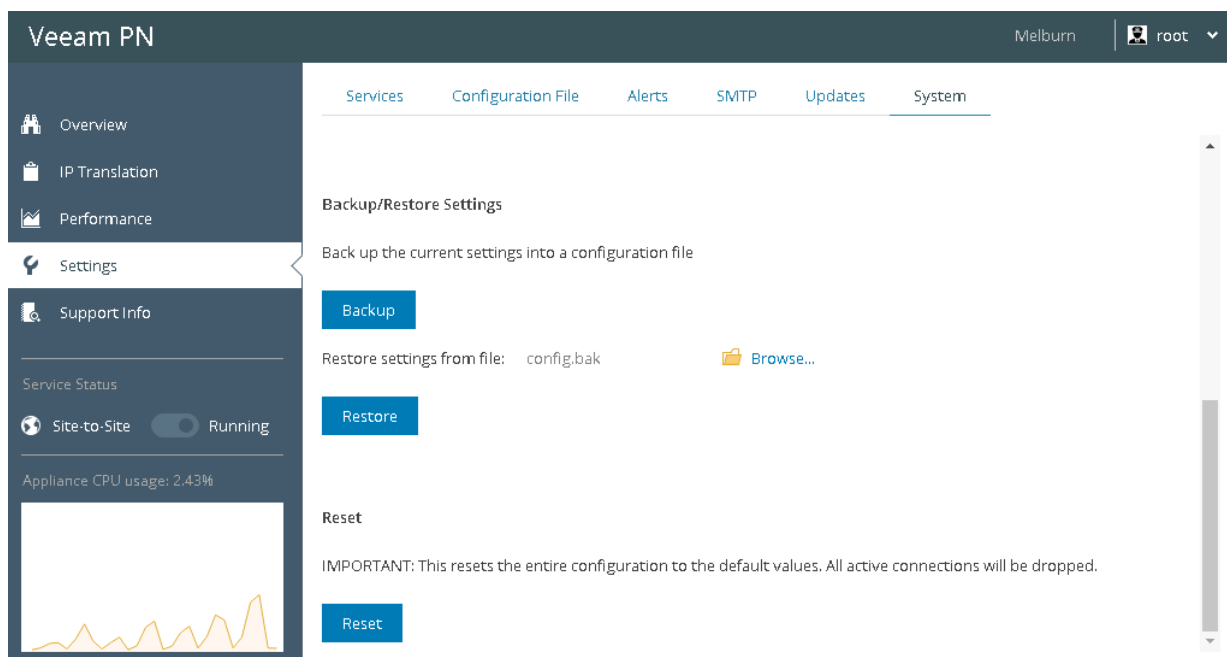
## IMPORTANT

Mind the following limitations:

- When you restore from the configuration backup of Veeam PN 2.0 to Veeam PN 2.1, the **Alerts** and **SMTP** settings change to default values.
- **Azure network hub:** You cannot restore from the configuration backup of Veeam PN 2.0 to Veeam PN 2.1.

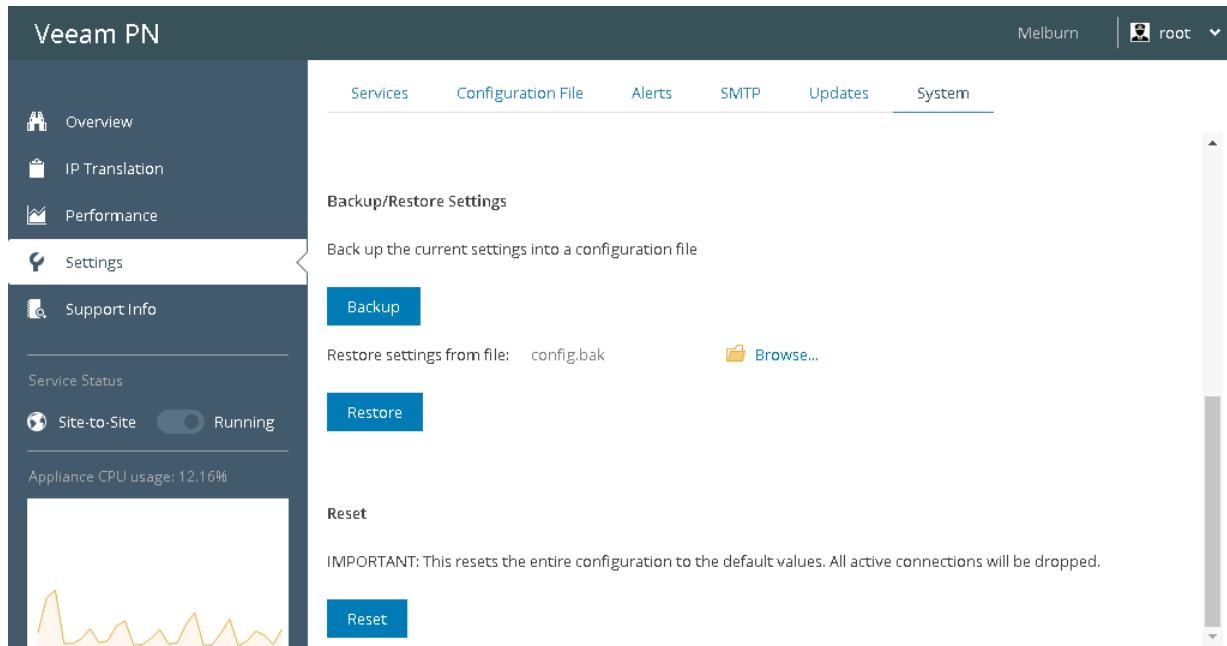
To create a configuration backup:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.
4. In the **Backup/Restore Settings** section, click **Backup**. Veeam PN will save all configured settings for the Veeam PN appliance to the config.back file and download this file to the default download location on your machine.



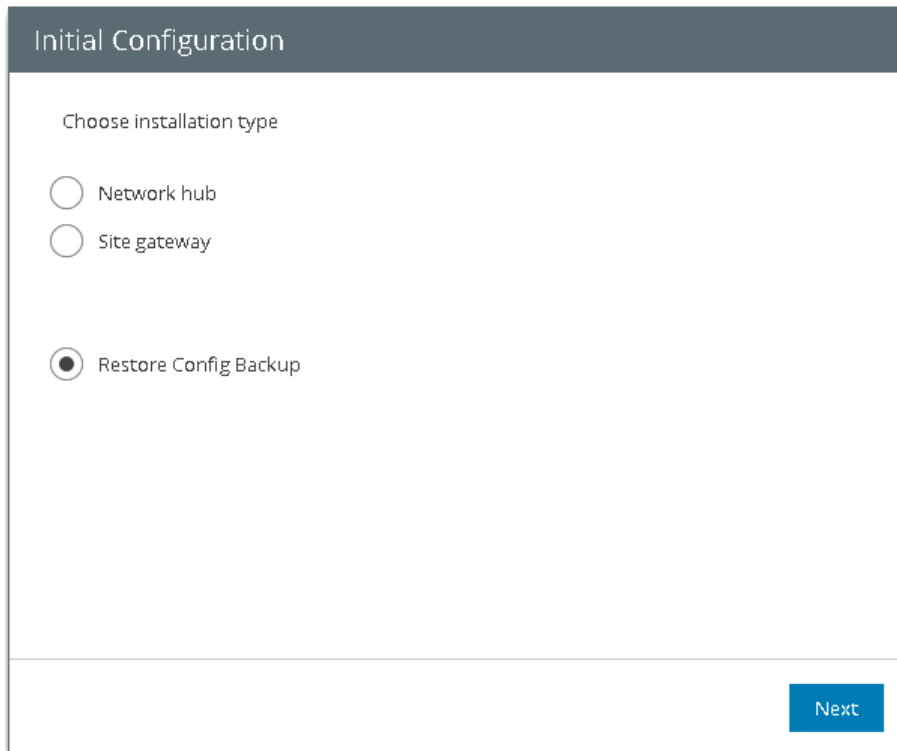
To restore a configuration backup:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **Settings**.
3. Click the **System** tab.
4. In the **Backup/Restore Settings** section, click **Browse** and select a configuration backup file from which you want to restore Veeam PN settings.
5. Click **Restore**.



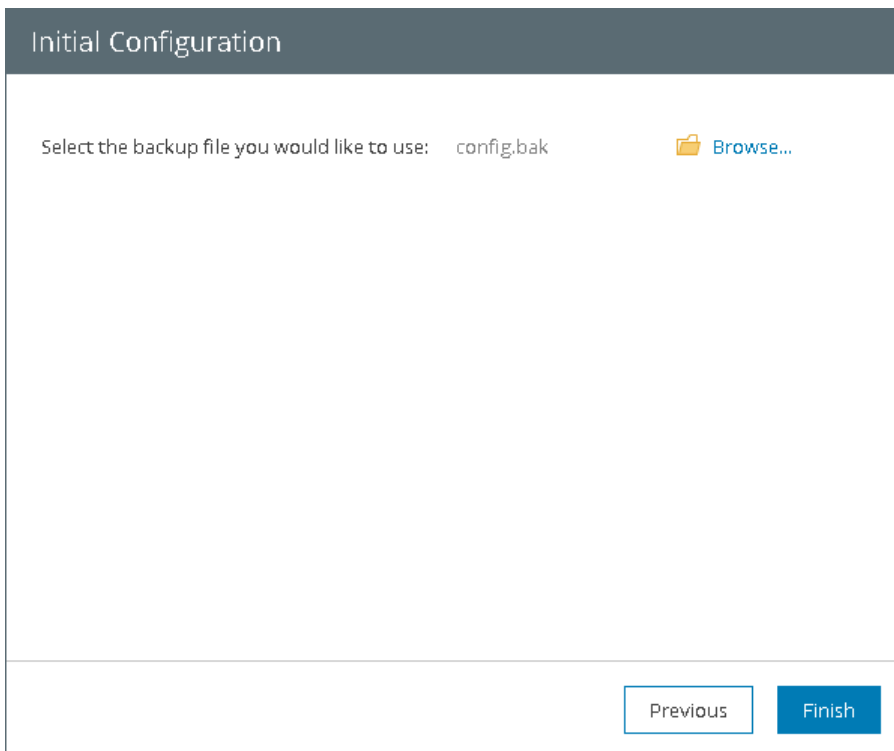
You can also use the configuration backup file to configure settings of a newly deployed Veeam PN appliance:

1. At the first step of the **Initial Configuration** wizard, select **Restore Config** and click **Next**.



The screenshot shows the 'Initial Configuration' wizard window. The title bar is dark grey with the text 'Initial Configuration' in white. The main area has a light grey background. At the top, it says 'Choose installation type'. Below this, there are three radio button options: 'Network hub', 'Site gateway', and 'Restore Config Backup'. The 'Restore Config Backup' option is selected, indicated by a filled black circle. At the bottom right, there is a blue button labeled 'Next'.

2. Click **Browse** and select a configuration backup file from which you want to restore Veeam PN settings.
3. Click **Finish** to apply configuration settings to the newly deployed appliance.



The screenshot shows the 'Initial Configuration' wizard window at the second step. The title bar is dark grey with the text 'Initial Configuration' in white. The main area has a light grey background. It says 'Select the backup file you would like to use: config.bak'. To the right of this text is a folder icon and a blue link labeled 'Browse...'. At the bottom right, there are two buttons: a light blue button labeled 'Previous' and a blue button labeled 'Finish'.

# Updating Veeam PN

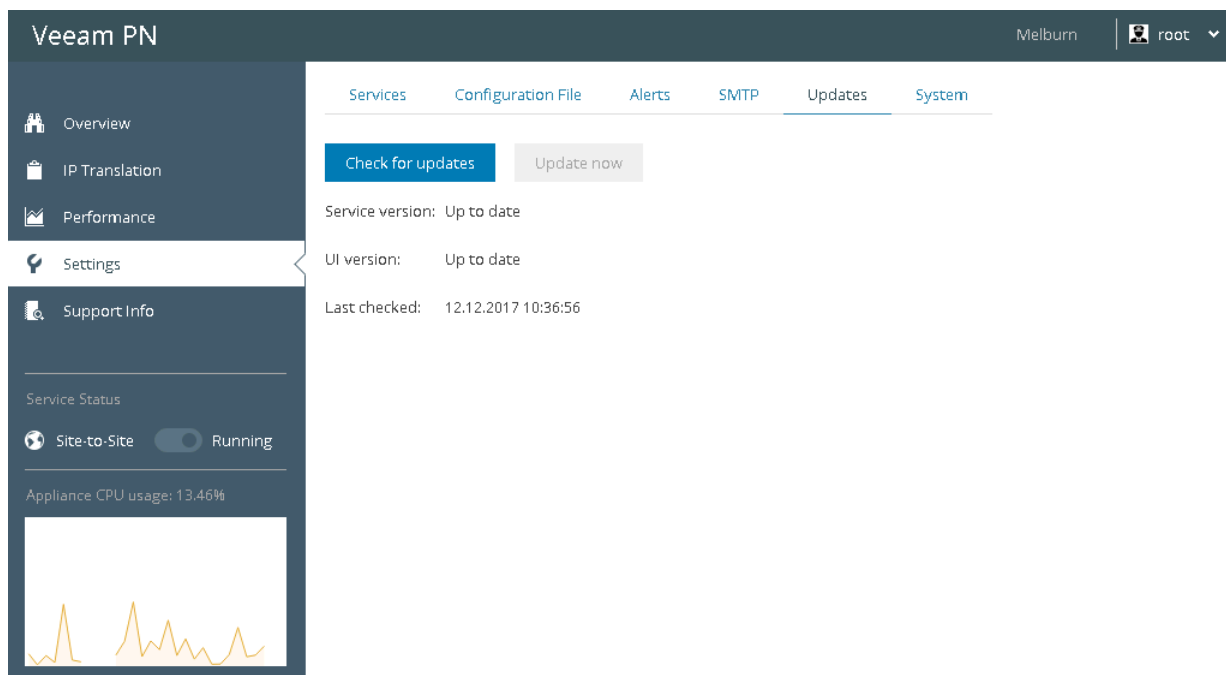
You can check for product updates and download a newer version of Veeam PN using the Veeam PN portal.

- [Checking for product updates](#)
- [Updating Veeam PN](#)
- [Troubleshooting failed update](#)

## Checking for Product Updates

To check for product updates:

1. Log in to the Veeam PN portal.
2. In the configuration menu on the left, click **Settings**.
3. Click the **Updates** tab.
4. Click **Check for updates**. If a newer version of the product is available, Veeam PN will inform you about it. You can use the **Update now** button to download the newer product version to your machine and update the product.



## Updating Veeam PN

If you are using Veeam PN 2.0, you can update to version 2.x from the web console.

1. To update Veeam PN, go to **Settings > Updates** tab.
2. Click **Update now**.

Wait till the update is finished and reload the web page. The update may take up to one minute.

## IMPORTANT

If you are using Veeam PN 1.0, you cannot update to version 2.x from the web console. In this case, you must redeploy the Veeam PN appliance.

The screenshot displays the Veeam PN web console interface. The top header shows 'Veeam PN' on the left and 'Tech.COM' and a user profile 'joelle' on the right. A dark sidebar on the left contains navigation links: Overview, IP Translation, Clients, Performance, Settings (highlighted), and Support Info. Below the sidebar, the 'Service Status' section shows 'Site-to-Site' as 'Running' and 'Point-to-Site' as 'Stopped', with an 'Appliance CPU usage: 0.43%' indicator. The main content area features a yellow notification bar at the top stating 'Updates are available.' with a 'Close' link. Below this, a tabbed interface includes 'Services', 'VPN', 'Alerts', 'SMTP', 'Updates' (selected), and 'System'. The 'Updates' tab contains two buttons: 'Check for updates' and 'Update now'. It also displays version information: 'Service version: 2.1.0.461', 'UI version: 2.1.0.461', and 'Last checked: 02.12.2019 02:31:31'.

# Troubleshooting Failed Veeam PN Update

If the Veeam PN update fails, you can look into the updater logs at `/var/log/Veeam/veeam-updater/updater.log.txt` and try the following solutions:

- [Removing Expired PGP Keys](#)
- [Updating APT Sources for WireGuard](#)

## Removing Expired PGP Keys

If Veeam PN update fails due to expired PGP keys for `repository.veeam.com`, the `/var/log/Veeam/veeam-updater/updater.log.txt` will contain the following error:

```
An error occurred during the signature verification. The repository is not updated and the previous index files will be used. GPG error: http://repository.veeam.com/pn/public pn InRelease: The following signatures were invalid: EXPKEYSIG 3268CF038EEC045B Veeam Software Repository key <support@veeam.com>
Failed to fetch http://repository.veeam.com/pn/public/dists/pn/InRelease The following signatures were invalid: EXPKEYSIG 3268CF038EEC045B Veeam Software Repository key <support@veeam.com>
Some index files failed to download. They have been ignored, or old ones used instead.
```

To resolve the issue, you must download a new PGP key and update the apt tool. To update the pgp key, do the following:

1. Open the console of Veeam PN appliance machine.
2. To remove the old PGP key, run the following command:

```
sudo apt-key del FBF8A590
```

3. To download a new gpg, run the following command:

```
sudo wget http://repository.veeam.com/keys/veeam.gpg -O /etc/apt/trusted.gpg.d/veeam.gpg
```

4. Update the APT package manager:

```
sudo apt update
```

5. Now you can update Veeam PN as described in [Updating Veeam PN](#).

## Updating APT Sources for WireGuard

If you have deployed Veeam PN before WireGuard moved its packages from PPA to Ubuntu repositories, the update process will fail.

To resolve the issue, remove the WireGuard's PPA repository from the list of apt sources:

```
sudo apt-add-repository -r ppa:wireguard/wireguard
```

# How-Tos

You can use Veeam PN to implement the following scenarios:

- [Set Up VPN Between Microsoft Azure Site and Local Sites](#)
- [Set Up VPN from Endpoints to Microsoft Azure](#)
- [Set Up VPN Between Remote Sites](#)
- [Set Up VPN from Endpoints to Local Site](#)

Additional guides for Veeam PN deployment and optimization:

- [Install Veeam PN on Ubuntu](#)
- [Install Veeam PN with Script](#)
- [Install Free SSL Certificate on Veeam PN Appliance Host](#)
- [Optimize Queue Length in Linux Kernel](#)



# Set Up VPN Between Microsoft Azure and Local Sites

You can use Veeam PN to set up a VPN connection between private clouds in Microsoft Azure and local company sites. This scenario can be helpful if you have moved some of your application and services to Microsoft Azure. In this case, you can join Microsoft Azure networks with local company networks over the VPN and enable secure communication between remote sites.

## Reference Environment

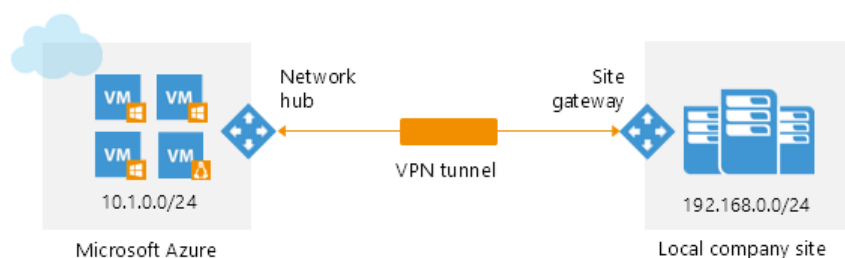
This how-to assumes that your company environment is distributed between two sites:

- Microsoft Azure: part of your applications and services are hosted in Microsoft Azure.
- Local company site: part of your applications and services are hosted on a local company site.

In this scenario, you will deploy Veeam PN components in the following way:

- Network hub will be hosted in Microsoft Azure.
- Site gateway will be hosted on the local company site.

The network hub and site gateway will produce the two terminal points of a VPN tunnel. Application and services in Microsoft Azure and on the local company site will be able to securely communicate over the VPN tunnel. Users on the local company site will be able to get access to company resources in Microsoft Azure.



## Prerequisites

To follow instructions of this how-to, check the following prerequisites:

- You must have a user account in Microsoft Azure.
- You must use the Azure Resource Manager model to configure the network hub in Microsoft Azure. The classic deployment model is not supported.
- You must have a VMware vSphere host on the local company site. A site gateway is deployed as a virtual appliance and placed on the VMware vSphere host.

## Step-By-Step Walkthrough

To set up a VPN connection between a private cloud in Microsoft Azure and a local company site, you will:

1. [Deploy the network hub in Microsoft Azure.](#)
2. [Register a client for the local site network in the Veeam PN portal.](#)

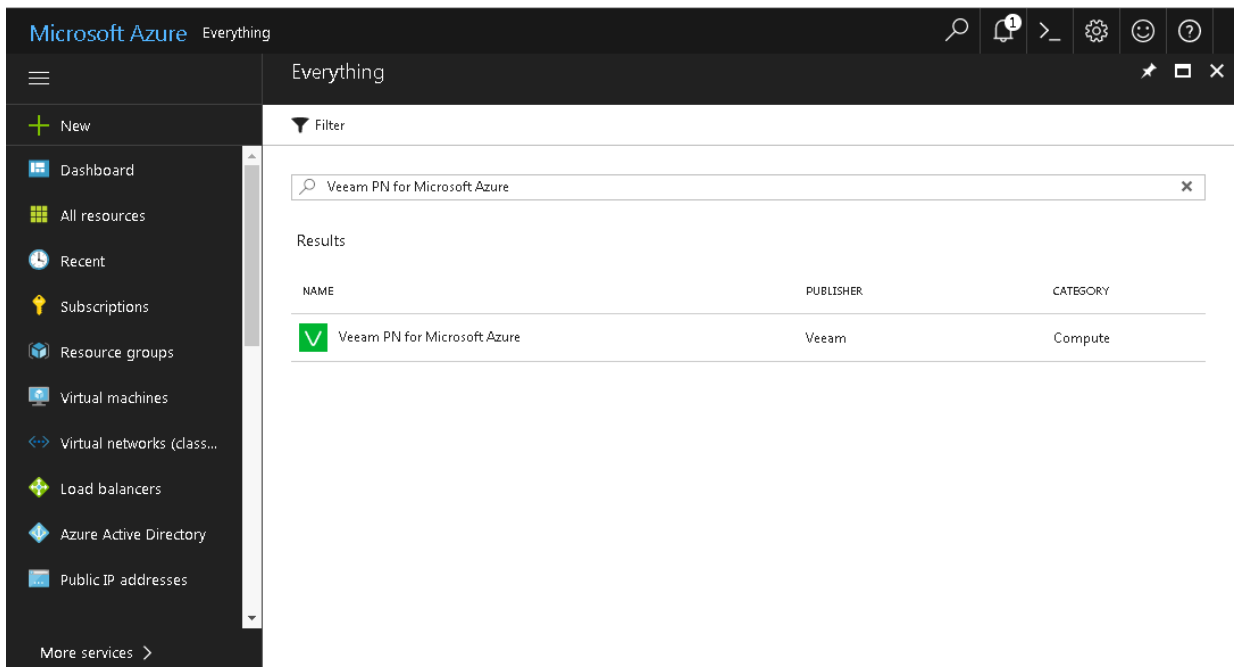
3. [Deploy a site gateway in the local site network.](#)
4. [Add Static Routes for Outgoing Traffic on Default Gateways](#)

## Step 1. Deploy Network Hub in Microsoft Azure

The network hub is the core of the VPN infrastructure. If you want to join a Microsoft Azure network with a local site network, you must deploy the network hub in Microsoft Azure.

To deploy the network hub:

1. Sign in to the Microsoft Azure portal at <https://portal.azure.com>.
2. In the menu on the left, click **New**.
3. In the marketplace, search for the 'Veeam PN for Microsoft Azure' template.
4. Select the template and click **Create**.



5. On the **Basics** blade, specify basic VM settings: VM name, user credentials for the network hub administrator account, subscription, resource group and location.

Microsoft Azure << Create Veeam PN for Microsoft Azure > Basics

Create Veeam PN for Microsoft Azure x Basics x

1 Basics  
Configure basic settings >

2 Veeam PN settings  
Configure the Veeam PN se... >

3 Security settings  
Choose required security le... >

4 VPN Information  
Provide VPN information >

5 Summary  
Veeam PN for Microsoft Az... >

\* Virtual Machine name ①  
veeamn ✓

\* User name ①  
veeamnadmin ✓

\* Password ①  
\*\*\*\*\* ✓

\* Confirm password  
\*\*\*\*\* ✓

Subscription  
Visual Studio Premium with MSDN v

\* Resource group ①  
☒ Create new ☐ Use existing  
veeam\_pn ✓

OK

6. On the **Veeam PN settings** blade, specify basic settings for the network hub appliance: VM size (A1 size is minimum), storage account, public IP address, domain name, virtual network and subnet.

Microsoft Azure << Create Veeam PN for Microsoft Azure > Veeam PN settings

Create Veeam PN for Microsoft Azure x Veeam PN settings x

1 Basics  
Done ✓

2 Veeam PN settings  
Configure the Veeam PN se... >

3 Security settings  
Choose required security le... >

4 VPN Information  
Provide VPN information >

5 Summary  
Veeam PN for Microsoft Az... >

\* Virtual machine size ①  
1x Standard A1 >

\* Storage account ①  
veeamn >

\* Public IP address ①  
(new) publiID >

\* Domain name for VeeamPN ①  
veeamn01 ✓  
westeurope.cloudapp.azure.com

\* Virtual network ①  
(new) veeam-pn-net >

\* Subnet ①  
Review subnet configuration >

OK

7. On the **Security settings** blade, specify parameters for the self-signed SSL certificate that Veeam PN will use to secure connection in the VPN: the certificate key length.

Microsoft Azure << Create Veeam PN for Microsoft Azure > Security settings

1 Basics Done ✓

2 Veeam PN settings Done ✓

3 Security settings Choose required security le... >

4 VPN Information Provide VPN information >

5 Summary Veeam PN for Microsoft Az... >

Connection encryption key size ⓘ

1536 (default) ▾

OK

8. On the **VPN Information** blade, make sure that **Yes** is enabled in the **Enable Site-to-Site** field. In the **Specify a protocol** and **Specify a port** fields, leave default settings.

Microsoft Azure << Create Veeam PN for Microsoft Azure > VPN Information

1 Basics Done ✓

2 Veeam PN settings Done ✓

3 Security settings Done ✓

4 VPN Information Provide VPN information >

5 Summary Veeam PN for Microsoft Az... >

Enable Site-to-Site ⓘ

Yes No

Specify a protocol ⓘ

UDP TCP

\* Specify a port ⓘ

1194

Enable Point-to-Site ⓘ

Yes No

Specify a protocol ⓘ

UDP TCP

\* Specify a port ⓘ

6179

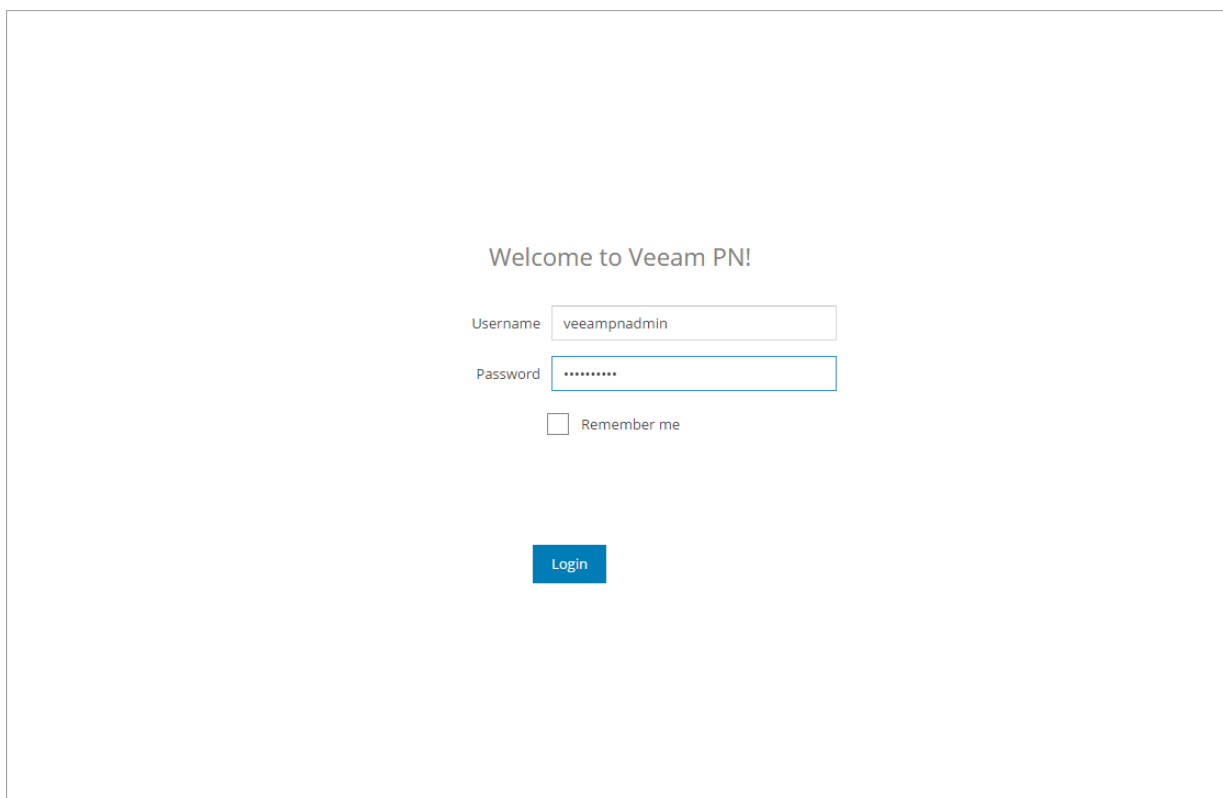
OK

9. On the **Summary** blade, click **OK**.
10. On the **Buy** blade, click **Purchase**.

Veeam PN will deploy the network hub from the Microsoft Azure template. The deployment process typically takes several minutes. Wait for this process to complete.

11. In the Microsoft Azure portal, open properties of the deployed appliance and get its IP address.

12. In a web browser, access the Veeam PN portal by the following address: `https://<networkhubIP>`.  
The browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.
13. At the **Welcome** screen, log in to the portal under the network hub administrator account. You specified credentials for the network hub administrator account on the **Basic** blade.
14. Click **Login**.



Welcome to Veeam PN!

Username

Password

☐ Remember me

Login

15. On the welcome screen of the **Azure Setup** wizard, click **Next**.
16. The **Azure Setup** wizard will display the <https://aka.ms/devicelogin> link and an authentication code. Copy the code to the Clipboard, open the <https://aka.ms/devicelogin> link in a web browser and enter the code in the code field.
17. Click **Next**. Veeam PN will assign the Network Contributor role on the routing table in the Microsoft Azure network to the network hub administrator account. Wait for the process to complete and click **Finish**.

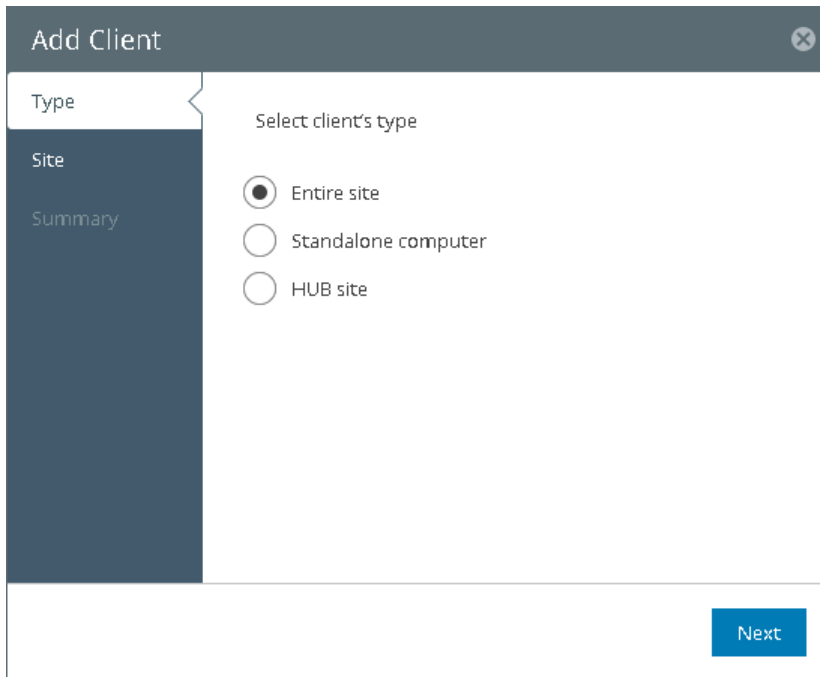
## Step 2. Register Client for Local Site Network in Veeam PN Portal

To add a local site network to the VPN, you must register a client for this local network in the Veeam PN portal. Veeam PN will generate a configuration file for the local site network. You will use the configuration file to set up a site gateway in the local site network.

To register a client for the local site network:

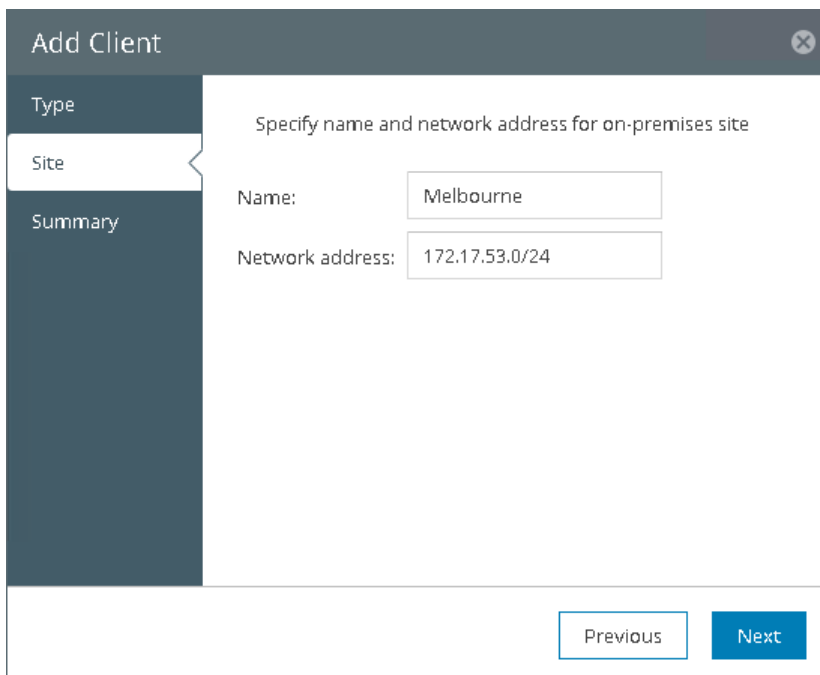
1. In the Veeam PN portal, in the configuration menu on the left click **Clients**.
2. At the top of the clients list, click **Add**.

3. At the **Type** step of the wizard, select **Entire site**.



The screenshot shows the 'Add Client' wizard window. On the left, a sidebar contains three steps: 'Type' (selected), 'Site', and 'Summary'. The main area is titled 'Select client's type' and contains three radio button options: 'Entire site' (which is selected), 'Standalone computer', and 'HUB site'. A blue 'Next' button is located at the bottom right of the window.

4. At the **Site** step of the wizard, enter a name and address of the local site network using the CIDR notation.



The screenshot shows the 'Add Client' wizard window at the 'Site' step. The sidebar on the left now has 'Site' selected. The main area is titled 'Specify name and network address for on-premises site'. It contains two input fields: 'Name:' with the value 'Melbourne' and 'Network address:' with the value '172.17.53.0/24'. At the bottom right, there are two buttons: 'Previous' and 'Next'.

5. At the **Summary** step of the wizard, click **Finish**.

Veeam PN will generate an XML file with VPN settings for the local site network. The XML file will be automatically downloaded to the default downloads folder. Save the downloaded file in a network shared folder accessible from the local site network.

## Step 3. Deploy Site Gateway in Local Site Network

When you deploy the network hub in Microsoft Azure, you configure one point of the VPN tunnel. To configure the other point of the VPN tunnel, you must deploy a site gateway on the local company site. The site gateway establishes a VPN connection with the network hub in Microsoft Azure, which lets data to travel securely over a public connection between remote sites.

To deploy a site gateway in the local site network:

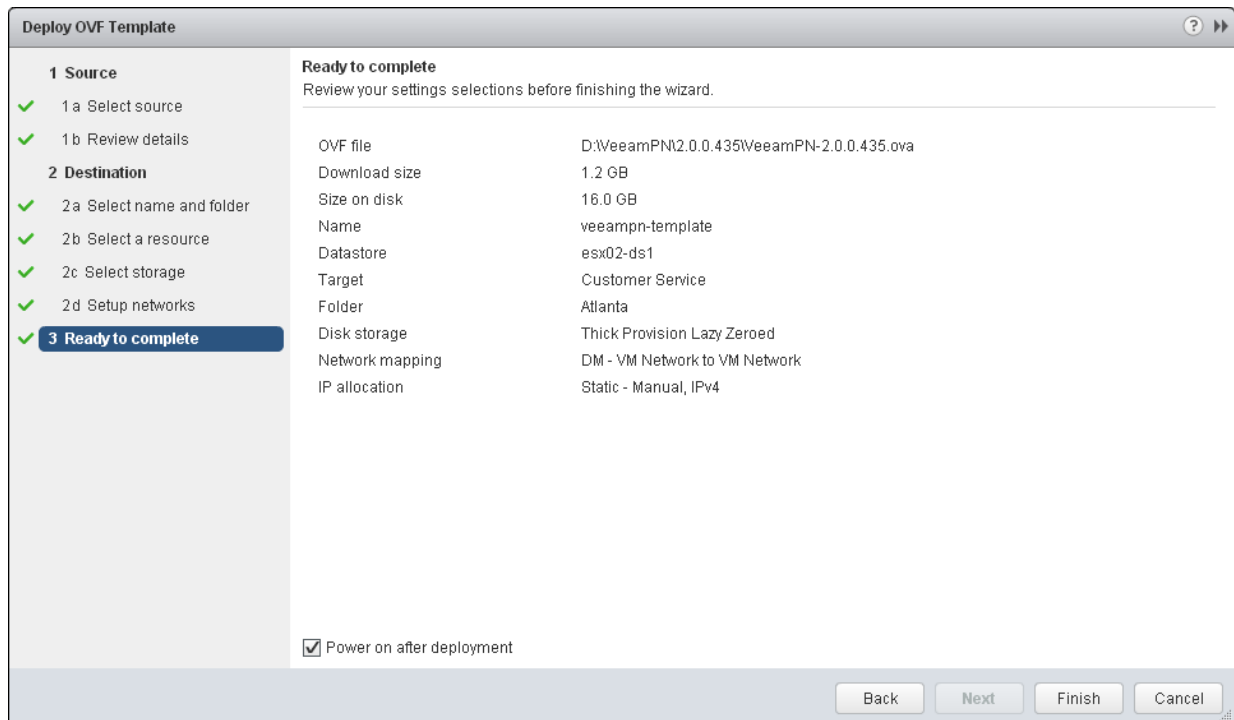
1. Download the Veeam PN OVA package from: <https://www.veeam.com/downloads.html> and save it in a network shared folder accessible from the local site network.
2. In VMware vSphere Web Client, open the hosts and clusters inventory list and select a host on which you want to place the site gateway.
3. From the menu at the top of the working area, select **Actions > Deploy OVF Template**.
4. At the **Select source** step of the wizard, select **Local file**, click **Browse** and browse to the Veeam PN OVA package.

The screenshot shows the 'Deploy OVF Template' wizard. On the left, a sidebar lists the steps: 1 Source (with sub-steps 1 a Select source, 1 b Review details, and 2 Destination), 2 a Select name and folder, 2 b Select a resource, 2 c Select storage, and 3 Ready to complete. The '1 a Select source' step is currently active and highlighted. The main area is titled 'Select source' and contains instructions: 'Select the source location' and 'Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.' There are two radio buttons: 'URL' (unselected) and 'Local file' (selected). Below the 'Local file' radio button is a 'Browse...' button and a text field containing the path 'D:\VeeamPN\2.0.0.435\VeeamPN-2.0.0.435.ova'. At the bottom right, there are four buttons: 'Back', 'Next' (which is highlighted), 'Finish', and 'Cancel'.

5. Follow the next steps of the wizard and specify site gateway settings: datastore on which the site gateway VM disk must be placed, disk format, network to which the site gateway must be connected and so on.

6. At the last step of the wizard, select the **Power on after deployment** check box and click **Finish**.

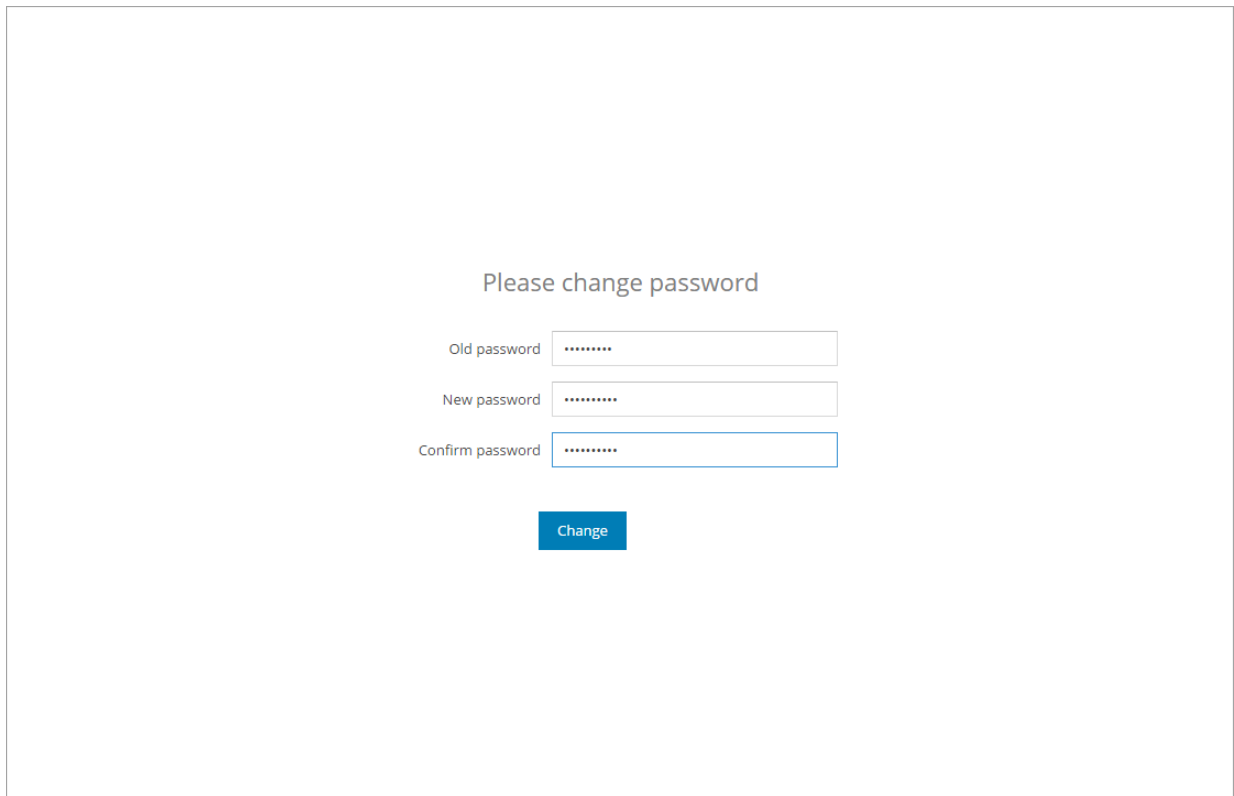
Veeam PN will deploy the site gateway on the selected host. The deployment process typically takes several minutes. Wait for the process to complete and proceed to site gateway configuration.



7. In VMware vSphere Web Client, navigate to the **Summary** tab and get an IP address of the deployed site gateway.
8. In a web browser, access the site gateway portal by the following address: `https://<sitegatewayIPAddress>`.  
  
The browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.
9. At the **Welcome to Veeam PN** screen of the portal, enter the credentials for the built-in administrator account:
  - Username: *root*
  - Password: *VeeamPN*



10. Click **Login**. When prompted, change the password for the built-in administrator account.



The screenshot shows a 'Please change password' dialog box. It contains three text input fields, each with a placeholder of seven asterisks. The first field is labeled 'Old password', the second 'New password', and the third 'Confirm password'. Below these fields is a blue button labeled 'Change'.

Please change password

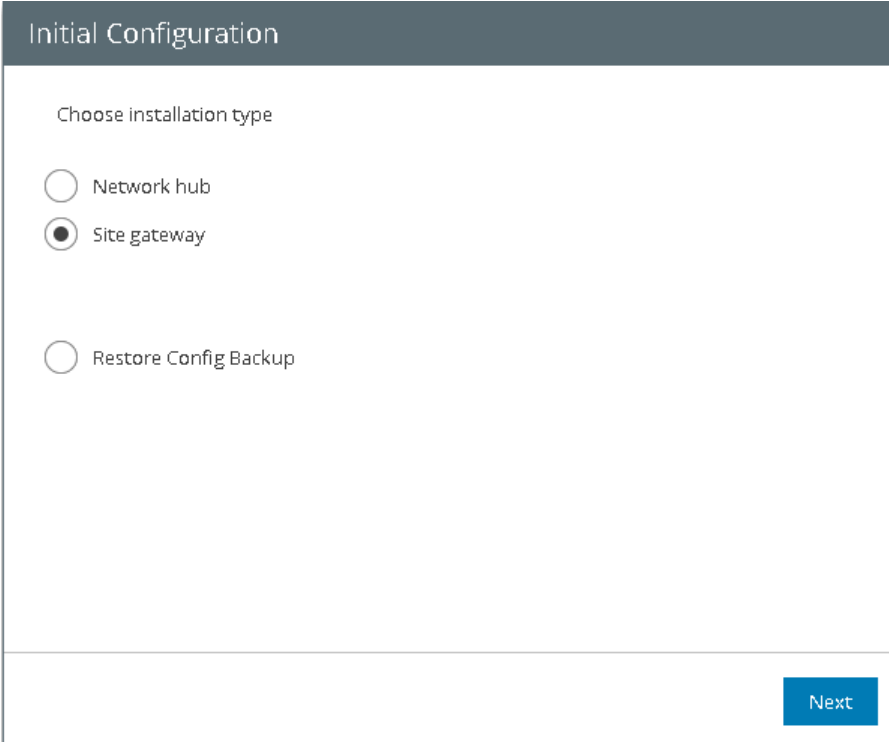
Old password

New password

Confirm password

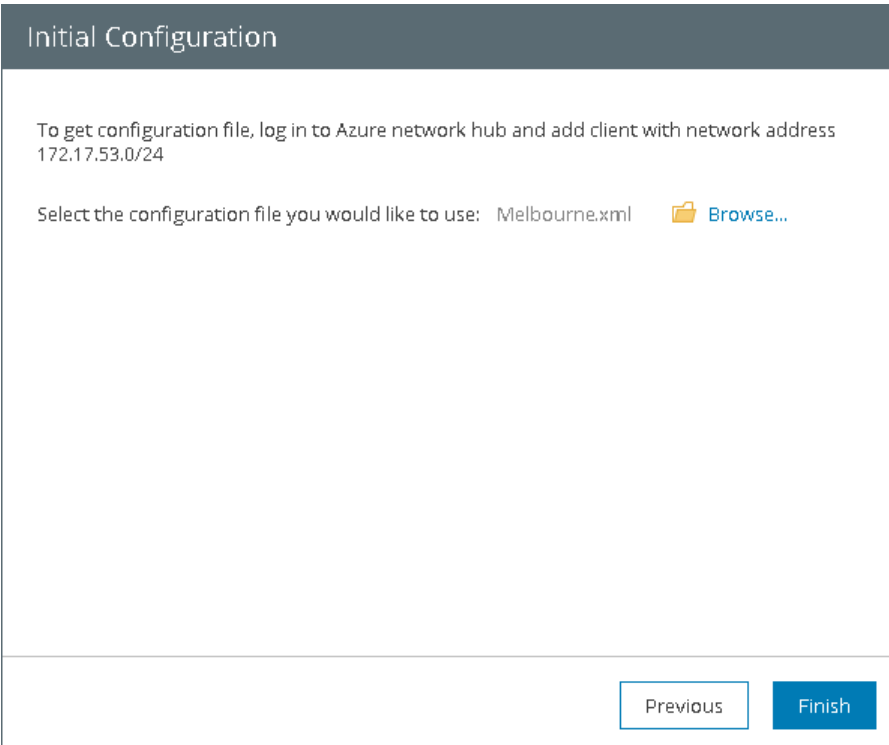
[Change](#)

11. At the first step of the **Initial Configuration** wizard, select **Site gateway**.



The screenshot shows the 'Initial Configuration' wizard window. At the top is a dark header with the title 'Initial Configuration'. Below the header, the text 'Choose installation type' is displayed. There are three radio button options: 'Network hub', 'Site gateway' (which is selected with a black dot), and 'Restore Config Backup'. At the bottom right of the window is a blue button labeled 'Next'.

12. Click **Browse** and browse to the configuration file for the local site network generated by Veeam PN.



The screenshot shows the 'Initial Configuration' wizard window at a later step. The header 'Initial Configuration' is at the top. The main content area contains the text: 'To get configuration file, log in to Azure network hub and add client with network address 172.17.53.0/24'. Below this, it says 'Select the configuration file you would like to use: Melbourne.xml' followed by a folder icon and a blue link labeled 'Browse...'. At the bottom right, there are two buttons: 'Previous' (outlined) and 'Finish' (solid blue).

13. Click **Finish**.

## Step 4. Add Static Routes for Outgoing Traffic on Default Gateways

By default, when a machine in one remote site needs to communicate with a machine in another remote site, it sends a request over the default site gateway. To route traffic going between sites over the VPN tunnel, you need to add static routes on default gateways on both sites. These static routes will destine the traffic from the default gateway to the Veeam PN appliance — network hub or site gateway, which, in its turn, will route traffic through the VPN tunnel between the two sites.

For example, Site A and Site B have the following configuration:

### Site A: 192.168.0.0/24

- Network mask: 255.255.255.0
- Site gateway IP address: 192.168.0.2
- Default gateway IP address: 192.168.0.1
- Client machine IP address: 192.168.0.14

### Site B: 172.17.53.0/24

- Network mask: 255.255.255.0
- Site gateway IP address: 172.17.53.2
- Default gateway IP address: 172.17.53.1
- Client machine IP address: 172.17.53.12

If a machine in Site A needs to communicate with a machine in Site B, the traffic will first be sent to the default gateway 192.168.0.1. The default gateway must then route the traffic to the site gateway that, in its turn, will route the traffic through the VPN tunnel. For this reason, you must add the following route on the default gateway 192.168.0.1:

```
route add 172.17.53.0 mask 255.255.255.0 192.168.0.2
```

In a similar manner, you must add a route on the default gateway 172.17.53.1 in Site B:

```
route add 192.168.0.0 mask 255.255.255.0 172.17.53.2
```

## Result

You have set up a VPN connection between a Microsoft Azure network and local site network. VMs running in Microsoft Azure are now accessible from the local site network, and vice versa.

# Set Up VPN from Endpoints to Microsoft Azure

You can use Veeam PN to set up a VPN connection from remote user machines to private clouds in Microsoft Azure. This scenario can be helpful if you have moved some of your application and services to Microsoft Azure. In this case, you can provide company users with access to VMs in Microsoft Azure.

## Reference Environment

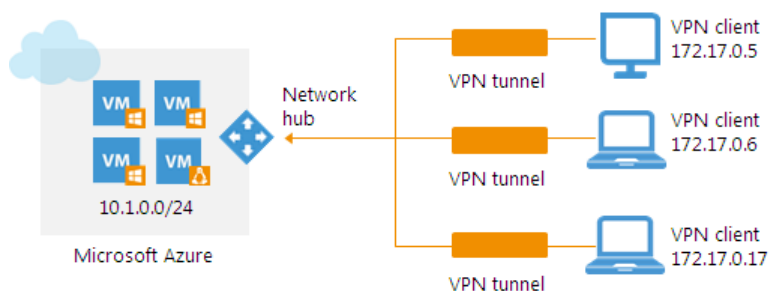
This how-to assumes that your company environment is distributed between two sites:

- Microsoft Azure: part of your applications and services are hosted in Microsoft Azure.
- Local company site: users who need to gain access to Microsoft Azure VMs are working on a local company site or remotely.

In this scenario, you will deploy Veeam PN components in the following way:

- The network hub will be hosted in Microsoft Azure.
- You will configure VPN settings on user machines with the help of OpenVPN.

Whenever users need to access VMs in Microsoft Azure, they will establish a VPN connection from their machines to the network hub in Microsoft Azure, that, in its turn, will route requests to Microsoft Azure VMs.



## Prerequisites

To follow instructions of this how-to, check the following prerequisites:

- You must have a user account in Microsoft Azure.
- You must use the Azure Resource Manager model to configure the network hub in Microsoft Azure. The classic deployment model is not supported.

## Step-By-Step Walkthrough

To set up a VPN connection from user machines to Microsoft Azure, you will:

1. [Deploy the network hub in Microsoft Azure.](#)
2. [Register clients for user machines in the Veeam PN portal.](#)
3. [Configure OpenVPN on user machines.](#)

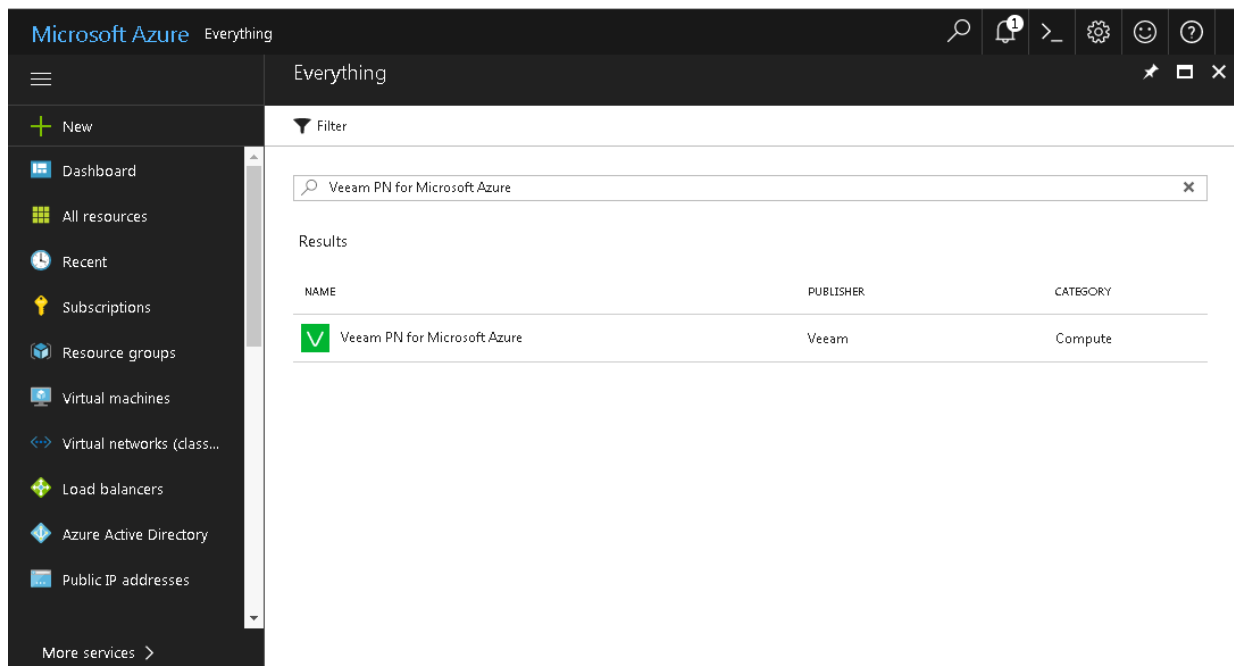
4. Establish a VPN connection from user machines to the network hub in Microsoft Azure.

## Step 1. Deploy Network Hub in Microsoft Azure

The network hub is the core of the VPN infrastructure. If you want to set up a VPN connection from user machines to VMs in Microsoft Azure, you must deploy the network hub in Microsoft Azure.

To deploy the network hub:

1. Sign in to the Microsoft Azure portal at <https://portal.azure.com>.
2. In the menu on the left, click **New**.
3. In the marketplace, search for the '*Veeam PN for Microsoft Azure*' template.
4. Select the template and click **Create**.



5. On the **Basics** blade, specify basic VM settings: VM name, user credentials for the network hub administrator account, subscription, resource group and location.

Microsoft Azure << Create Veeam PN for Microsoft Azure > Basics

Create Veeam PN for Microsoft Azure x Basics x

1 Basics  
Configure basic settings >

2 Veeam PN settings  
Configure the Veeam PN se... >

3 Security settings  
Choose required security le... >

4 VPN Information  
Provide VPN information >

5 Summary  
Veeam PN for Microsoft Az... >

\* Virtual Machine name veeamn ✓

\* User name veeamadmin ✓

\* Password [masked] ✓

\* Confirm password [masked] ✓

Subscription  
Visual Studio Premium with MSDN v

\* Resource group ☒ Create new ☐ Use existing  
veeam\_pn ✓

OK

6. On the **Veeam PN settings** blade, specify basic settings for the network hub appliance: VM size (A1 size is minimum), storage account, public IP address, domain name, virtual network and subnet.

Microsoft Azure << Create Veeam PN for Microsoft Azure > Veeam PN settings

Create Veeam PN for Microsoft Azure x Veeam PN settings x

1 Basics  
Done ✓

2 Veeam PN settings  
Configure the Veeam PN se... >

3 Security settings  
Choose required security le... >

4 VPN Information  
Provide VPN information >

5 Summary  
Veeam PN for Microsoft Az... >

\* Virtual machine size 1x Standard A1 >

\* Storage account veeamn >

\* Public IP address (new) publicIP >

\* Domain name for VeeamPN veeamn01 ✓  
westeurope.cloudapp.azure.com

\* Virtual network (new) veeam-pn-net >

\* Subnet Review subnet configuration >

OK

7. On the **Security settings** blade, specify parameters for the self-signed SSL certificate that Veeam PN will use to secure connection in the VPN: the certificate key length.

Microsoft Azure << Create Veeam PN for Microsoft Azure > Security settings

Create Veeam PN for Microsoft Azure x

Security settings x

1 Basics Done ✓

2 Veeam PN settings Done ✓

3 Security settings Choose required security le... >

4 VPN Information Provide VPN information >

5 Summary Veeam PN for Microsoft Az... >

Connection encryption key size ⓘ

1536 (default) v

OK

8. On the **VPN Information** blade, make sure that **Yes** is enabled in the **Enable Point-to-Site** field. In the **Specify a protocol** and **Specify a port** fields, leave default settings.

Microsoft Azure << Create Veeam PN for Microsoft Azure > VPN Information

Create Veeam PN for Microsoft Azure x

VPN Information x

1 Basics Done ✓

2 Veeam PN settings Done ✓

3 Security settings Done ✓

4 VPN Information Provide VPN information >

5 Summary Veeam PN for Microsoft Az... >

Enable Site-to-Site ⓘ

Yes No

Specify a protocol ⓘ

UDP TCP

\* Specify a port ⓘ

1194

Enable Point-to-Site ⓘ

Yes No

Specify a protocol ⓘ

UDP TCP

\* Specify a port ⓘ

6179

9. On the **Summary** blade, click **OK**.

10. On the **Buy** blade, click **Purchase**.

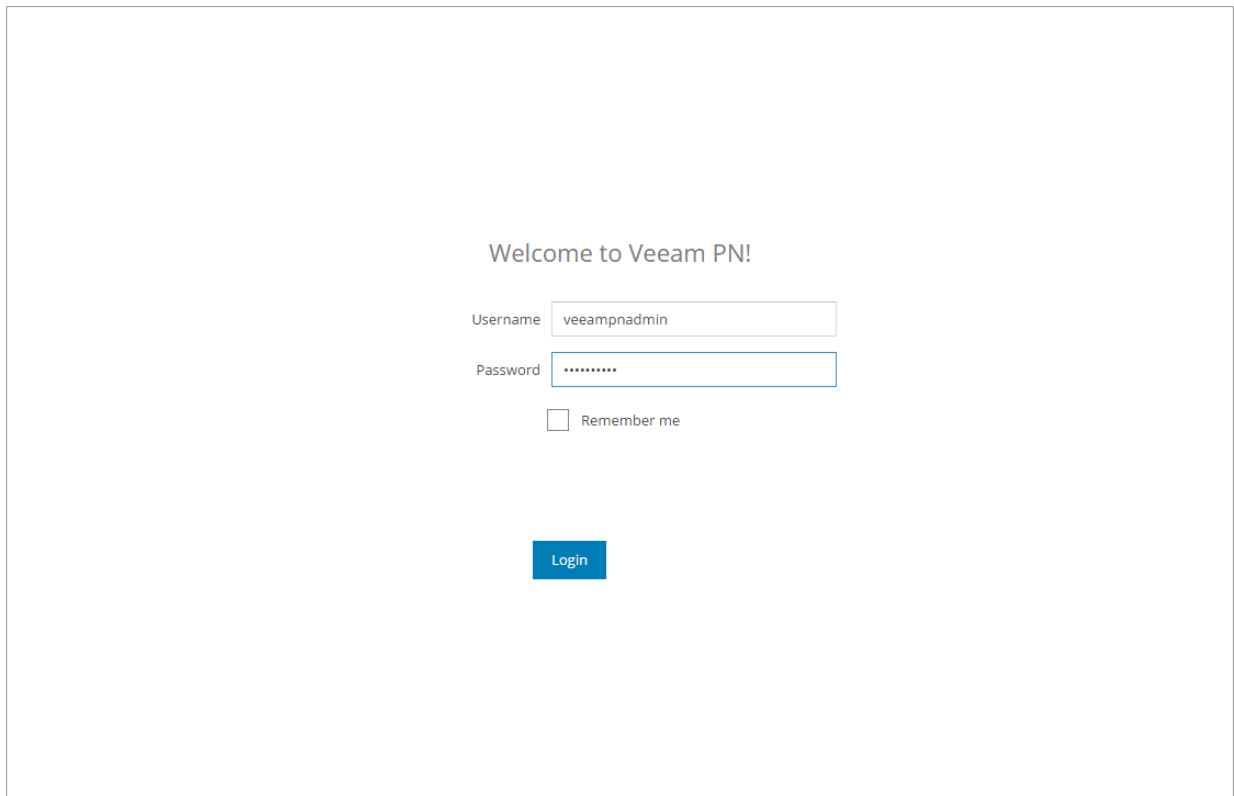
Veeam PN will deploy the network hub from the Microsoft Azure template. The deployment process typically takes several minutes. Wait for this process to complete.

11. In the Microsoft Azure portal, open properties of the deployed VM and get its IP address.

12. In a web browser, access the Veeam PN portal by the following address: `https://<networkhubIP>`.

The browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.

13. At the **Welcome** screen, log in to the portal under the network hub administrator account. You specified credentials for the network hub administrator account on the **Basic** blade.
14. Click **Login**.



Welcome to Veeam PN!

Username

Password

☐ Remember me

Login

15. On the welcome screen of the **Azure Setup** wizard, click **Next**.
16. The **Azure Setup** wizard will display the <https://aka.ms/devicelogin> link and an authentication code. Copy the code to the Clipboard, open the <https://aka.ms/devicelogin> link in a web browser and enter the code in the code field.
17. Click **Next**. Veeam PN will assign the Network Contributor role on the routing table in the Microsoft Azure network to the network hub administrator account. Wait for the process to complete and click **Finish**.

## Step 2. Register Clients for User Machines

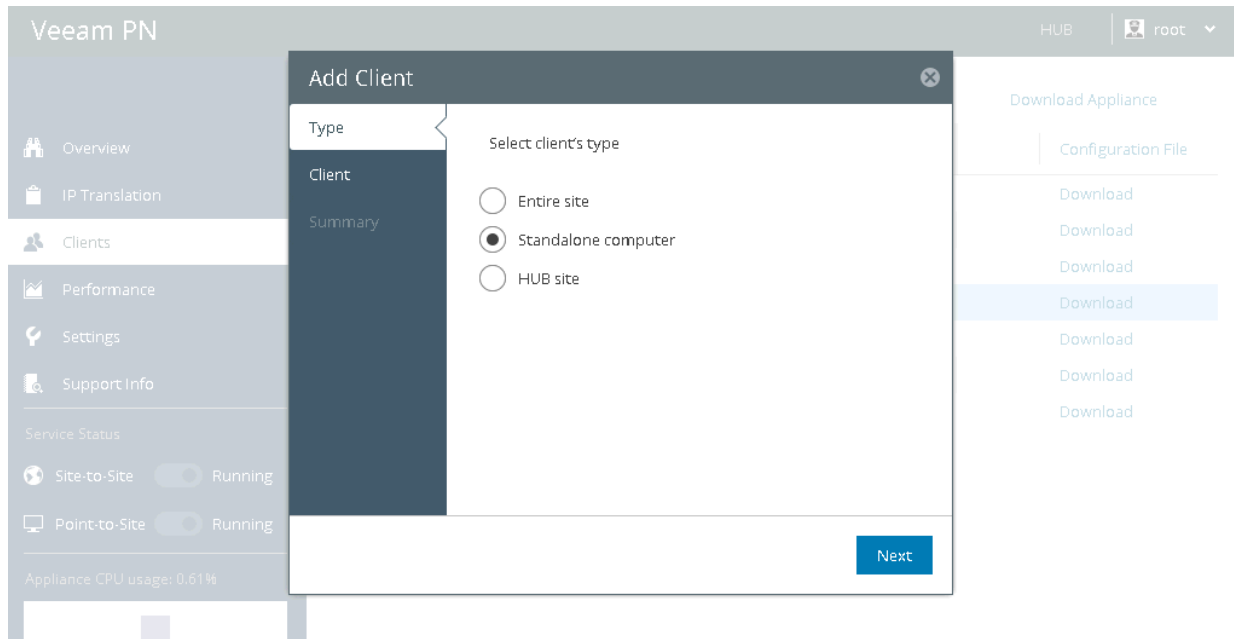
To provide remote users with access to VMs in Microsoft Azure, you must register clients for these users in the Veeam PN portal. Veeam PN will generate configuration files for users. You will use these configuration files to set up a VPN connection on user machines.

To register a client for user machines:

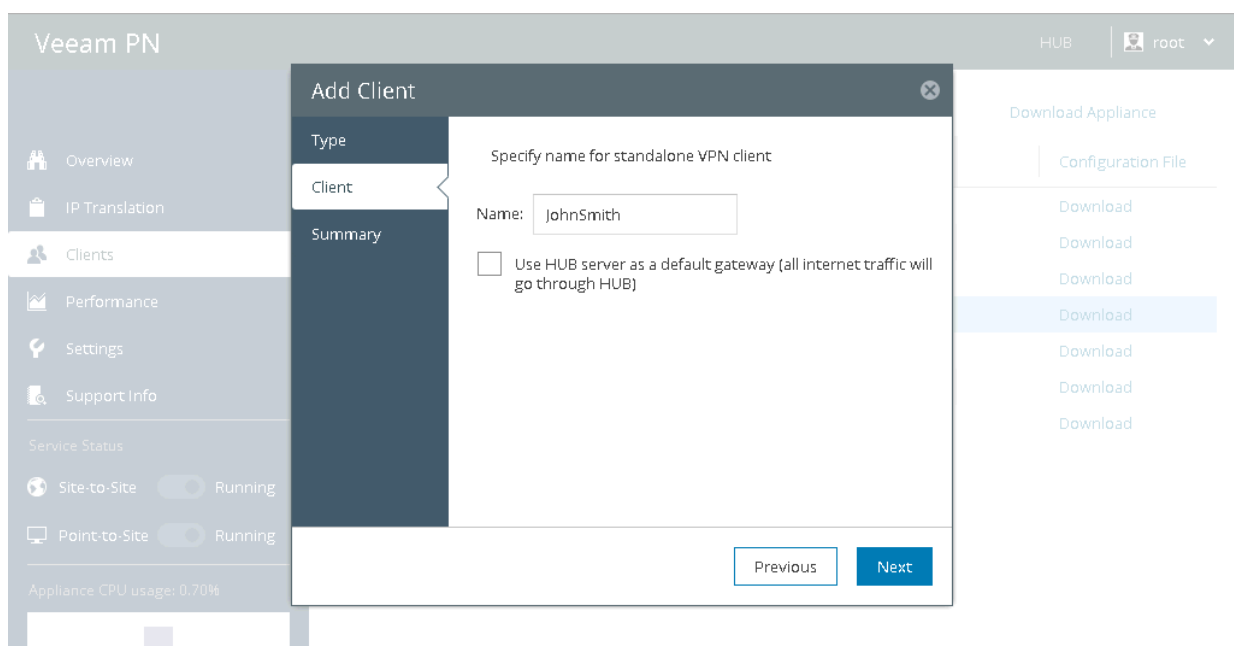
1. In the Veeam PN portal, in the configuration menu on the left click **Clients**.
2. At the top of the clients list, click **Add**.



- At the **Type** step of the wizard, select **Standalone computer**.



- At the **Client** step of the wizard, enter a name for the user machine.
- Select the **Use HUB server as a default gateway** check box.



- At the **Summary** step of the wizard, click **Finish**.

Veeam PN will generate an XML file with VPN settings for the user. The XML file will be automatically downloaded to the default downloads folder. Save the downloaded file in a network shared folder accessible from the user machine.

- Repeat steps 1-5 for all users to whom you want to provide access.

## Step 3. Configure OpenVPN on User Machines

To let a user access VMs in Microsoft Azure over the VPN, you must configure VPN settings on the user machine. To do this, you must use OpenVPN software and a configuration file generated by Veeam PN.

To configure OpenVPN on user machines:

1. Download the OpenVPN setup file for the user machine OS from: <https://openvpn.net/index.php/open-source/downloads.html>.
2. Run the OpenVPN setup file and install the product with default installation settings.
3. Place the configuration file generated by Veeam PN in a folder where OpenVPN configuration files are stored: C:\Program Files\OpenVPN\config.
4. Repeat steps 1-3 for all users to whom you want to provide access.

## Step 4. Establish VPN connection from User Machines to Microsoft Azure

To establish a VPN connection from user machines to Microsoft Azure:

1. On a user machine, create a batch file with the following command:

```
"openvpn-gui.exe" --connect "C:\Program Files\OpenVPN\config\client.ovpn"
```

where C:\Program Files\OpenVPN\bin\openvpn-gui.exe is a path to the OpenVPN product folder and C:\Program Files\OpenVPN\config\client.ovpn is a path to the user machine configuration file.

2. Run the batch file. Veeam PN will establish a connection from the user machine to the network hub.
3. Repeat steps 1-2 for all users to whom you want to provide access.

## Result

You have set up a VPN connection from user machines to VMs to Microsoft Azure. VMs running in Microsoft Azure are now accessible to users working remotely.

# Set Up VPN Between Remote Sites

You can use Veeam PN to set up a VPN connection between remote company offices and sites. This scenario can be helpful if company services and applications are distributed between two or more sites, for example, a headquarters site and branch office. In this case, you can join several remote networks over the VPN and enable secure communication between them.

## Reference Environment

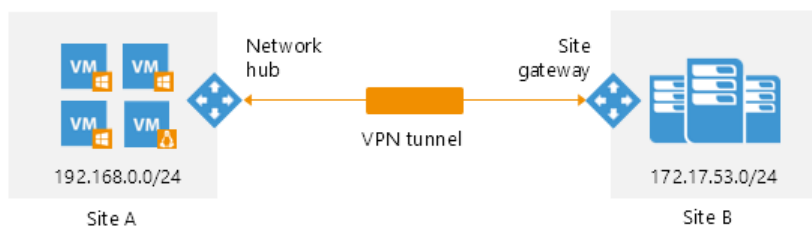
This how-to assumes that your company environment is distributed between two remote sites:

- Site A: part of your applications and services are hosted on Site A.
- Site B: part of your applications and services are hosted on Site B.

In this scenario, you will deploy Veeam PN components in the following way:

- The network hub will be deployed on Site A.
- A site gateway will be deployed on Site B.

The network hub and site gateway will produce the two terminal points of a VPN tunnel. Application and services on Site A and Site B will be able to communicate securely with each other over the VPN. Users on one remote site will be able to access resources on the other site.



## Prerequisites

To follow instructions of this how-to, check the following prerequisite:

You must have a VMware vSphere host in each site. The network hub and site gateway are deployed as virtual appliances and placed on VMware vSphere hosts.

## Step-By-Step Walkthrough

To set up a VPN connection between remote sites, you will:

1. [Deploy the network hub in a local site network.](#)
2. [Register a client for a remote network.](#)
3. [Deploy a site gateway in the remote network.](#)
4. [Add static routes for outgoing traffic on default gateways.](#)

# Step 1. Deploy Network Hub in Local Site Network

The network hub is the core of the VPN infrastructure. If you want to join several remote networks, you must deploy the network hub in one of them.

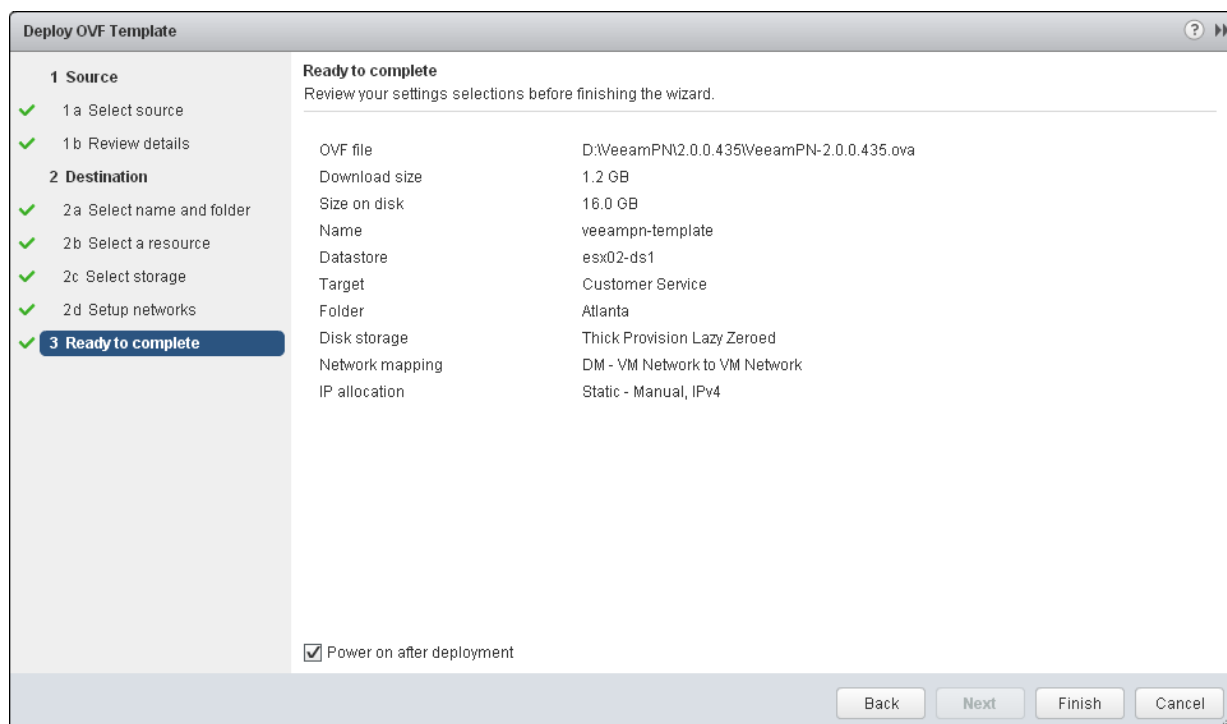
To deploy the network hub:

1. Download the Veeam PN OVA package from: <https://www.veeam.com/downloads.html> and save it in a network shared folder accessible from the site where you plan to deploy the network hub.
2. In VMware vSphere Web Client, open the hosts and clusters inventory list and select a host on which you want to place the network hub.
3. From the menu at the top of the working area, select **Actions > Deploy OVF Template**.
4. At the **Select source** step of the wizard, select **Local file**, click **Browse** and browse to the Veeam PN OVA package.

The screenshot shows the 'Deploy OVF Template' wizard. On the left, a sidebar lists the steps: 1 Source (with sub-steps 1a Select source, 1b Review details), 2 Destination (with sub-steps 2a Select name and folder, 2b Select a resource, 2c Select storage), and 3 Ready to complete. Step 1a is currently active. The main area is titled 'Select source' and 'Select the source location'. It provides instructions: 'Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.' There are two radio buttons: 'URL' (unselected) and 'Local file' (selected). Below the 'Local file' option is a 'Browse...' button and the file path 'D:\VeeamPN\2.0.0.435\VeeamPN-2.0.0.435.ova'. At the bottom right, there are four buttons: 'Back', 'Next' (highlighted), 'Finish', and 'Cancel'.

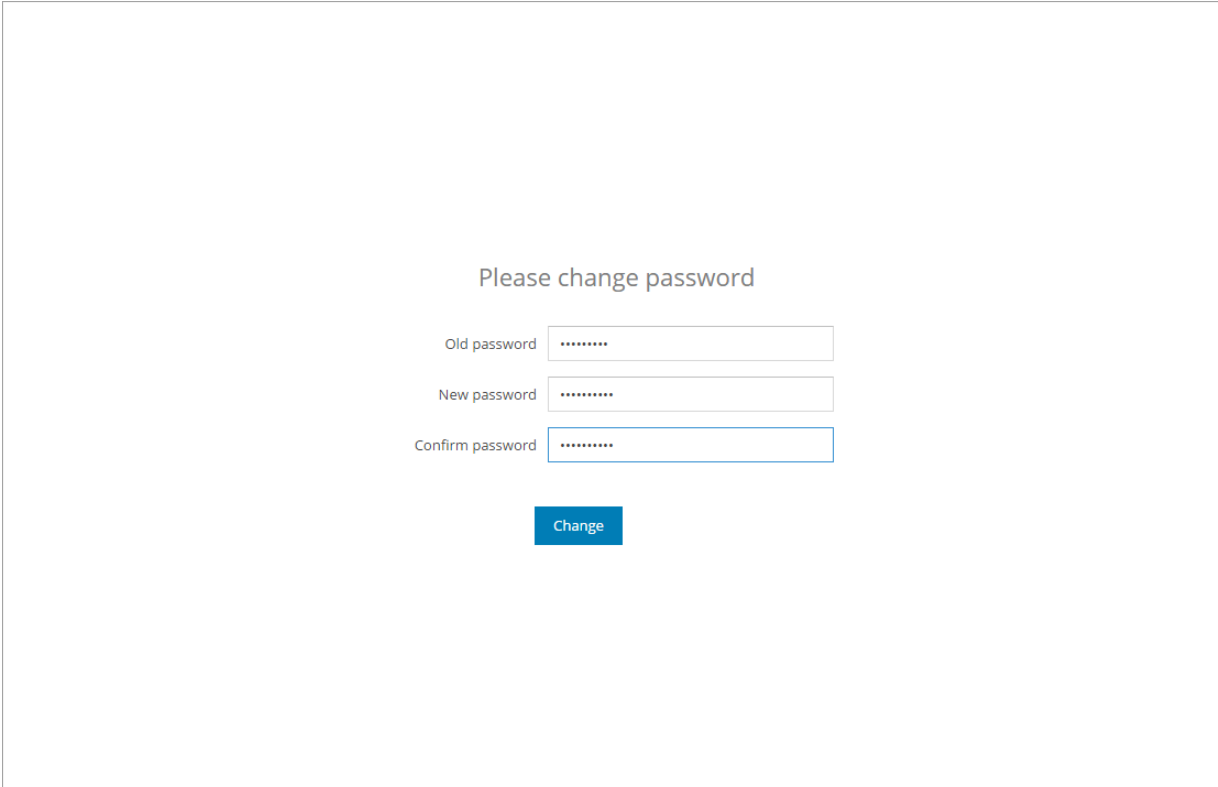
5. Follow the next steps of the wizard and specify network hub deployment settings: datastore on which the network hub disk must be placed, disk format, network to which the network hub must be connected and so on.
6. At the last step of the wizard, select the **Power on after deployment** check box and click **Finish**.

VMware vSphere will deploy the network hub on the selected host. The deployment process typically takes several minutes. Wait for this process to complete and proceed to network hub configuration.



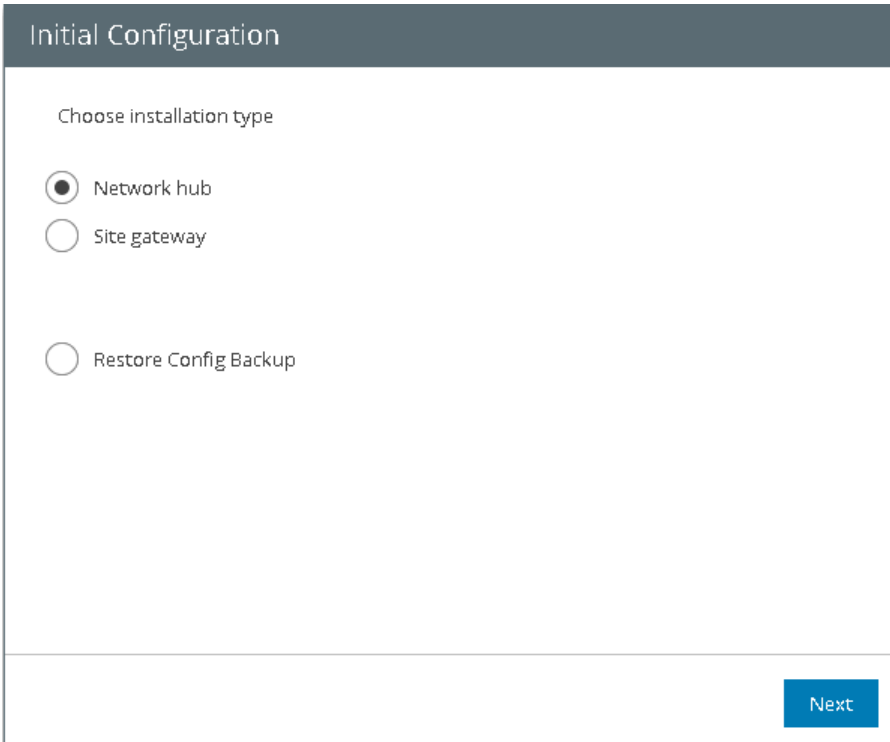
7. In VMware vSphere Web Client, navigate to the **Summary** tab and get an IP address of the network hub.
8. In a web browser, access the network hub portal by the following address: `https://<applianceIP>`.  
The browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.
9. At the **Welcome to Veeam PN** screen of the portal, log in to the network hub portal using the credentials of the built-in account:
  - Username: *root*
  - Password: *VeeamPN*
10. Click **Login**.

11. When prompted, change the password for the built-in account.



The screenshot shows a 'Please change password' dialog box. It contains three input fields: 'Old password', 'New password', and 'Confirm password', each with a masked password (seven dots). Below the fields is a blue 'Change' button.

12. At the first step of the **Initial Configuration** wizard, select **Network hub** and click **Next**.



The screenshot shows the 'Initial Configuration' wizard. The title bar is dark gray with the text 'Initial Configuration'. Below the title bar, the text 'Choose installation type' is displayed. There are three radio button options: 'Network hub' (selected), 'Site gateway', and 'Restore Config Backup'. A blue 'Next' button is located at the bottom right of the wizard window.

13. Specify parameters for a self-signed certificate that Veeam PN will use to secure communication in the VPN: the certificate key length and click **Next**.

### Initial Configuration

Specify the required information for the self-signed certificate generation

Name:

Encryption level:

PreviousNext

14. After the certificate is generated, click **OK**, then click **Next** to proceed to the network hub configuration.
15. In the **Network hub public IP or DNS** name field, specify an IP address or full DNS name for the network hub. The IP address or DNS name must be public and accessible from remote user machines.

16. Select the **Enable site-to-site VPN** check box. In the **Protocol** and **Port** fields, leave default settings.

The image shows a screenshot of the 'Initial Configuration' dialog box. At the top, there is a dark header bar with the text 'Initial Configuration'. Below this, the main area is titled 'Specify VPN settings'. The first field is 'Network hub public IP or DNS name:' with a text box containing '52.169.186.63'. Below this is a checked checkbox labeled 'Enable site-to-site VPN'. Underneath, there are two fields: 'Protocol:' with a dropdown menu showing 'UDP' and 'Port:' with a spinner box showing '1194'. Below these is an unchecked checkbox labeled 'Enable point-to-site VPN'. Underneath, there are two more fields: 'Protocol:' with a dropdown menu showing 'UDP' and 'Port:' with a spinner box showing '6179'. At the bottom right of the dialog, there are two buttons: 'Previous' and 'Finish'.

17. Click **Finish**.

## Step 2. Register Client for Remote Network

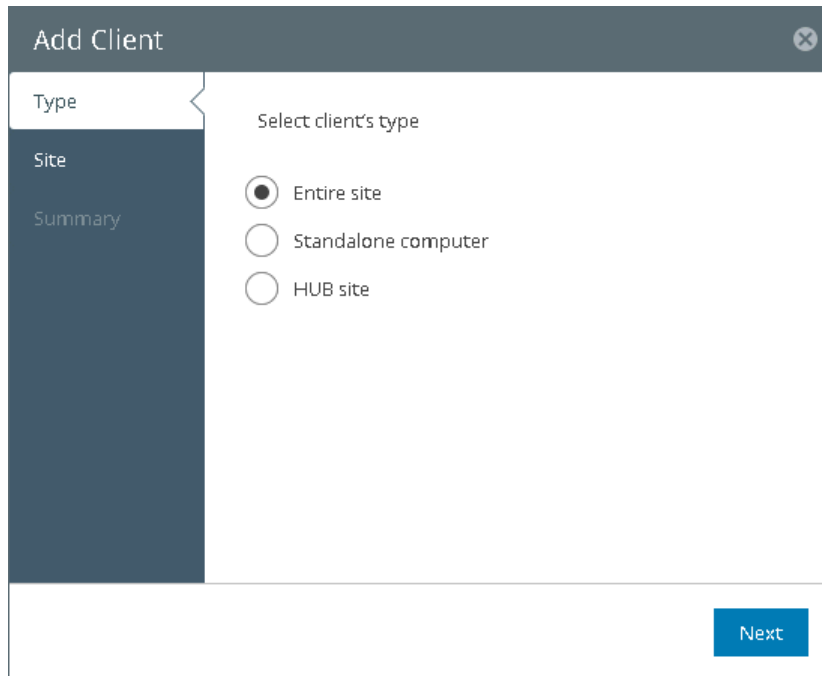
To add a remote network to the VPN, you must register a client for this network in the Veeam PN portal. Veeam PN will generate a configuration file for the remote network. You will use the configuration file to set up a site gateway in the network.

To register a client for the remote network:

1. In the Veeam PN portal, in the configuration menu on the left click **Clients**.
2. At the top of the clients list, click **Add**.



- At the **Type** step of the wizard, select **Entire site**.

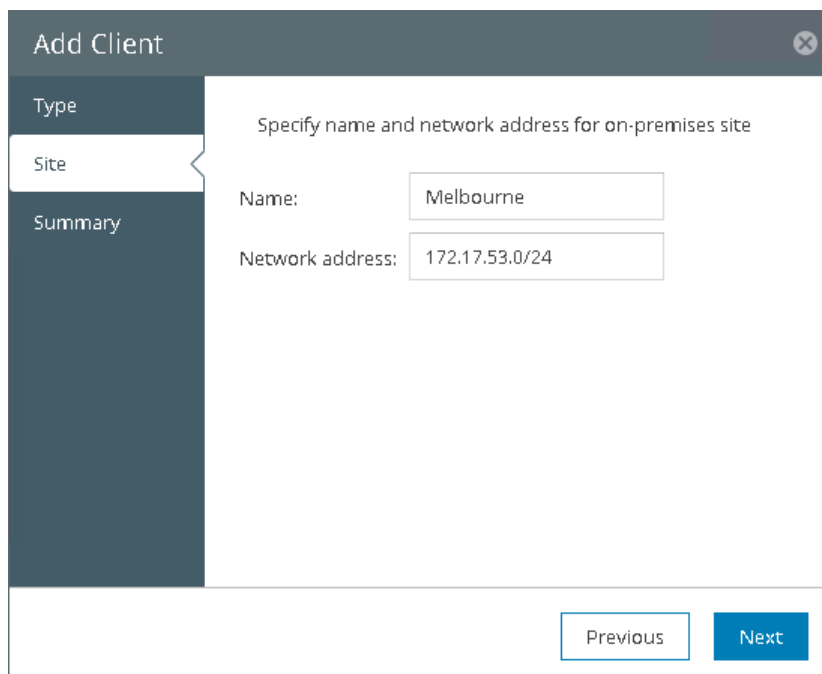


The screenshot shows the 'Add Client' wizard window. On the left, there is a vertical sidebar with three tabs: 'Type', 'Site', and 'Summary'. The 'Type' tab is currently selected. The main area of the wizard is titled 'Select client's type' and contains three radio button options: 'Entire site' (which is selected), 'Standalone computer', and 'HUB site'. At the bottom right of the main area, there is a blue 'Next' button.

#### NOTE

If you add a client for the Hub site, it will make machines on the Hub site accessible over the VPN. To see how to add a client for the Hub site, see [Registering Hub Site](#).

- At the **Site** step of the wizard, enter a name and address of the remote network using the CIDR notation.



The screenshot shows the 'Add Client' wizard window, now at the 'Site' step. The 'Site' tab is selected in the sidebar. The main area is titled 'Specify name and network address for on-premises site'. It contains two input fields: 'Name:' with the value 'Melbourne' and 'Network address:' with the value '172.17.53.0/24'. At the bottom right, there are two buttons: 'Previous' and 'Next'.

- At the **Summary** step of the wizard, click **Finish**.

Veeam PN will generate an XML file with VPN settings for the remote network. The XML file will be automatically downloaded to the default downloads folder. Save the downloaded file in a network shared folder accessible from the remote network.

## Step 3. Deploy Site Gateway in Remote Network

When you deploy the network hub in Site A, you configure one point of the VPN tunnel. To configure the other point of the VPN tunnel, you must deploy a site gateway in Site B. The network hub will establish a connection with the site gateway, which lets data to travel securely between remote sites over a public connection.

To deploy a site gateway in the remote network:

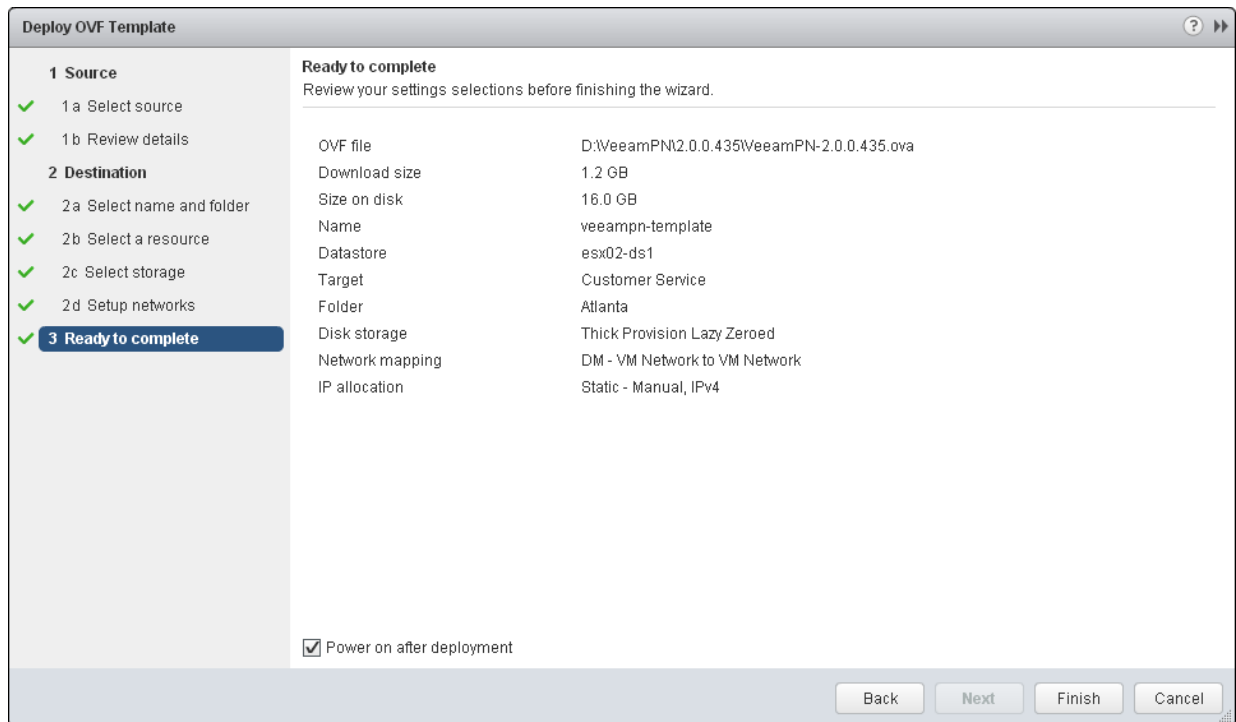
1. Download the Veeam PN OVA package from: <https://www.veeam.com/downloads.html> and save it in a network shared folder accessible from the remote network.
2. In VMware vSphere Web Client, open the hosts and clusters inventory list and select a host on which you want to deploy the site gateway.
3. From the menu at the top of the working area, select **Actions > Deploy OVF Template**.
4. At the **Select source** step of the wizard, select **Local file**, click **Browse** and browse to the Veeam PN OVA package.

The screenshot shows the 'Deploy OVF Template' wizard. On the left, a sidebar lists the steps: 1 Source (with sub-steps 1a Select source, 1b Review details, 2 Destination, 2a Select name and folder, 2b Select a resource, 2c Select storage, and 3 Ready to complete). Step 1a is currently selected. The main area is titled 'Select source' and 'Select the source location'. It contains instructions: 'Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.' There are two radio buttons: 'URL' and 'Local file'. The 'Local file' option is selected. Below it is a text field showing the file path 'D:\VeeamPN\2.0.0.435\VeeamPN-2.0.0.435.ova' and a 'Browse...' button. At the bottom right, there are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

5. Follow the next steps of the wizard and specify site gateway settings: datastore on which the site gateway VM disk must be placed, disk format, network to which the site gateway must be connected and so on.

6. At the last step of the wizard, select the **Power on after deployment** check box and click **Finish**.

The deployment process typically takes several minutes. Wait for the process to complete and proceed to site gateway configuration.

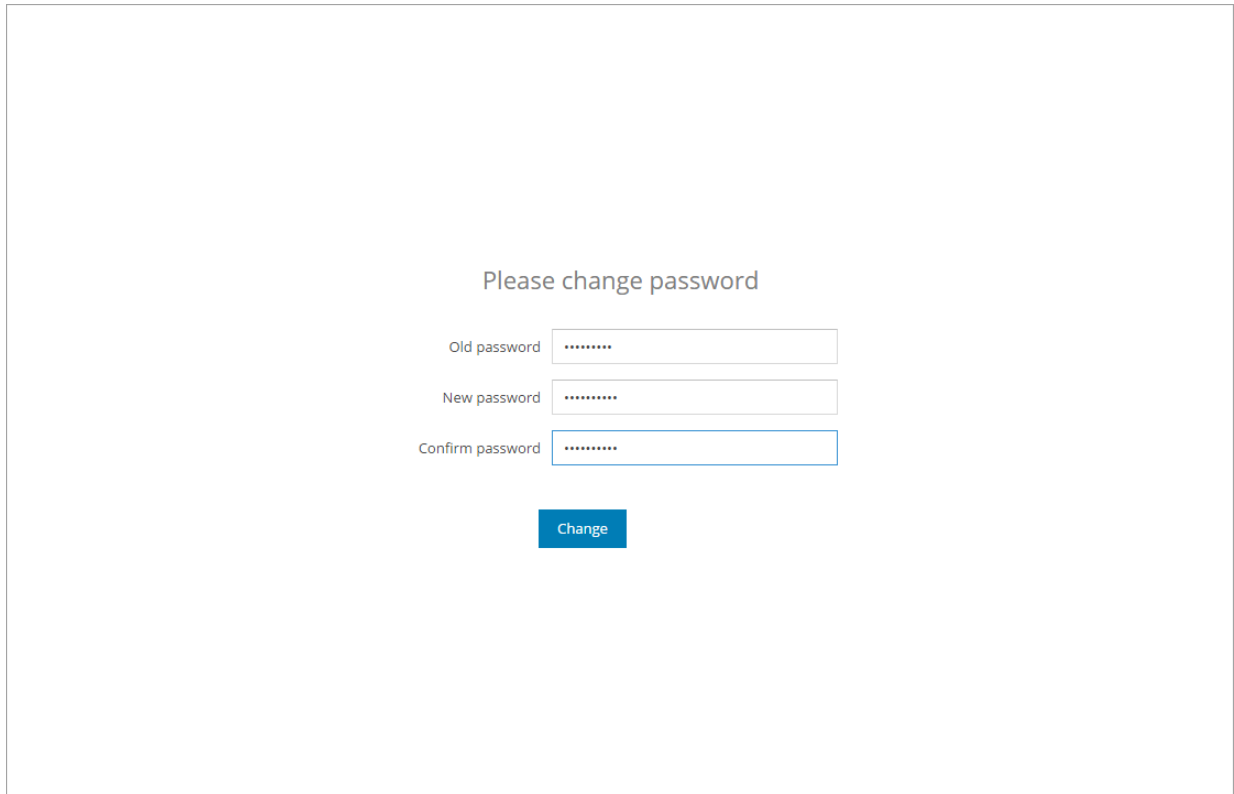


7. In VMware vSphere Web Client, navigate to the **Summary** tab and get an IP address of the deployed site gateway.
8. In a web browser, access the site gateway portal by the following address: `https://<sitegatewayIPaddress>`.

The browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.

9. At the **Welcome to Veeam PN** screen of the portal, enter credentials for the built-in account:
- Username: *root*
  - Password: *VeeamPN*

10. Click **Login**. When prompted, change the password for the built-in account.



The screenshot shows a 'Please change password' dialog box. It contains three input fields: 'Old password', 'New password', and 'Confirm password'. Each field is filled with seven dots. Below the fields is a blue button labeled 'Change'.

Please change password

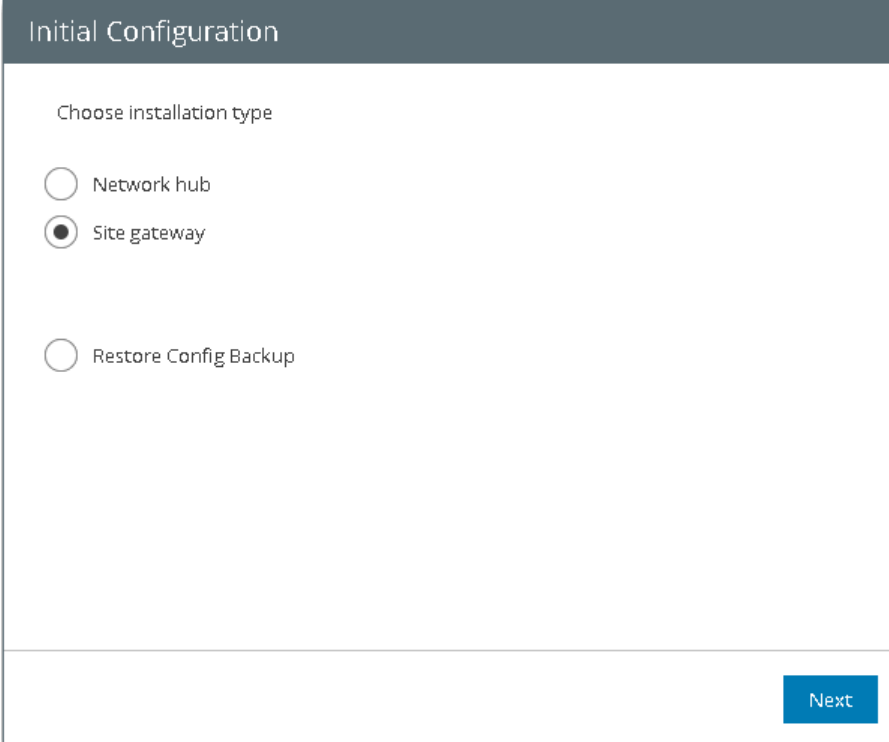
Old password

New password

Confirm password

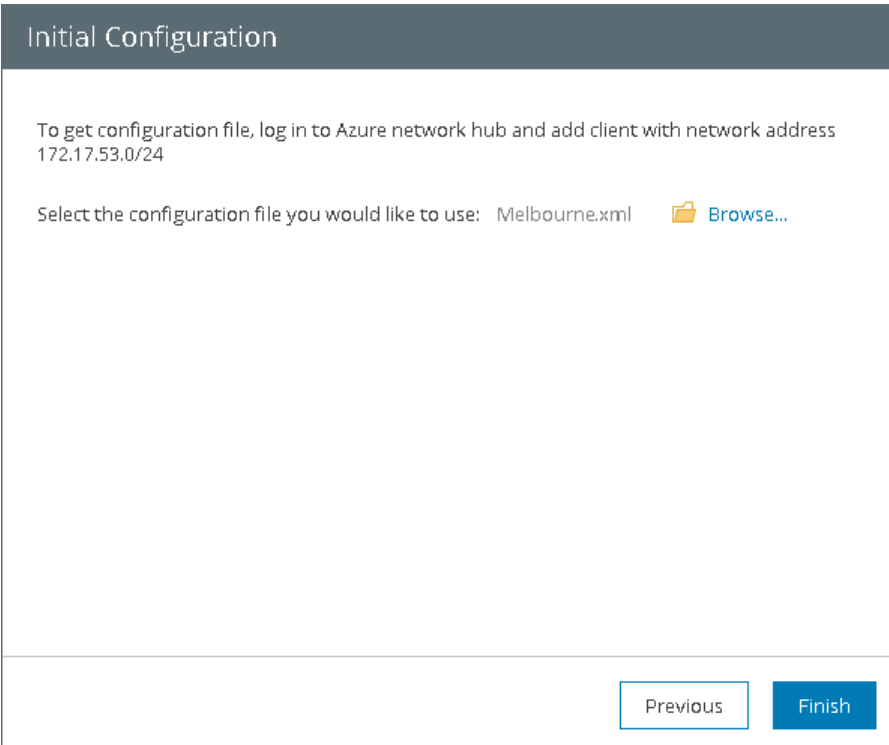
[Change](#)

11. At the first step of the **Initial Setup** wizard, select **Site gateway**.



The screenshot shows the 'Initial Configuration' window of the Veeam PN wizard. It has a dark header with the title 'Initial Configuration'. Below the header, the text 'Choose installation type' is displayed. There are three radio button options: 'Network hub', 'Site gateway' (which is selected), and 'Restore Config Backup'. At the bottom right, there is a blue 'Next' button.

12. Click **Browse** and browse to the configuration file generated by Veeam PN.



The screenshot shows the 'Initial Configuration' window at a later step. The header 'Initial Configuration' is still present. The main text reads: 'To get configuration file, log in to Azure network hub and add client with network address 172.17.53.0/24'. Below this, it says 'Select the configuration file you would like to use: Melbourne.xml' followed by a folder icon and a 'Browse...' link. At the bottom right, there are two buttons: 'Previous' and 'Finish'.

13. Click **Finish**.

## Step 4. Add Static Routes for Outgoing Traffic on Default Gateways

By default, when a machine in one remote site needs to communicate with a machine in another remote site, it sends a request over the default site gateway. To route traffic going between sites over the VPN tunnel, you need to add static routes on default gateways on both sites. These static routes will destine the traffic from the default gateway to the Veeam PN appliance — network hub or site gateway, which, in its turn, will route traffic through the VPN tunnel between the two sites.

For example, Site A and Site B have the following configuration:

### Site A: 192.168.0.0/24

- Network mask: 255.255.255.0
- Site gateway IP address: 192.168.0.2
- Default gateway IP address: 192.168.0.1
- Client machine IP address: 192.168.0.14

### Site B: 172.17.53.0/24

- Network mask: 255.255.255.0
- Site gateway IP address: 172.17.53.2
- Default gateway IP address: 172.17.53.1
- Client machine IP address: 172.17.53.12

If a machine in Site A needs to communicate with a machine in Site B, the traffic will first be sent to the default gateway 192.168.0.1. The default gateway must then route the traffic to the site gateway that, in its turn, will route the traffic through the VPN tunnel. For this reason, you must add the following route on the default gateway 192.168.0.1:

```
route add 172.17.53.0 mask 255.255.255.0 192.168.0.2
```

In a similar manner, you must add a route on the default gateway 172.17.53.1 in Site B:

```
route add 192.168.0.0 mask 255.255.255.0 172.17.53.2
```

## Result

You have set up a VPN connection between two remote sites. VMs running on one site are now accessible for machines running on the other site.

# Set Up VPN from Endpoints to Local Site

You can use Veeam PN to set up a VPN connection from remote user machines to application and services on a local company site. This scenario can be helpful if some of your users are working remotely, for example, travelling, and still need to use company resources. In this case, you can provide separate users with remote access to the company site over the VPN.

## Reference Environment

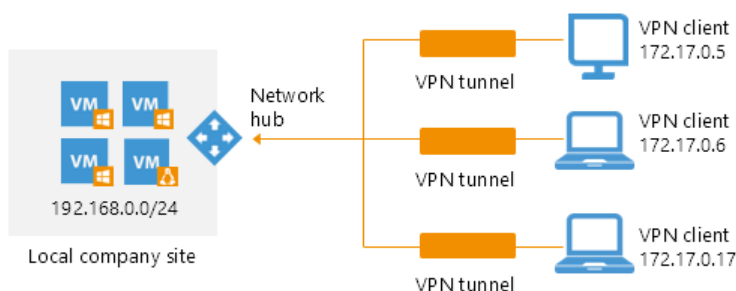
This how-to assumes that your company environment is configured in the following way:

- Local company site: your applications and services are hosted on a local company site.
- Remote users: users who need to gain access to the local company site are working remotely.

In this scenario, you will deploy Veeam PN components in the following way:

- The network hub will be deployed on the local company site.
- You will configure VPN settings on user machines with the help of OpenVPN.

Whenever users need to access resources on the local company site, they will establish a VPN connection to the network hub, that, in its turn, will route requests to machines on the local company site.



## Prerequisites

To follow instructions of this how-to, check the following prerequisite:

You must have a VMware vSphere host on the local company site. The network hub is deployed as a virtual appliance and placed on a VMware vSphere host.

## Step-By-Step Walkthrough

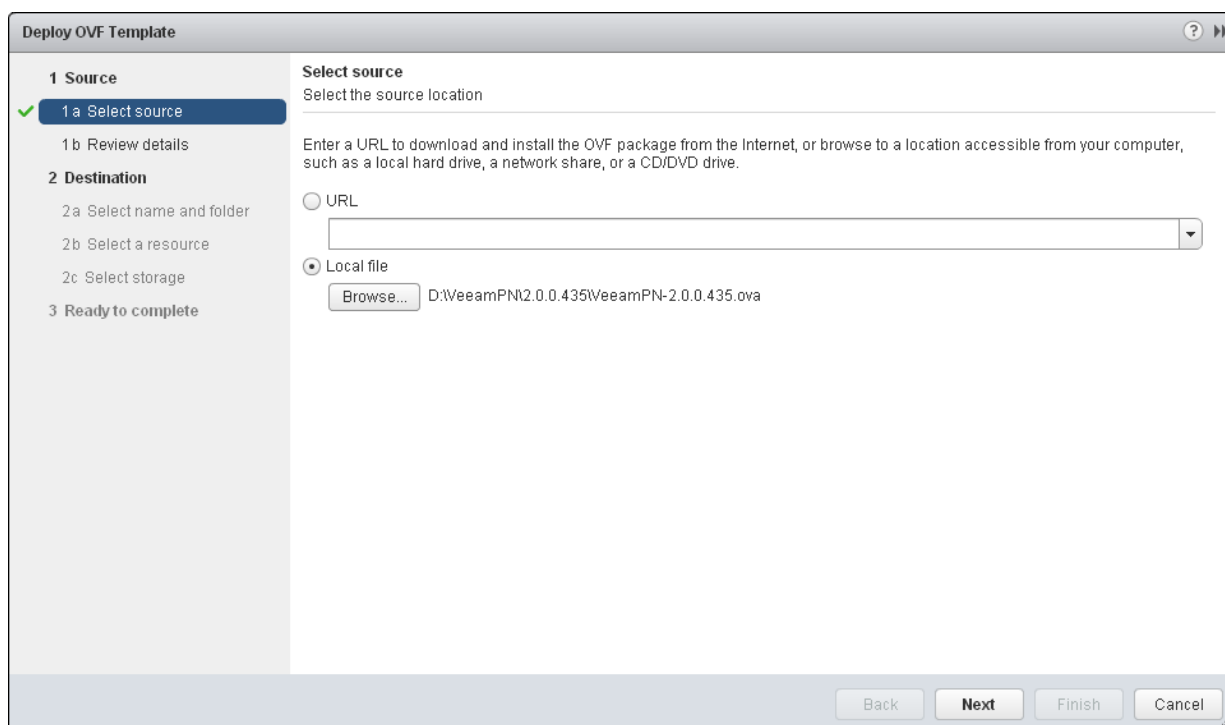
To set up a VPN connection from user machines to the local company site, you will:

1. [Deploy the network hub on the local company site](#)
2. [Register HUB site](#)
3. [Register clients for user machines in the Veeam PN portal](#)
4. [Configure OpenVPN on user machines](#)
5. [Establish a VPN connection from user machines to the network hub on the local company site](#)

# Step 1. Deploy Network Hub in Local Company Site

The network hub is the core of the VPN infrastructure. If you want to set up a VPN connection from user machines to company resources, you must deploy the network hub on the local company site.

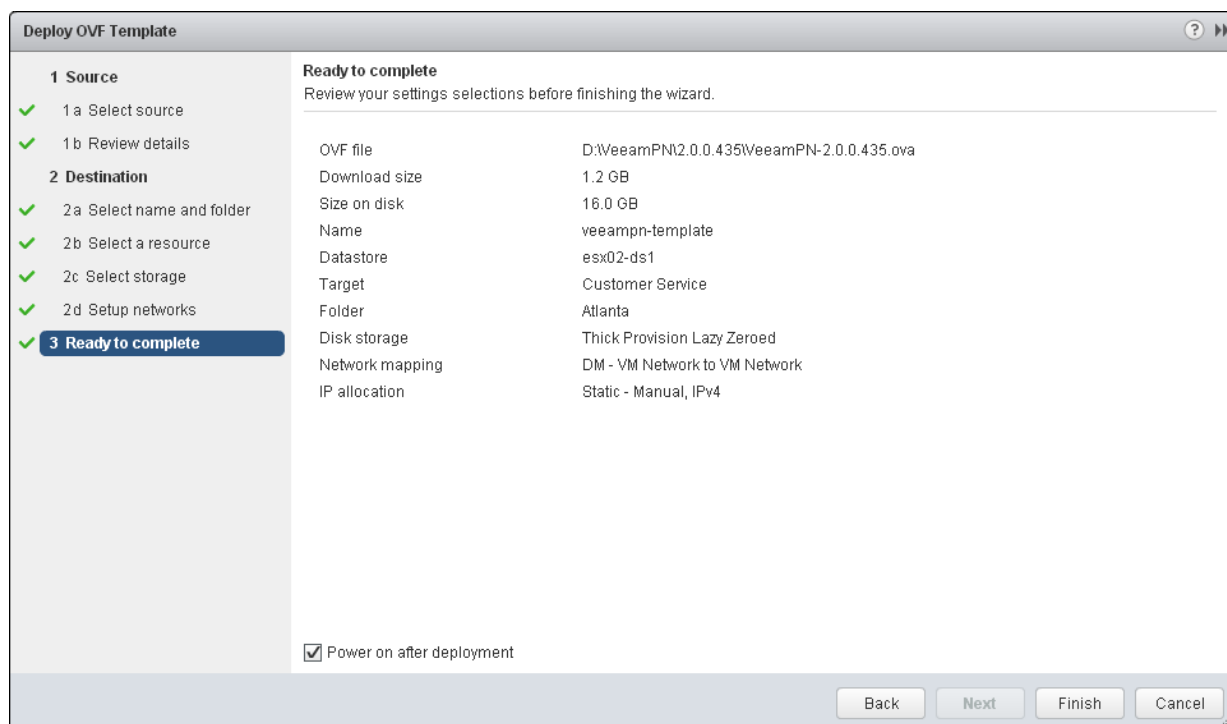
1. Download the Veeam PN OVA package from: <https://www.veeam.com/downloads.html> and save it in a network shared folder.
2. In VMware vSphere Web Client, open the hosts and clusters inventory list and select a host on which you want to place the network hub.
3. From the menu at the top of the working area, select **Actions > Deploy OVF Template**.
4. At the **Select source** step of the wizard, select **Local file**, click **Browse** and browse to the Veeam PN OVA package.



5. Follow the next steps of the wizard and specify network hub deployment settings: datastore on which the network hub disk must be placed, disk format, network to which the network hub must be connected and so on.
6. At the last step of the wizard, select the **Power on after deployment** check box and click **Finish**.

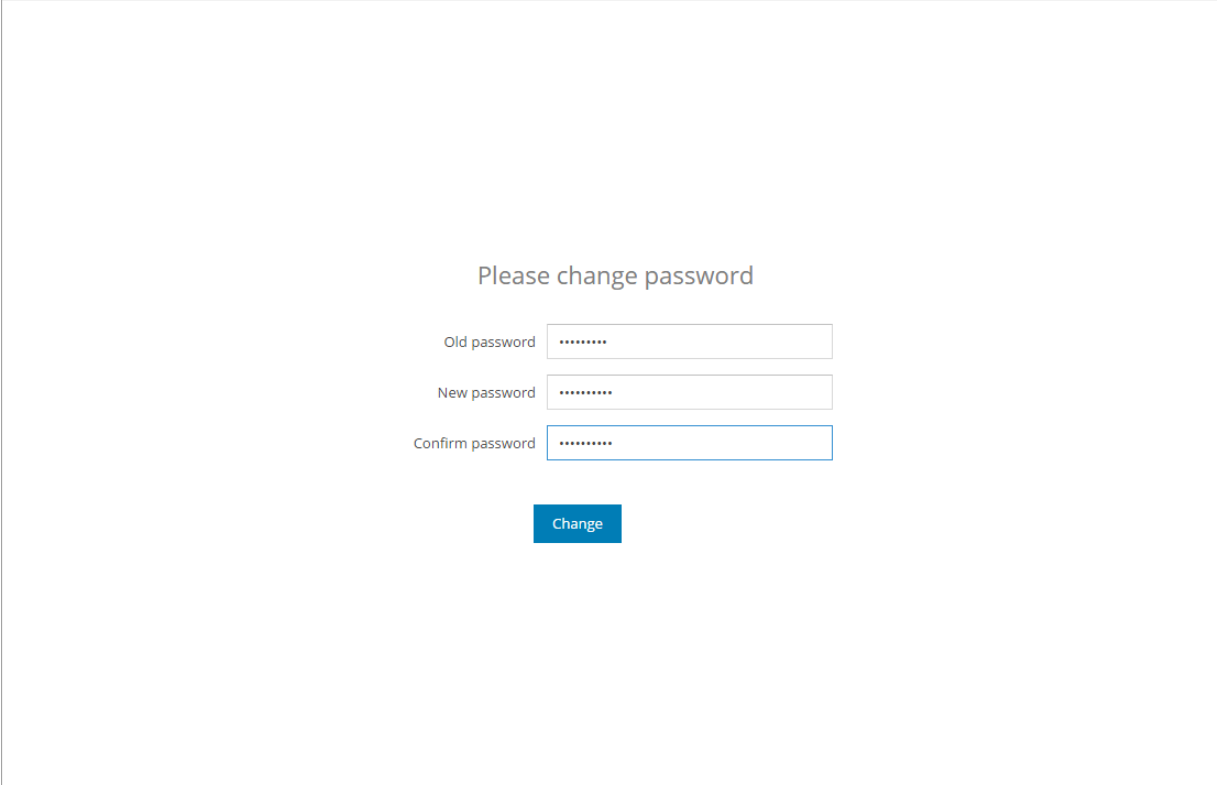
VMware vSphere will deploy the network hub on the selected host. The deployment process typically takes several minutes. Wait for this process to complete and proceed to network hub configuration.





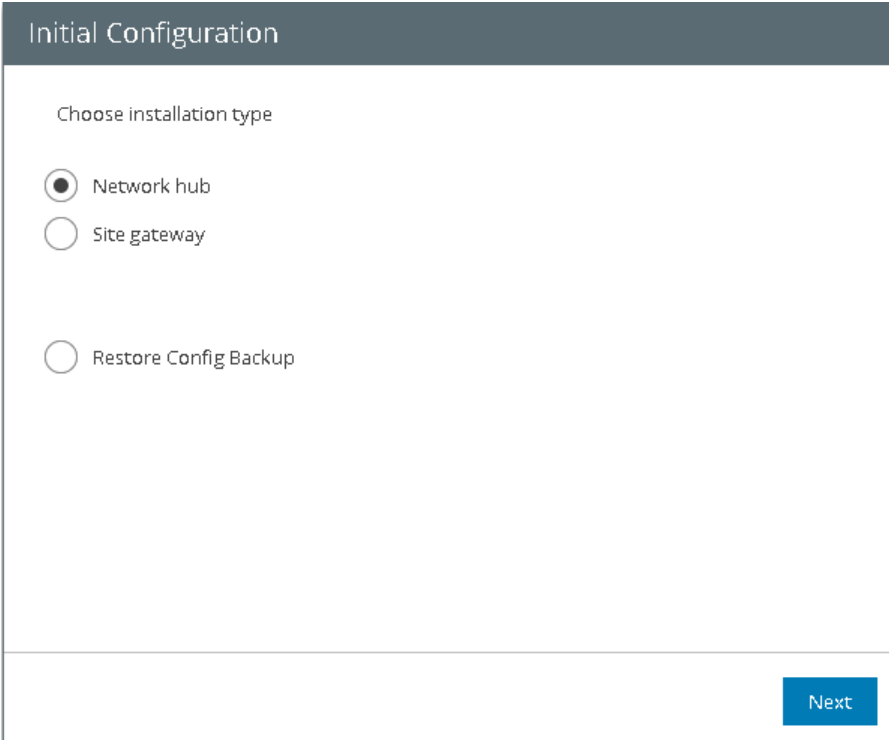
7. In VMware vSphere Web Client, navigate to the **Summary** tab and get an IP address of the network hub.
8. In a web browser, access the network hub portal by the following address: `https://<networkhubIP>`.  
The browser will display a warning notifying that the connection is untrusted. Ignore the warning and agree to proceed to the portal.
9. At the **Welcome to Veeam PN** screen of the portal, log in to the network hub portal using credentials of the built-in account:
  - Username: *root*
  - Password: *VeeamPN*
10. Click **Login**.

11. When prompted, change the password for the built-in account.



The screenshot shows a 'Please change password' dialog box. It contains three input fields: 'Old password', 'New password', and 'Confirm password', each with a masked password (seven dots). Below the fields is a blue 'Change' button.

12. At the first step of the **Initial Configuration** wizard, select **Network hub** and click **Next**.



The screenshot shows the 'Initial Configuration' wizard. The title bar is dark gray with the text 'Initial Configuration'. Below the title bar, the text 'Choose installation type' is displayed. There are three radio button options: 'Network hub' (selected), 'Site gateway', and 'Restore Config Backup'. A blue 'Next' button is located at the bottom right of the wizard window.

13. Specify parameters for a self-signed certificate that Veeam PN will use to secure communication in the VPN: the certificate key length and click **Next**.

### Initial Configuration

Specify the required information for the self-signed certificate generation

Name:

Encryption level:

PreviousNext

14. After the certificate is generated, click **OK**, then click **Next** to proceed to network hub configuration.
15. In the **Network hub public IP or DNS** name field, specify an IP address or full DNS name for the network hub. The IP address or DNS name must be public and accessible from remote user machines.

16. Select the **Enable point-to-site VPN** check box. In the **Protocol** and **Port** fields, leave default settings.

### Initial Configuration

Specify VPN settings

Network hub public IP or DNS name:

☐ Enable site-to-site VPN

Protocol:

Port:

☒ Enable point-to-site VPN

Protocol:

Port:

[Previous](#) [Finish](#)

17. Click **Finish**.

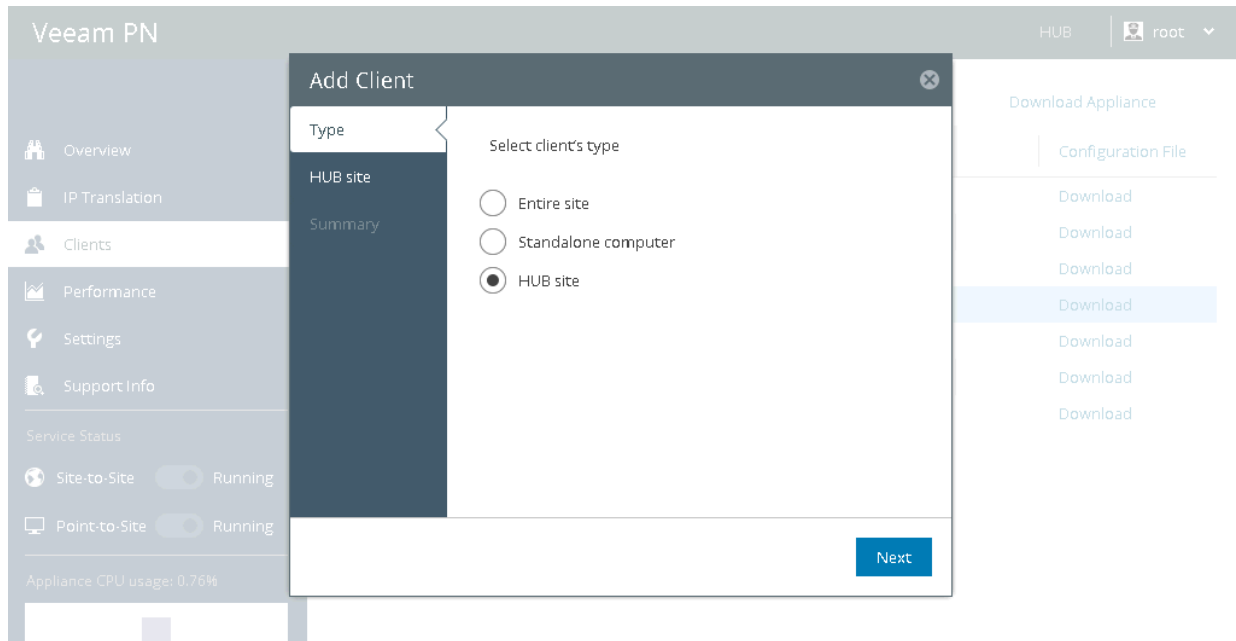
## Step 2. Register HUB Site

When you set up the network hub in a local site and want to make machines in this site accessible over the VPN, you must register this local site as a client in the network hub portal.

To register a hub site client:

1. Log in to the network hub portal as a Portal Administrator.
2. In the configuration menu on the left, click **Clients**.
3. At the top of the clients list, click **Add**.

4. At the **Type** step of the wizard, select **HUB site**.

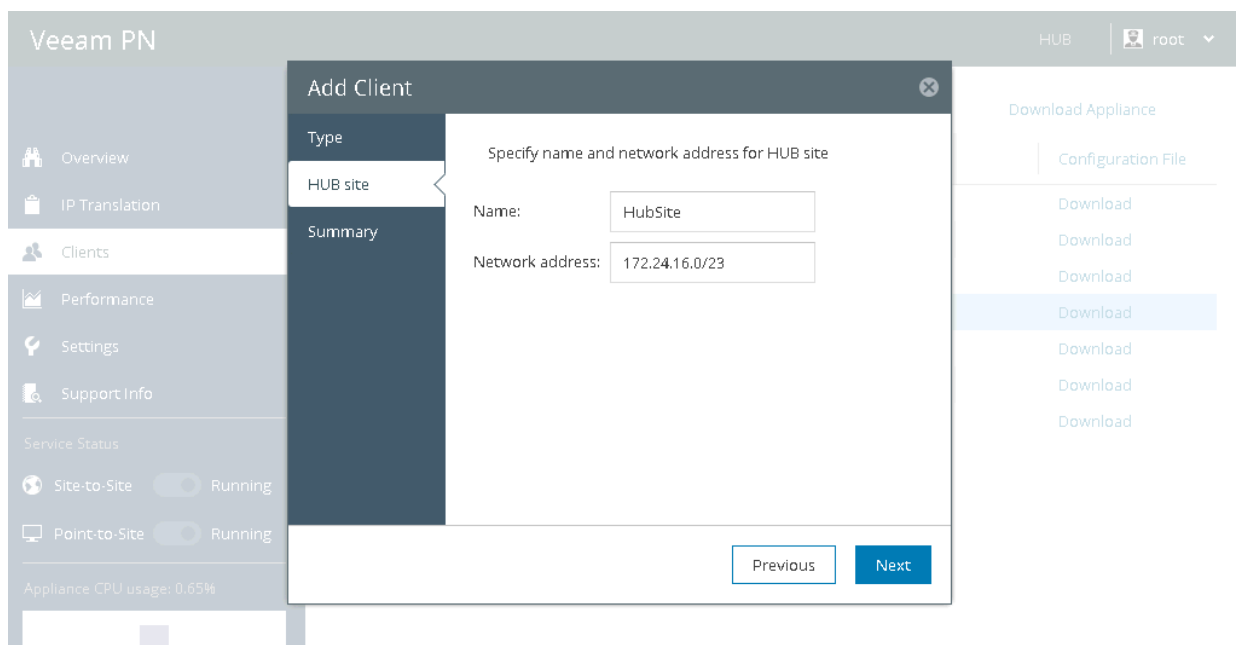


5. At the **Site** step of the wizard, enter details for the site where the network hub is deployed:

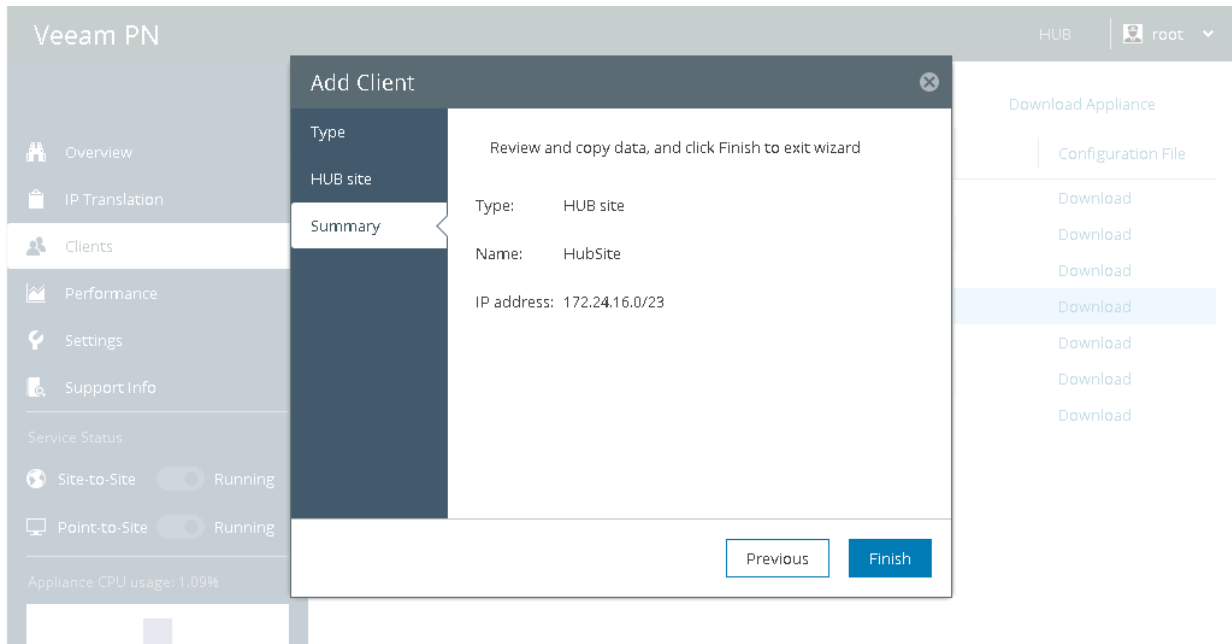
- In the **Name** field, enter a name for the site. The site name will be displayed in the list of clients.
- In the **Network address** field, enter the address of the network where the network hub is deployed using the CIDR notation.

## IMPORTANT

The site name must not contain space characters.



- At the **Summary** step of the wizard, review details of the site and click **Finish** to close the wizard.



#### IMPORTANT

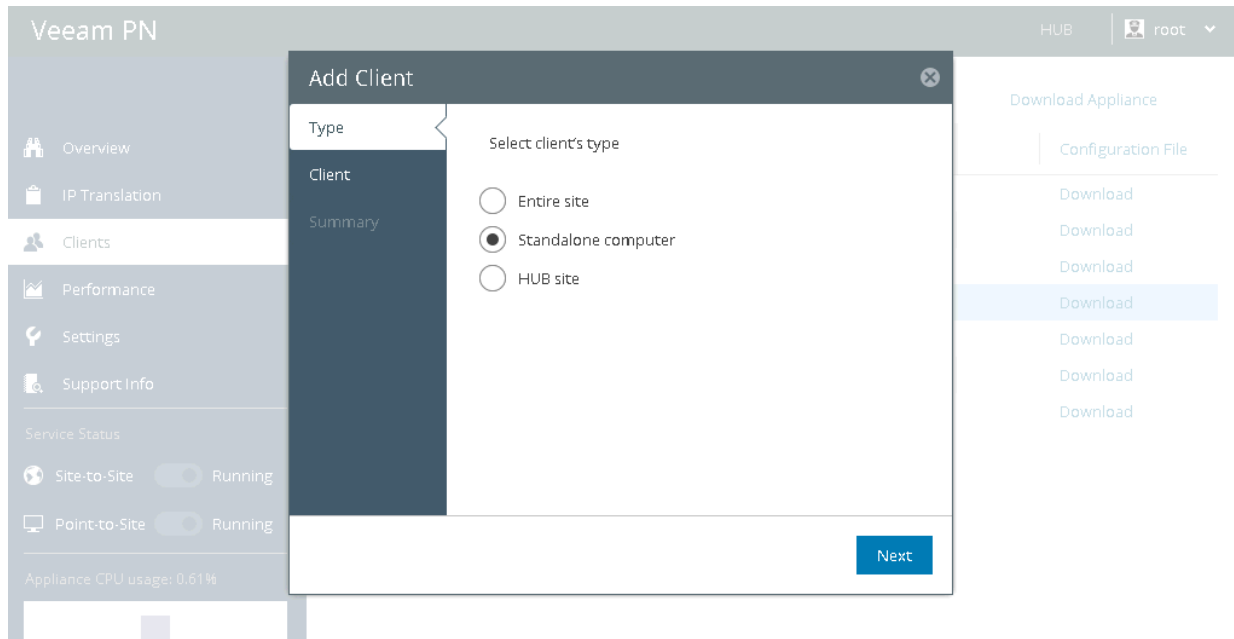
- After you register a hub site as a client, you do not need to perform additional configuration actions: download a configuration file and set it up (as described in the next step).
- Note that the hub site client always remains in the Disconnected state, which is an expected behavior.

## Step 3. Register Clients for User Machines

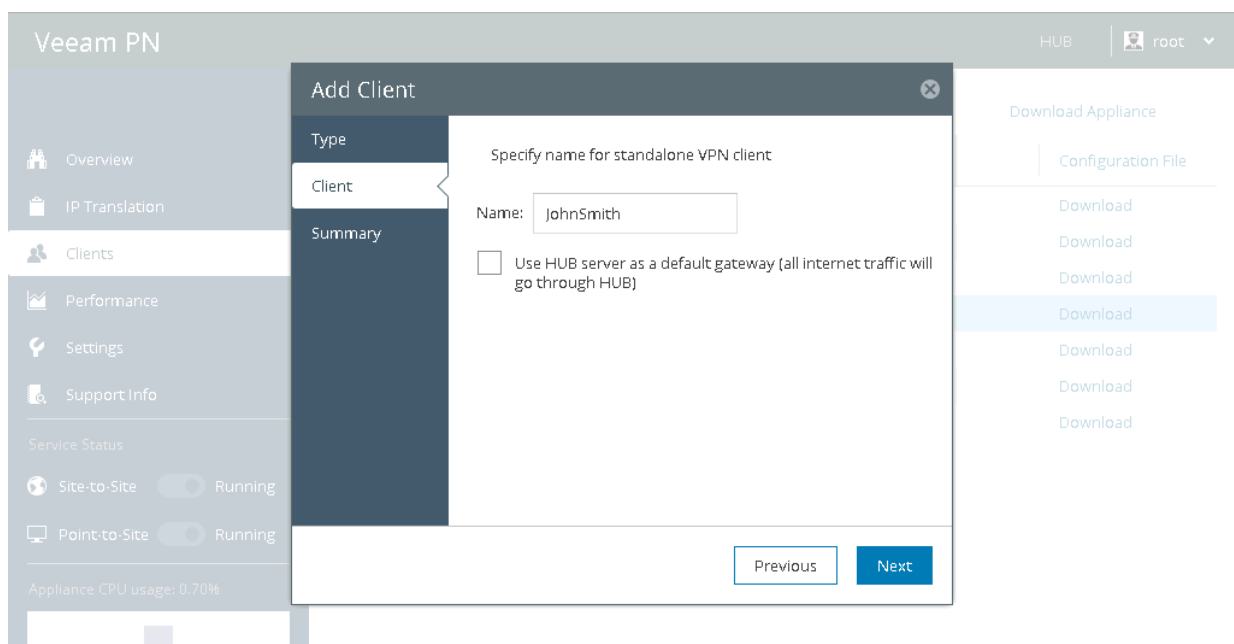
To provide users with access to company resources, you must register clients for these users in the Veeam PN portal. Veeam PN will generate configuration files for users. You will use these configuration files to set up a VPN connection on user machines.

- In the Veeam PN portal, in the configuration menu on the left click **Clients**.
- At the top of the clients list, click **Add**.

- At the **Type** step of the wizard, select **Standalone computer**.



- At the **Client** step of the wizard, enter a name for the user machine.



- At the **Summary** step of the wizard, click **Finish**.

Veeam PN will generate an XML file with VPN settings for the user. The XML file will be automatically downloaded to the default downloads folder. Save the downloaded file in a network shared folder accessible from the user machine.

- Repeat steps 1-5 for all users to whom you want to provide access.

## Step 4. Configure OpenVPN on User Machines

To let a user access company resources, you must configure VPN settings on the user machine. To do this, you must use OpenVPN software and configuration file generated by Veeam PN.

To configure OpenVPN on user machines:

1. Download the OpenVPN setup file for the user machine OS from: <https://openvpn.net/index.php/open-source/downloads.html>.
2. Run the OpenVPN setup file and install the product with default installation settings.
3. Place the client configuration file generated by Veeam PN in a folder where OpenVPN configuration files are stored: C:\Program Files\OpenVPN\config.
4. Repeat steps 1-3 for all users to whom you want to provide access.

## Step 5. Establish VPN connection from User Machines to Microsoft Azure

To establish a VPN connection from user machines to the local company site:

1. On a user machine, create a batch file with the following command:

```
openvpn-gui.exe --connect "C:\Program Files\OpenVPN\config\client.ovpn"
```

where C:\Program Files\OpenVPN\config\client.ovpn is a path to the user machine configuration file. Note that you must launch the command from the folder where OpenVPN is installed (C:\Program Files\OpenVPN\bin\ by default)

2. Run the batch file. Veeam PN will establish a connection from the user machine to the network hub.
3. Repeat steps 1-2 for all users to whom you want to provide access.

## Result

You have set up a VPN connection from user machines to the local company site. Machines running on the local company site are now accessible to users working remotely.



# Install Veeam PN on Ubuntu

You can deploy the Veeam PN appliance in the Microsoft Azure and Amazon AWS marketplaces or download an OVA template from <https://www.veeam.com/cloud-disaster-recovery-azure-download.html> and deploy it on premises. You can also deploy your own Ubuntu server and install Veeam PN directly from the Veeam Linux Repositories.

## TIP

You can also deploy Veeam PN using an installer script. For details, see [Install Veeam PN with Script](#).

## System Requirements

- Ubuntu 18.04
- 1 vCPU (Minimum)
- 1 GB vRAM (Minimum)
- 16 GB of Hard Drive space
- External Network Connectivity

## Installing Veeam PN on Ubuntu

To install Veeam PN on an Ubuntu machine, do the following. Note that you must have superuser rights.

1. Download and add the Veeam Software Repository Key to your system:

```
curl -k http://repository.veeam.com/keys/veeam.gpg | apt-key add -
```

2. Add Veeam PN to the list of sources in APT and run an APT update.

```
echo "deb [arch=amd64] http://repository.veeam.com/pn/public pn stable" > /etc  
/apt/sources.list.d/veeam-pn.list  
apt-get update
```

3. Install two packages: the Server and UI components.

```
apt-get -y install veeam-vpn-ui veeam-vpn-svc
```

Apt-get will list a significant amount of dependencies that must be installed as well. During the installation of packages, you may be asked to overwrite existing IPTables rules.

4. After the installation of packages is complete, you can log in to the Veeam PN web portal. To open Veeam PN web portal, open `https://<Veeam_PN_server_IP_address>` in a web-browser. Use your root user credentials to log in to the web portal.



Welcome to Veeam PN!

Username

Password

☐ Remember me

Login

# Install Veeam PN with Script

On Ubuntu 18.04 machine, you can deploy Veeam PN using the installer script. If you want to deploy Veeam PN using the script, you don't need to download the Veeam PN image. The script will download all required files from Linux repository. You can download the installer script (`VeeamPN-installer.run.sh`) at: <https://www.veeam.com/veeampn-download.html>.

Before you deploy Veeam PN, see [system requirements](#).

To install Veeam PN, run the installer script with the required parameters.

<pre>sudo bash ./VeeamPN-installer.run.sh -- -y -c -f</pre>	
<code>-c (--configure-system)</code>	Pre-configures the system before installation: configures ssh settings, installs updates.
<code>-f (--force)</code>	Forces the installation: ignores pre-checks of additional tools (Apache, WireGuard, etc.)
<code>-y (--quiet)</code>	Switches to quiet mode (unattended installation): the wizard will not ask you to confirm installation of required tools.
<code>-v (--version)</code>	Shows version information.
<code>-h (--help)</code>	Shows help.

# Install Free SSL Certificate on Veeam PN Appliance Host

During the installation, Veeam PN generates a self-signed certificate. To mitigate the risk of MITM attacks, you can obtain and install a free SSL certificate from [Let's Encrypt](#).

If you have additional questions when installing the certificate, refer to [Certbot instructions](#).

## NOTE

All commands mentioned in this topic require root privileges.

To install the certificate, do the following:

1. Open the console of Veeam PN appliance machine.
  - [VMware vSphere] Open the TTY console of the VM where Veeam PN appliance is deployed.
  - [Microsoft Azure] In PuTTY, use the Veeam PN appliance hostname to connect to the console.
2. Add a PPA (Personal Package Archive) to the list of repositories and install Certbot:

```
apt-get update
apt-get install software-properties-common
add-apt-repository universe
add-apt-repository ppa:certbot/certbot
apt-get update
apt-get install certbot python-certbot-apache
```

3. Automatic obtaining of a certificate won't work on the VeeamPN setup. Thus, you must do the procedure manually. Run the following command to launch the manual plugin:

```
certbot certonly --manual
```

4. Follow the instructions of the wizard:
  - a. Enter your email address.
  - b. Enter FQDN of the hub server.
  - c. Select Y or N to select is it okay that you IP will be logged.
5. After finishing the wizard, you will see the description of verification steps. Certbot will display the following:
  - A testing URL (for example: `http://<domain_name_of_VeeamPN_hub>/.well-known/acme-challenge/XGqBCdZcx__vLZgZblxGbxIm1Vh9Wvy3w0yc54k`).
  - Testing data that must be returned from the requested URL (for example: `x__vLZgZblxGbxIm1Vh9F14Wmvy3w0yc54k.J7vHny3k6jqUUXoH0QfwwgRc93SudMY8Ddv`)

To follow instructions from LetsEncrypt, open a second SSH console to the same VeeamPN server.

6. In the second console, modify the `http_redirector.conf` file:

- a. Open the `/etc/apache2/sites-enabled/http_redirector.conf` file with a text editor.

```
nano /etc/apache2/sites-enabled/http_redirector.conf
```

- b. In the file content, add a place for files lookup under the `/var/www/certbot` line and comment 3 lines of original redirection instructions. See the example below:

```
<VirtualHost *:80>
DocumentRoot /var/www/certbot/
# RewriteEngine On
# RewriteCond %{HTTPS} off
# RewriteRule ^(.*)$ https://%{HTTP_HOST}%{REQUEST_URI}
</VirtualHost>
```

7. Create a requested file for URL with requested data in it:

- a. Create a path for the testing URL (you only need to add the part after the domain name to `/var/www/certbot/`). Thus, you must create a directory for requested sample URL (see step 5):

```
mkdir -p /var/www/certbot/.well-known/acme-challenge/
```

- b. Create a requested file for URL with requested data in it:

```
echo '<data>' > <full path to file>/<requested filename>
```

In our example, it will be like the following:

```
echo 'x_vLZgZblxGbxIm1Vh9F14Wmvy3w0yc54k.J7vHny3k6jqUUXoH0QfwwgRc93SudMY8Ddv'
> /var/www/certbot/.well-known/acme-challenge/XGqBCdZcx__vLZgZblxGbxIm1Vh9Wvy3
w0yc54k
```

If the command returns the *Access Denied* code, do the following:

- a. Go to the `/var/www/certbot/.well-known/acme-challenge/` directory and create an empty file.

```
cd /var/www/certbot/.well-known/acme-challenge/
touch XGqBCdZcx__vLZgZblxGbxIm1Vh9Wvy3w0yc54k
```

- b. Open the file with a text editor and the requested data.

```
nano XGqBCdZcx__vLZgZblxGbxIm1Vh9Wvy3w0yc54k
```

8. Restart the Apache HTTP server.

```
apachectl restart
```

9. In the first SSH console, press [Enter] to proceed the verification process.

The successful result should look like the following:

```
Congratulations! Your certificate and chain have been saved at:
/etc/letsencrypt/live/<your FQDN of VeeamPN server>/fullchain.pem
Your key file has been saved at:
/etc/letsencrypt/live/<your FQDN of VeeamPN server>/privkey.pem
```

10. Edit the `veeam-pn-site.conf` config file to change SSL certificates.

```
nano /etc/apache2/sites-enabled/veeam-pn-site.conf
```

In the `veeam-pn-site.conf` file, change the filenames for `SSLCertificateFile` and `SSLCertificateKeyFile`. Replace default filenames with the names of files obtained from Let's Encrypt (see the previous step):

- Use full path to `fullchain.pem` for `SSLCertificateFile`
- Use full path to `privkey.pem` for `SSLCertificateKeyFile`

11. Edit the `http-redirector.conf` file to restore original HTTP to HTTPS redirection.

- a. Open the `http-redirector.conf` file using a text editor.

```
nano /etc/apache2/sites-enabled/http-redirector.conf
```

- b. Edit the file as shown in the example below.

```
<VirtualHost *:80>
    RewriteEngine On
    RewriteCond %{HTTPS} off
    RewriteRule ^(.*)$ https://%{HTTP_HOST}%{REQUEST_URI}
</VirtualHost>
```

12. Restart the Apache HTTP server.

```
apachectl restart
```

# Improve Veeam PN Performance

The **txqueuelen** parameter of an interface in the Linux kernel. It limits the number of packets in the transmission queue in the interface's device driver.

The default value of **txqueuelen** is 1000 for Veeam PN appliance server deployed from Azure Marketplace or from OVA template. Values of up to 8000 have been used successfully to further improve performance. If a host is low performance or has slow links, having too big txqueuelen may disturb interactive performance.

To change the value of **txqueuelen**, log in to the Veeam PN appliance TTY console and run the following command:

```
ifconfig ens160 txqueuelen 4000
```