

nuagenetworks eXperience



Quick Start Guide

11.10.2016 v3

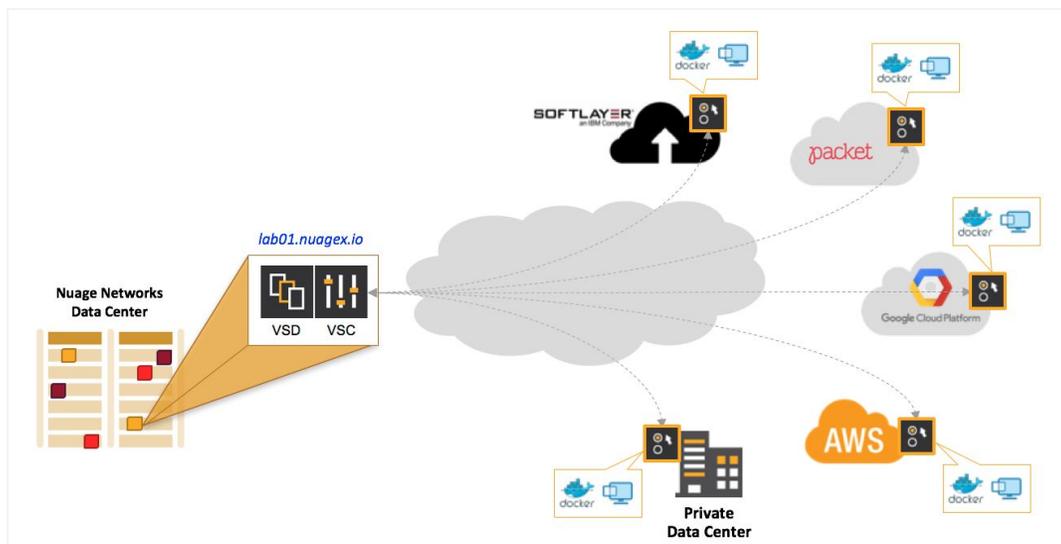
Nuage Networks
755 Ravendale Drive
Mountain View, CA 94043



Overview

This guide is designed to familiarize new users of the Nuage Networks eXperience (Nuage X) with the platform and how to use it to deploy a Nuage Networks VSP instance to complete some initial testing. The platform includes a documentation and knowledge base section for anyone looking to learn more about the Nuage Networks VSP SDN solution and the Nuage Networks VSP API.

The Nuage Networks VSP comprises of three elements, the Nuage X lab will only include the Virtualized Services Directory (VSD) and the Virtualized Services Controller (VSC), with the user providing the host where the Virtualized Router & Switch (VRS) will be installed, which will connect workloads running on the host to the Nuage Networks overlay network.



Goals

1. Introduce the Nuage Networks eXperience (Nuage X) service
2. Walk through all of the features available through the Nuage X platform
3. Successfully deploy a Nuage Networks VSP instance
4. Successfully connect a VM or bare metal host the Nuage Networks VSP instance
5. Successfully deploy containers and VM based workloads on the new connected host
6. Complete a basic connectivity test



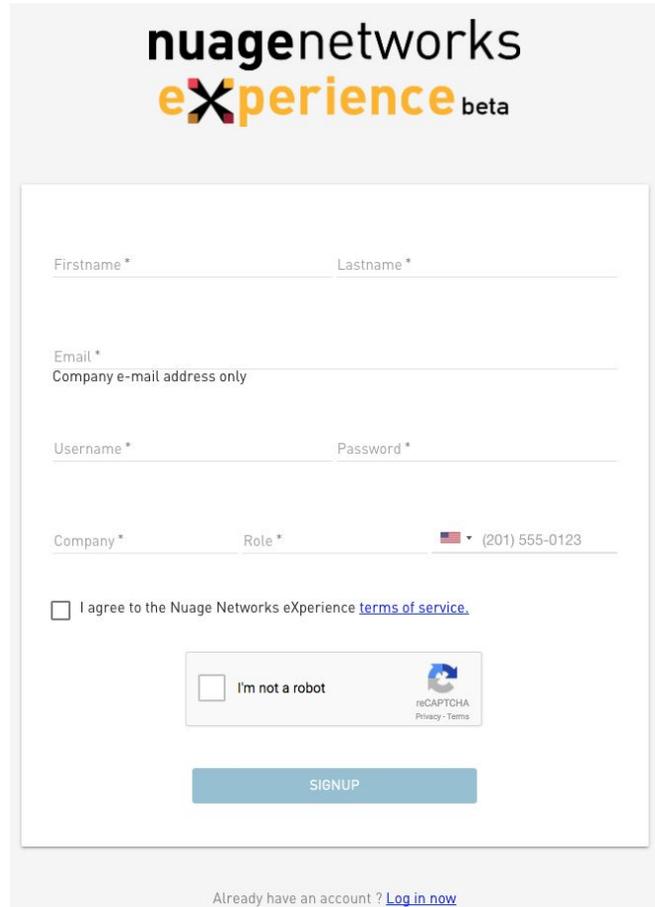
Requirements

- Familiarity with Linux operating systems and Software Defined Networking (SDN) is not required, but desired
- The platform does not deploy any hosts, therefore, the user must provide their own host (hypervisor in BM or VM). The host can be in a public cloud (AWS, GCE, Azure) or a BM service (Softlayer, packet.net) or in a private datacenter
- Open access to the public IP address of the deployed lab (provided along with a deployed lab) and the following ports (TCP 8443, 6633, 7406 and 7509)



Registration

In order to use the platform, a user must first create an account at <http://nuagex.io/signup>, where they will need to fill-out the following form:



The registration form for Nuage Networks eXperience beta includes the following fields and elements:

- nuagenetworks eXperience beta** logo at the top.
- Fields for **Firstname *** and **Lastname ***.
- Field for **Email *** with the note "Company e-mail address only".
- Fields for **Username *** and **Password ***.
- Fields for **Company *** and **Role ***, with a phone number field containing a US flag icon and "(201) 555-0123".
- A checkbox for "I agree to the Nuage Networks eXperience [terms of service](#)".
- A reCAPTCHA widget with the text "I'm not a robot" and a "reCAPTCHA Privacy - Terms" link.
- A blue **SIGNUP** button.
- A link at the bottom: "Already have an account ? [Log in now](#)".

An email will be automatically generated and sent to the e-mail address provided for confirmation, and once the user completes the confirmation process, the account will be sent for approval to the Nuage X admins. The approval process generally takes 24-48 hours to process.



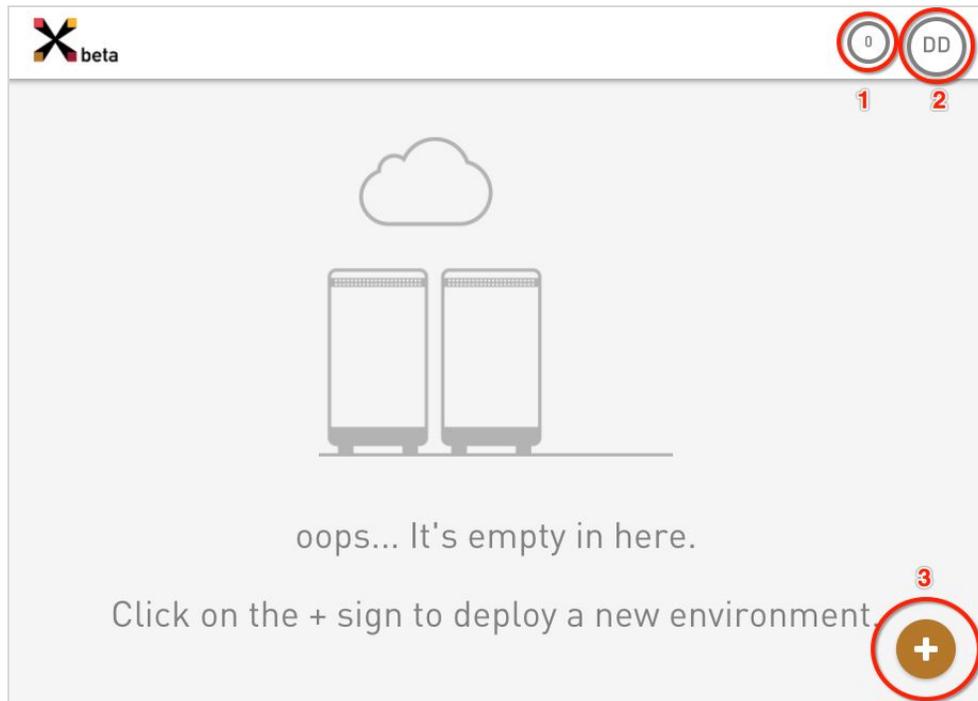
Login

Once an account has been approved, the user will be immediately notified via e-mail and they will be able to login at <http://nuagex.io/login> using the username and password entered during the registration process

The image shows a login form for Nuage Networks eXperience beta. The form is centered on a light gray background. At the top, the logo reads "nuagenetworks" in black, "eXperience" in orange with a stylized 'X', and "beta" in a smaller black font. Below the logo is a white rectangular box containing two input fields: "Username*" and "Password*", each with a horizontal line for text entry. A blue button with the text "LOGIN" is positioned below the input fields. At the bottom of the form, there are two links: "Don't have an account yet ? [Register](#)" and "[Forgot your password ?](#)".

User Dashboard

The user dashboard is the first screen that user will see after logging into the platform. The dashboard has three key buttons, Jobs, Account Settings & Create Lab:



1. Jobs

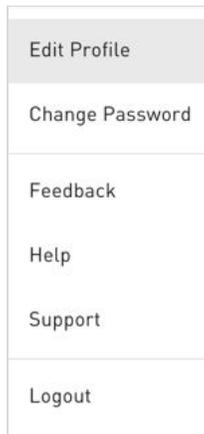
This is the list of tasks that the user has initiated. A "0" means that all tasks requested by the user have been completed. Any pending task will show a "1" and a red circle until the task completes (as follows)





2. Account Settings

Users can edit their profile in the “account settings” icon along with providing feedback and/or requesting help, or logging out

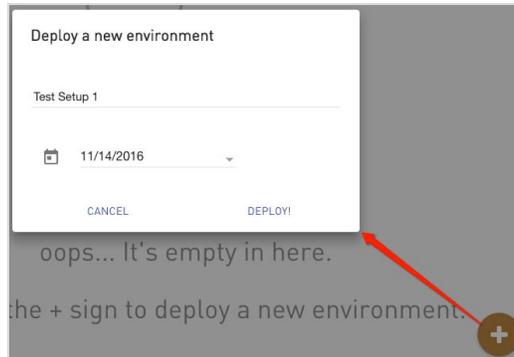


3. Create a new environment

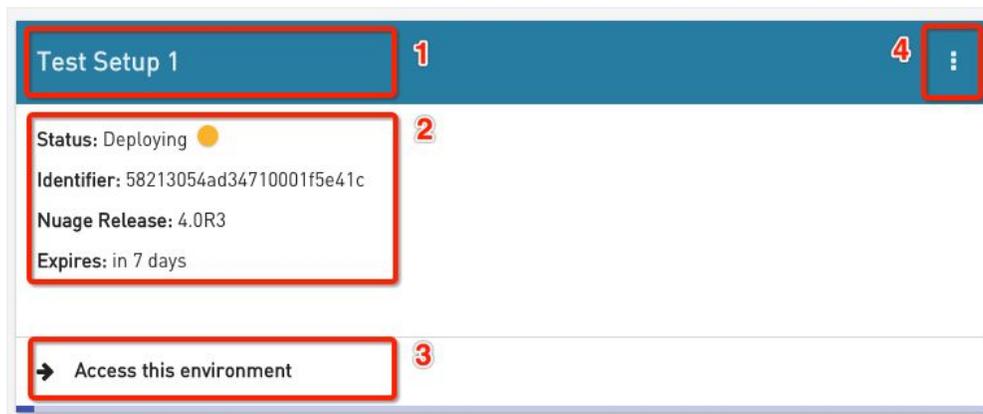
The button on the bottom right can be used to deploy a new Nuage Networks VSP instance

Deploying Nuage Networks VSP Instances

In order to deploy a Nuage Networks VSP instance, the user needs to specify a name and an expiration date. The Nuage Networks VSP instance will automatically get deleted on the expiration date.



Deploying a Nuage Networks VSP will display the following lab specific section that shows the status of the instances, the release, the expiration and a link to access the environment



1. Lab Name

The name of the lab deployed.

2. Lab Information

This section includes the Status of the lab, a unique identifier, the software release and the expiration date. The “status” of a newly created lab will transition from “Deploying” to “Initializing” to “Started”, which is the final state. “Errored” status is a transitional state that may get displayed if an issue occurs during the lab

deployment, but measures have been put in place to automatically recover from errors.

3. Lab Access Details

To get more details about the lab, gain access to documentation and additional support, the user should click on the “Access this environment” link

The screenshot displays the Nuage Networks VSP Lab Instance 1 interface. At the top, there is a navigation bar with the Nuage logo and a 'beta' label. Below the navigation bar, there is a breadcrumb trail showing 'Test Setup 1' and a 'DELETE' button. The main content area is divided into two sections: 'Setup' and 'Requirements'.

The 'Setup' section features a diagram illustrating the lab architecture. On the left, a box labeled 'Nuage Networks DataCenter' contains 'Nuage Networks VSP Lab Instance 1', which includes 'VSD (Management)' and 'VSC (Control)'. On the right, a box labeled 'Public Cloud or Private DC' contains 'Remote Host A' and 'Remote Host B', both with 'VRS (Management)' components. Dashed red lines indicate connections between the VSD/VSC components and the VRS components on the remote hosts.

Below the diagram, the text explains that the deployed environment includes the management plane (VSD) and the control plane (VSC) of the Nuage Networks VSP, and requires the user to provide their own hosts (baremetal servers or virtual machines), then install the Nuage Networks VRS (Virtual Router & Switch) on that host to complete the Nuage Networks VSP deployment. It also states that once the VRS on the remote host is connected to the lab instance, workload containers or virtual machines can be deployed and connected to the managed overlay network. Additionally, it mentions that pre-provisioned workload policy templates and sample commands are available for quick connection to test workloads.

The 'Requirements' section states that the lab is publicly accessible, but certain ports must be open for the remote host to connect: TCP: 6633 (OpenFlow).

On the right side of the interface, there is a sidebar with 'Environment information' and 'Nuage VSD access details'. The 'Environment information' section shows the status as 'Started', the identifier as '582505b19ccafa00019784f3', the hostname as '582505b19ccafa00019784f3.labs.nuagex.io', the expiration time as 'in 17 hours', the template as 'Nuage Network VSP 4.0R5', and the Nuage release as '4.0R5'. The 'Nuage VSD access details' section shows the username as 'admin', the password as a masked field, and the organization as 'csp'. There is an 'ACCESS VSD' button. At the bottom of the sidebar, there are icons for 'SUPPORT', 'HELP', and 'FEEDBACK'.

4. Lab Actions

This is a shortcut to either delete the lab or access the VSD Architect



The above command will install all required dependencies, download and install the VRS before finally configuring the VRS to connect to the user's lab.

To manually check the status of the connection from the Nuage Networks VRS on the host to the Nuage Networks VSC in the VSP instance, the user can execute the following command and should see the output highlighted below:

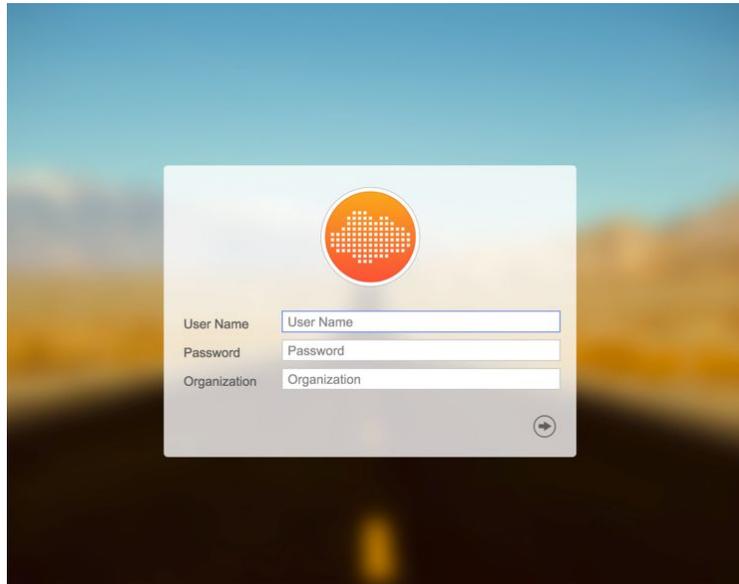
Command and sample output (is_connected must show true):

```
[root@usersHOST]# ovs-vsctl show
    Bridge "alubr0"
      Controller "ctr11"
        target: "tcp:10.0.0.3:6633"
        role: master
        is_connected: true
      Port svc-pat-tap
```

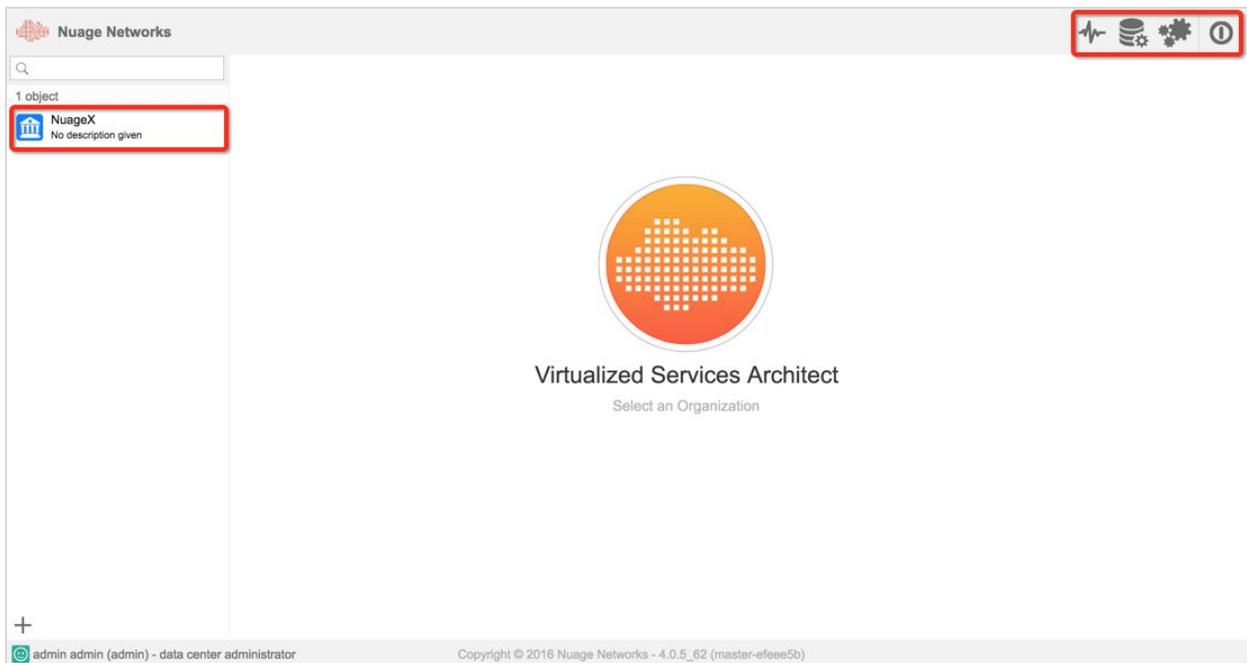


VSP Administration & Management

Managing the Nuage Networks VSP instance is done using the Nuage Networks VSD Architect at the https://<lab_ip>:8443 interface, with the URL and credentials provided within the lab dashboard view (right column - middle section)

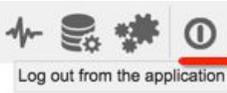


Once the user is logged into the VSD architect, the following dashboard will be displayed. There are two main areas to focus on in this view, the left side shows the tenants provisioned, and the top right are the main “admin” user configuration areas

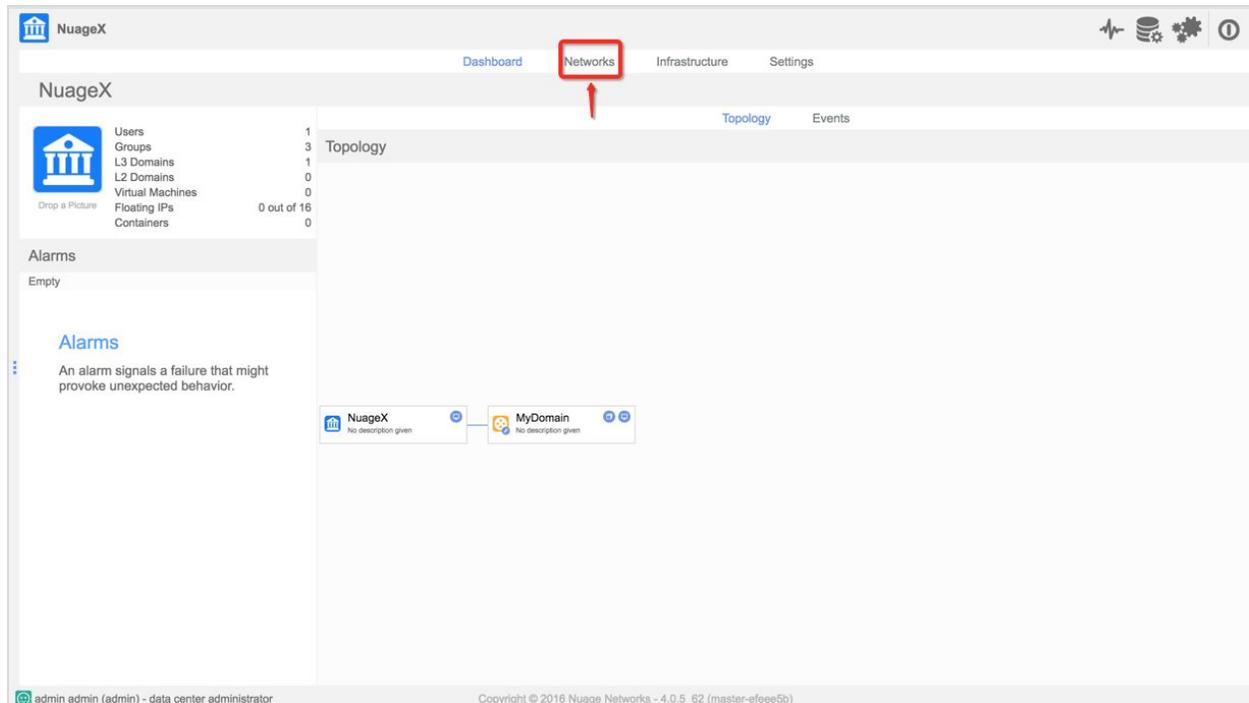




As “admin” user, the following four areas/actions are available:

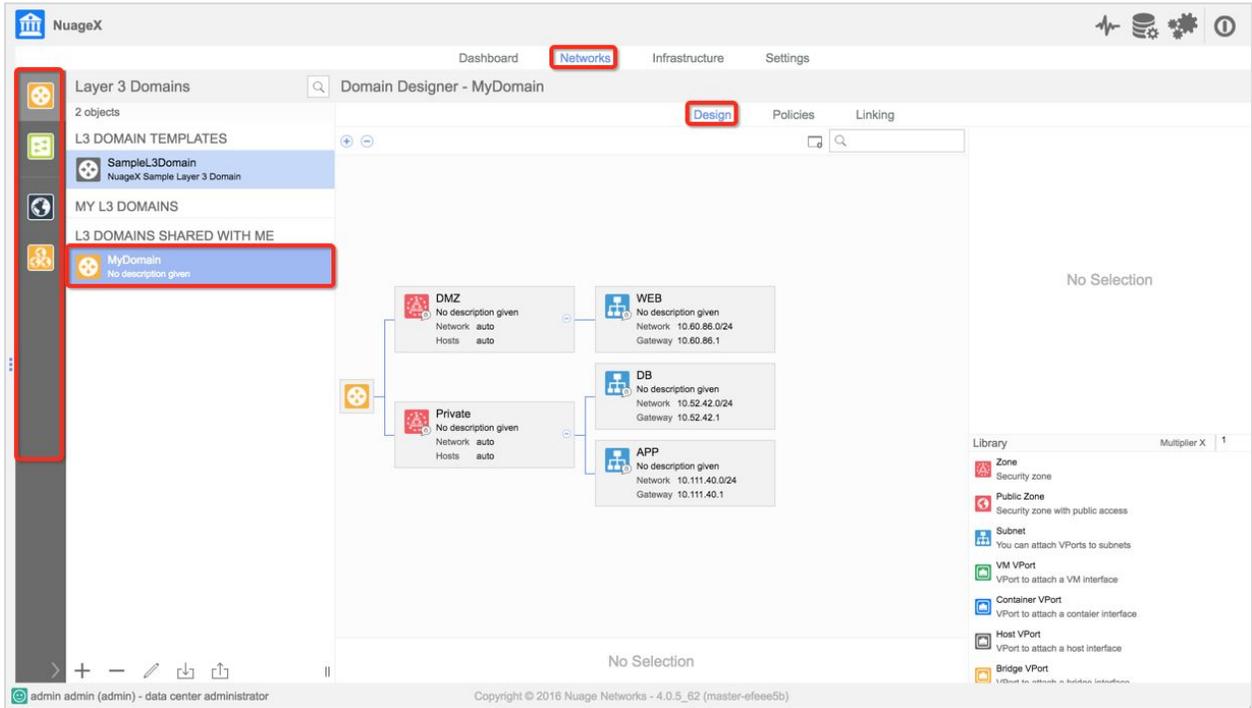
<p>Monitoring Console</p>		<p>The Monitoring Console provides a complete view of the Nuage VSP components apart from VSD, and their current operational state.</p>
<p>Platform Configuration</p>		<p>All of the Nuage Networks Platform configuration variables can be modified using this view</p>
<p>User Preferences</p>		<p>Logged in users can modify their profile under user preferences</p>
<p>Logout</p>		<p>To logout of the VSD architect view</p>

In order to view a particular tenant’s configuration dashboard, the user should choose the tenant from the left. They will then be able to view that tenants overlay network design. By default, the Dashboard/Topology view will be selected. For a more detailed view, the user must select the “Networks” tab highlighted in the capture below.





In the Tenant's "Networks" view, the user can view the Layer-2 and/or Layer-3 overlay networks available (templates and instances using these template). This quick start guide is not intended to work through all of the features, so for more details on how these features work, the Nuage Networks VSP User Guide is a better source and is included in as part of the deployed lab.



Connecting Sample Workloads

The lab includes sample commands to deploy 3 containers on the newly connected workload that match the template created in advance on VSD.

The screenshot displays the Nuage Networks VSD interface. At the top, there is a navigation bar with the 'beta' logo on the left and a '0' indicator and 'DD' button on the right. Below this is a blue header with a back arrow and 'Test Setup 1' text, and a 'DELETE' button on the right.

The main content area is titled 'Sample containers deployment' and is divided into two columns. The left column contains instructions and a table of Docker commands. The right column contains environment information and Nuage VSD access details.

Sample containers deployment

Once the remote HOST has successfully connected to the Nuage Networks VSD, you are now ready to start deploying test workloads that use the Nuage Networks VSP overlay. Here are sample commands and files that can be used as a quick way to get started

On the connected VRS host (after running the "Remote VRS Command"), execute the following three commands to deploy three containers, each on a separate application tier

WEB	<code>docker run -dit -e "NUAGE-DOMAIN=MyDomain" --name web -e "NUAGE-ZONE=DMZ" -e "NUAGE-NETWORK=WEB" -e "NUAGE-ENTERPRISE=NuageX" -e "NUAGE-USER=admin" --net=none nginx:stable-alpine</code>	
APP	<code>docker run -dit -e "NUAGE-DOMAIN=MyDomain" --name app -e "NUAGE-ZONE=Private" -e "NUAGE-NETWORK=APP" -e "NUAGE-ENTERPRISE=NuageX" -e "NUAGE-USER=admin" --net=none nginx:stable-alpine</code>	
DB	<code>docker run -dit -e "NUAGE-DOMAIN=MyDomain" --name db -e "NUAGE-ZONE=Private" -e "NUAGE-NETWORK=DB" -e "NUAGE-ENTERPRISE=NuageX" -e "NUAGE-USER=admin" --net=none nginx:stable-alpine</code>	

Verify that the containers have successfully connected to the overlay

- `docker exec web ip addr`
- `docker exec app ip addr`
- `docker exec db ip addr`

Environment information

Status: Started ●

Identifier: 582505b19cca0019784f3

Hostname: 582505b19cca0019784f3.labs.nuagex.io

Expires: in 17 hours

Template: Nuage Network VSP 4.0R5

Nuage Release: 4.0R5

Nuage VSD access details

Username: admin

Password: *****

Organization: csp

[ACCESS VSD](#)

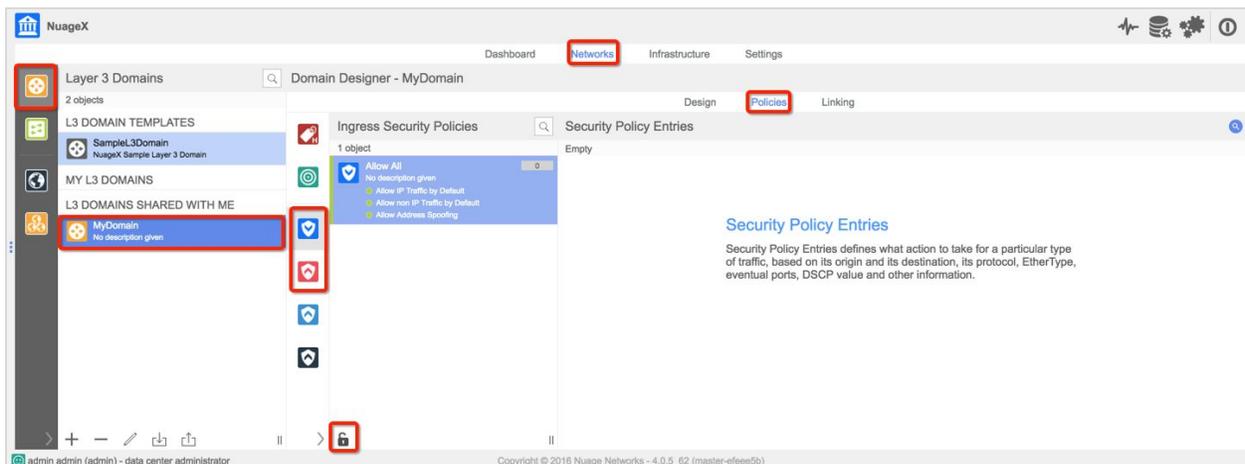
SUPPORT **HELP** **FEEDBACK**

Executing the commands listed on the host will instantiate containers, then using the three "docker exec" commands that follow will dump the IP addresses assigned for each container, so that the user can execute a connectivity test. The user can then modify these containers to deploy their own workloads.

Network & Security Policy Configuration

For simplicity, the lab is deployed with relaxed network security rules that allow all traffic to flow between workloads in the same networks as well as on different networks in the same routed domain. However, this configuration is not desirable in a production environment and does not take advantage of the microsegmentation features built into the Nuage Networks VSP. This topic is described in great detail in the Nuage Networks VSP User Guide (Section: Security and Forwarding Policies), but we will provide an overview for new users. Here is where a user of Nuage X can find the “policy” section on the VSD GUI:

[Networks in the 1st Tier TAB > L3 Domains > Select L3 Domain Shared With Me > Then Choose “Policies” from the 2nd tier TAB]



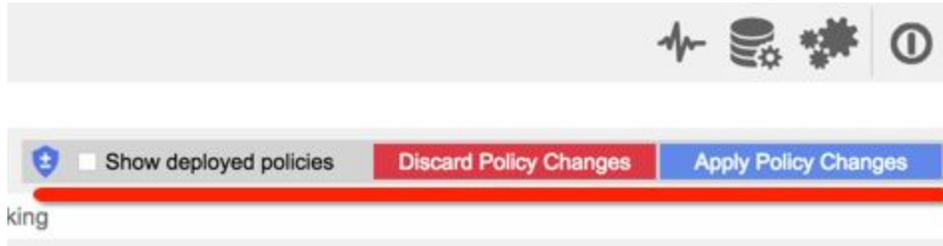
Below are some basic descriptions of the main topics that are relevant to network and security policies:

Ingress Security Policies: Provides security policy for traffic from the Endpoint into the network. For Ingress security policies, the security policy is applied to the Source location (Endpoint) and the Remote Network is the Destination Network.

Egress Security Policies: Provides security policy for traffic from the network to the Endpoint. For Egress security policies, the Location is the Destination Location, and the Remote Network is the Source Network. Typical usage for Egress security policies is to restrict traffic coming from outside the domain. For example, Internet traffic, traffic from an organization VPN.



In order to modify security policies, the user must be in “Edit” mode (lock icon at the bottom) must be clicked to enter “Edit” mode. Once completed, the user must either discard or apply their changes, but clicking on the respective button on the top right of the screen.





Deleting a VSP Lab

In order to delete a deployed lab, there are two options to complete that task. Within the lab environment detailed view, clicking on the “DELETE” button is one option. The other is in the main dashboard view, by clicking on the lab actions “:” button, then selecting “DELETE” from the pop-up menu. The user will be prompted to confirm the “delete” action (Note: This action cannot be undone)



OR





Documentation

Along with the Nuage Networks VSP instance, the user will also be able to gain access to view or download the html version of the API programming guide, the Nuage Networks VSP installation guide as well as the user guide.

The screenshot shows the Nuage Networks VSP interface. At the top left is the 'X beta' logo. The top navigation bar includes a back arrow, 'Test Setup 1', and a 'DELETE' button. The main content area has tabs for 'GETTING STARTED', 'DOCUMENTATION', 'REMOTE VRS', and 'SAMPLE CONTAINERS'. The 'DOCUMENTATION' tab is active, showing a list of documents under 'NuageX documentation' and 'Nuage Networks documentation 4.0R5'. A red box highlights the following documents:

- Nuage Networks eXperience Quick Start Guide
- Nuage VSP - VSD 4.0R5 REST API Programming Guide
- Nuage VSP 4.0.R5 Install Guide
- Nuage VSP 4.0.R5 User Guide

On the right side, there is an 'Environment information' panel with the following details:

- Status: Started (green dot)
- Identifier: 582505b19ccafa00019784f3
- Hostname: 582505b19ccafa00019784f3.labs.nuagex.io
- Expires: in 17 hours
- Template: Nuage Network VSP 4.0R5
- Nuage Release: 4.0R5

Below this is the 'Nuage VSD access details' panel:

- Username: admin
- Password: *****
- Organization: csp
- ACCESS VSD button

At the bottom right, there are three icons for 'SUPPORT', 'HELP', and 'FEEDBACK'. A URL is visible at the bottom left: <https://s3.amazonaws.com/publicnuagex/NuageX-QuickStartGuide-Public-v1.pdf>



Help

For any issues with the Nuage X platform or a deployed instance, the user should send an email to nuagex-help@nuagenetworks.net

About Nuage Networks

Nuage Networks (www.nuagenetworks.net) brings a unique combination of groundbreaking technologies and unmatched networking expertise to the enterprise and telecommunications industries. The Silicon Valley-based business has applied radically new thinking to the problem of delivering massively scalable and highly programmable SDN solutions within and across the datacenter and out to the wide area network with the security and availability required by business-critical environments. Nuage Networks, backed by the rapidly growing IP/Optical Networks business of Nokia, has the pedigree to serve the needs of the world's biggest clouds. The cloud has made promises—the mission of Nuage Networks is to help you realize them. Discover more at www.nuagenetworks.net and follow us @nuagenetworks