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Network Visualizer

Learn about the Network Visualizer tool.

Overview

An Oracle virtual network is composed of virtual cloud networks (VCNs), subnets, gateways, and other resources. These entities are related and connected through routing that's often complex. These resources can also have complex relationships with other Oracle Cloud Infrastructure (OCI) services. The ability to have a concise picture of these entities and their relationships is essential for understanding the design and operation of a virtual network.

The Network Visualizer provides a diagram of the implemented topology of all VCNs in a selected region and tenancy. This tool in the OCI Console can provide the following levels of granularity:

Regional Network Topology

You can see a **high-level layout and routing topology** of the entire virtual network configuration within a region. This topology includes DRGs, VCNs, CPEs, and various types of gateway.

In this view, a limit is enforced on the number of resources shown to enable the generation of larger maps. If the limit is exceeded, a partial topology is displayed with an error message. Network Visualizer applies the following limits irrespective of whether the compartment selected is a root or child compartment. You might see more or less resources than the limit for each depending on the number of resources you have and display logic. You can request a limit increase which is evaluated by the service team and accepted or rejected based on the required scale.

Resource	Display Limit

Resource	Display Limit
VCN	25
Internet Gateways	1 for each VCN. Limit increase not supported.
Local Peering Gateways (LPGs)	25 for each VCN
Network Address Translation Gateways (NAT)	10 for each VCN
Service Gateways	5 for each VCN
Dynamic Routing Gateways (DRGs)	5
DRG attachments and Cross Tenancy DRG attachments	30 for each DRG, 150 global limit (30*5 DRG)
Customer Premises Equipment (CPE)	10
IPSec Connections	10
IPSec Tunnels	20
FastConnect Virtual Circuits	10
Remote Peering Connections	10
DRG Route Tables	30 for each DRG
DRG Route Rules	100 for each route table

Virtual Cloud Network Topology

You can see the **organization of a single VCN** including its subnets and routing configuration. This topology includes subnets, VLANs, and gateways to other resources.

Subnet Topology

You can see **resource information** about instances, load balancers, FSS, and OKE clusters in the subnet.

Required Permissions

You need to set the following policy to have access to Network Visualizer.

```
Allow group <your_admin_group> to READ all-resources in tenancy
```

Network Visualizer doesn't belong to the `virtual-network-family` and doesn't belong to a specific group with more granular permission.

Working with Regional Network Topologies

The Network Visualizer tool diagram helps you view a high-level structure of network configuration and helps quick navigation between its core components. It provides a view of all resources in a particular combination of region and compartment.

You can view and understand the following from this diagram:

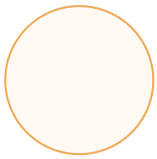
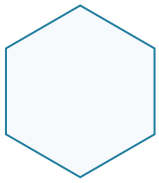
- How VCNs are interconnected
- How on-premises networks are connected (using FastConnect or Site-to-Site VPN)
- Which routing entities (DRGs and so on) control traffic routing
- How transit routing is configured

When you open a diagram for a compartment, it shows resources for all compartments nested underneath. You can also filter out objects from the compartments that you don't want to see.

You can see cross-region connections between network resources and you can also quickly change regions in the Console and see the VCNs in another region.

The **Regional Map** view uses the following symbols and conventions:

External resources	External devices such as a CPE are shown in the left side of the canvas, which is shaded and separated by a dashed line.
Customer-Premises Equipment (CPE)	
Oracle cloud resources	Oracle cloud resources are shown in the main area of the canvas.

Virtual Private Network (IPSec) connection	
Dynamic Routing Gateway (DRG)	
Connection	
Link	
FastConnect connection	
Virtual Cloud Network (VCN)	
Remote Peering Connection (RPC)	
NAT Gateway (NAT)	
Service Gateway (SGW)	
Internet gateway (IGW)	
Local Peering Gateway (LPG)	
Oracle region	
Resource outside the region or compartment or filtered because of a service limit (details aren't visible)	

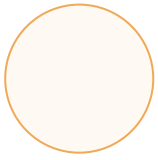
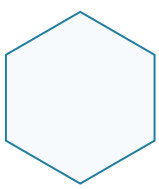
Working with VCN Topologies

The VCN topology routing diagram helps visualize the networking components that are part of the selected VCN up to the subnet level. With such visualization, you can focus on cross-AD deployment, routing and network security configurations. VCNs can also be viewed in Security mode that shows relationships with security lists and network security groups (NSGs) with other virtual network resources. When you view a VCN in one of these modes you can easily switch to the other mode.

You can view and understand the following from this diagram and information panel:

- Which subnets and VLANs belong to the VCN
- How subnets and VLANs are organized across availability domains
- How Security lists are applied within the VCN
- How NSGs are applied within the VCN
- Whether subnets in a VCN are public or private
- How subnets and VLANs are organized across compartments
- Which gateways (RPG, LPG, NGW, SGW, IGW) are part of the VCN
- Which routes are defined between subnets and gateways

The **Virtual Network Map** uses the following symbols and conventions:

Regional resources	Routable resources not internal to the VCN but routable from the VCN are shown in the left side of the canvas, which is shaded and separated by a dashed line.
DRG	
Other directly connected VCNs	

VCN resources	VCN resources such as subnets and VLANs are shown in the main area of the canvas. Gateways connecting the VCN to other resources in the region are shown on the dashed line defining the border of the VCN.
Link	
LPG	
SGW	
IGW	
Public Subnet (S)	
Private Subnet (S)	
VLAN (V)	
VPN	

Note

Load balancers and compute instances in a subnet aren't shown in this view. That level of detail is shown in the subnet maps.

Working With Subnet Maps

The main VCN topology diagram helps visualize the networking components that are part of the selected VCN up to subnet level, but no further. For each subnet in the VCN, you can access a Subnet resource map that examines resources inside the subnet in either Inventory or Security mode. When you view a subnet map in one of these modes you can easily switch to the other map mode.

The Subnet Inventory map lists resources in the subnet such as network load balancers, load balancers, and compute instances. A resource summary and more details are available for each of these resources.

The Subnet Security map also lists the resources in the subnet, but you can use this mode to click a resource and see what security lists and network security groups are associated with a specified resource.

You can view and understand the following from these diagrams and information panel:

- What compute instances and VLANs belong to the subnet
- How security lists are applied to compute instances and load balancers within the subnet
- How network security groups are applied to VNICs associated with compute instances
- Whether instances in a subnet have public or private VNICs
- How network security groups and security lists are organized across compartments

The Subnet Inventory map and Subnet Security map use the following symbols and conventions:

Public Network Load Balancer (NLB)	
Private Network Load Balancer (NLB)	
Public Load Balancer (LB)	
Private Load Balancer (LB)	
Mount Target (MT)	

Kubernetes Cluster (OKE)	
Compute instance (I)	
Security list (SL)	 SLs are shown the left side of the resource list while in Security mode.
Network security groups (NSG)	 NSGs are shown on the right side of the resource list while in Security mode.

Network Visualizer Tasks

- Viewing a Network Topology Map
- Viewing a VCN Topology Map
- Viewing a Subnet Topology Map

Was this article helpful?