Networking overview

Updated 2 minutes ago

This guide provides an overview of networking in the context of ZEDEDA Cloud. To learn about networking in the context of EVE-OS, see the LFEdge networking documentation.

There are two components of a ZEDEDA networking configuration: network objec network instance objects. **Network** objects contain routing information for edge nodes. **Network instance** objects contain routing information for edge apps. Both are

Network instance objects contain routing information for edge apps. Both are combined into a comprehensive networking solution.

The following two aspects of networking are configured when you onboard your edge nodes or upload your edge applications, respectively: designating management ports and setting up direct attachments.

Management ports connect your edge node to ZEDEDA Cloud. You can designate multiple management ports with primary and fallback priorities.

Direct attach, also called passthrough, connects an edge app to an I/O port without using an intermediary network instance.

Networks

Network configurations determine how edge nodes should connect to external networks and servers. Using network objects, you can assign your nodes static IP addresses, establish routes to DHCP servers and proxy servers, and provide your nodes with credentials for wireless connectivity, etc.

A single network object can generally route to multiple ports. WiFi ports, however, require a dedicated network object.

You must assign each port of an edge node to a network object, unless the port is disabled. You can assign primary and fallback priorities to each port. For example, you could configure a node to use wireless connectivity only when its ethernet connection goes down, or vice versa.

For instructions about how to use networks, see our guide to networks.

Network instances

A network instance (NI) is a virtual switch, representing a network segment running on an edge node. NIs enable network connectivity for your edge apps, including enabling edge apps on the same edge node to communicate with one another. NIs also enable your edge apps to share a physical port.

There are two types of network instances: **local** instances and **switch** instances. The difference is that local instances enable you to meet any IP address management (IPAM) requirements. Switch networks enable you send an app's traffic directly to one of the

requirements. Switch networks enable you send an app's traffic directly to one of the edge node's ports, allowing you to handle IPAM outside of the edge node.

Both types of network instances enable you to set up port sharing, meaning that you can assign multiple edge applications to a single port. Note, however, that each network instance can only be attached to a single port at a time. Local NIs can switch to different ports when they needs to.

You can deploy many NIs onto a single edge node, and each of your edge apps may be connected to many NIs. Edge apps connected to the same NI can talk to each other without any physical network connectivity. If two edge apps need to talk to each other, but they are not connected to a mutual NI, you must establish a route between them using physical uplinks.

For network functionality more advanced than what local and switch instances provide (e.g., a VPN), we recommend implementing what you need with an edge app.

Note that performance sensitive applications may work more optimally using Direct Attach, relying on NIs only for management traffic.

For instructions about how to use network instances, see our guide to network instances.

Local network instances

Local network instances use a private IP subnet to enable network connectivity for your edge apps. They also enable your edge apps to talk to each other.

Traffic sent through a local NI goes through network address translation (NAT) to ensure that the IP address from the local NIs subnet are never exposed outside of your edge node. The same is true for your edge apps' MAC addresses. For this reason, you can let EVE generate MAC addresses for your edge apps, rather than defining one explicitly.

For Local network instances, EVE runs basic network services like DHCP or DNS internally.

Switch network instances

Switch network instances enable network connectivity for your edge apps through a

dedicated port. When you assign a port to a switch instance, no other network instance can access that port. If multiple edge apps need to use a switch instance's port, you need to attach them all to the switch instance.

Switch instances are useful if you don’t want to do any IP address management within the ZEDEDA ecosystem. For example, your app might need to share the same IP subnet with some hosts on another network.

Default configurations

You can mark both network configurations and network instances as default. These defaults are automatically applied to your edge nodes and apps when they are onboarded or create, respectively.