



## Overview

### ONTAP 9

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You should familiarize yourself with the networking components of a cluster before setting up the cluster. Configuring the physical networking components of a cluster into logical components provides the flexibility and multi-tenancy functionality in ONTAP.

The various networking components in a cluster are as follows:

- Physical ports

Network interface cards (NICs) and host bus adapters (HBAs) provide physical (Ethernet and Fibre Channel) connections from each node to the physical networks (management and data networks).

For site requirements, switch information, port cabling information, and controller onboard port cabling, see the Hardware Universe at [hwu.netapp.com](http://hwu.netapp.com).

- Logical ports

Virtual local area networks (VLANs) and interface groups constitute the logical ports. Interface groups treat several physical ports as a single port, while VLANs subdivide a physical port into multiple separate ports.

- IPspaces

You can use an IPspace to create a distinct IP address space for each SVM in a cluster. Doing so enables clients in administratively separate network domains to access cluster data while using overlapping IP addresses from the same IP address subnet range.

- Broadcast domains

A broadcast domain resides in an IPspace and contains a group of network ports, potentially from many nodes in the cluster, that belong to the same layer 2 network. The ports in the group are used in an SVM for data traffic.

- Subnets

A subnet is created within a broadcast domain and contains a pool of IP addresses that belong to the same layer 3 subnet. This pool of IP addresses simplifies IP address allocation during LIF creation.

- Logical interfaces

A logical interface (LIF) is an IP address or a worldwide port name (WWPN) that is associated with a port. It is associated with attributes such as failover groups, failover rules, and firewall rules. A LIF communicates over the network through the port (physical or logical) to which it is currently bound.

The different types of LIFs in a cluster are data LIFs, cluster-scoped management LIFs, node-scoped management LIFs, intercluster LIFs, and cluster LIFs. The ownership of the LIFs depends on the SVM where the LIF resides. Data LIFs are owned by data SVMs, node-scoped management LIFs, cluster-scoped management, and intercluster LIFs are owned by the admin SVMs, and cluster LIFs are owned by the cluster SVM.

- DNS zones

DNS zone can be specified during the LIF creation, providing a name for the LIF to be exported through the cluster's DNS server. Multiple LIFs can share the same name, allowing the DNS load balancing feature to

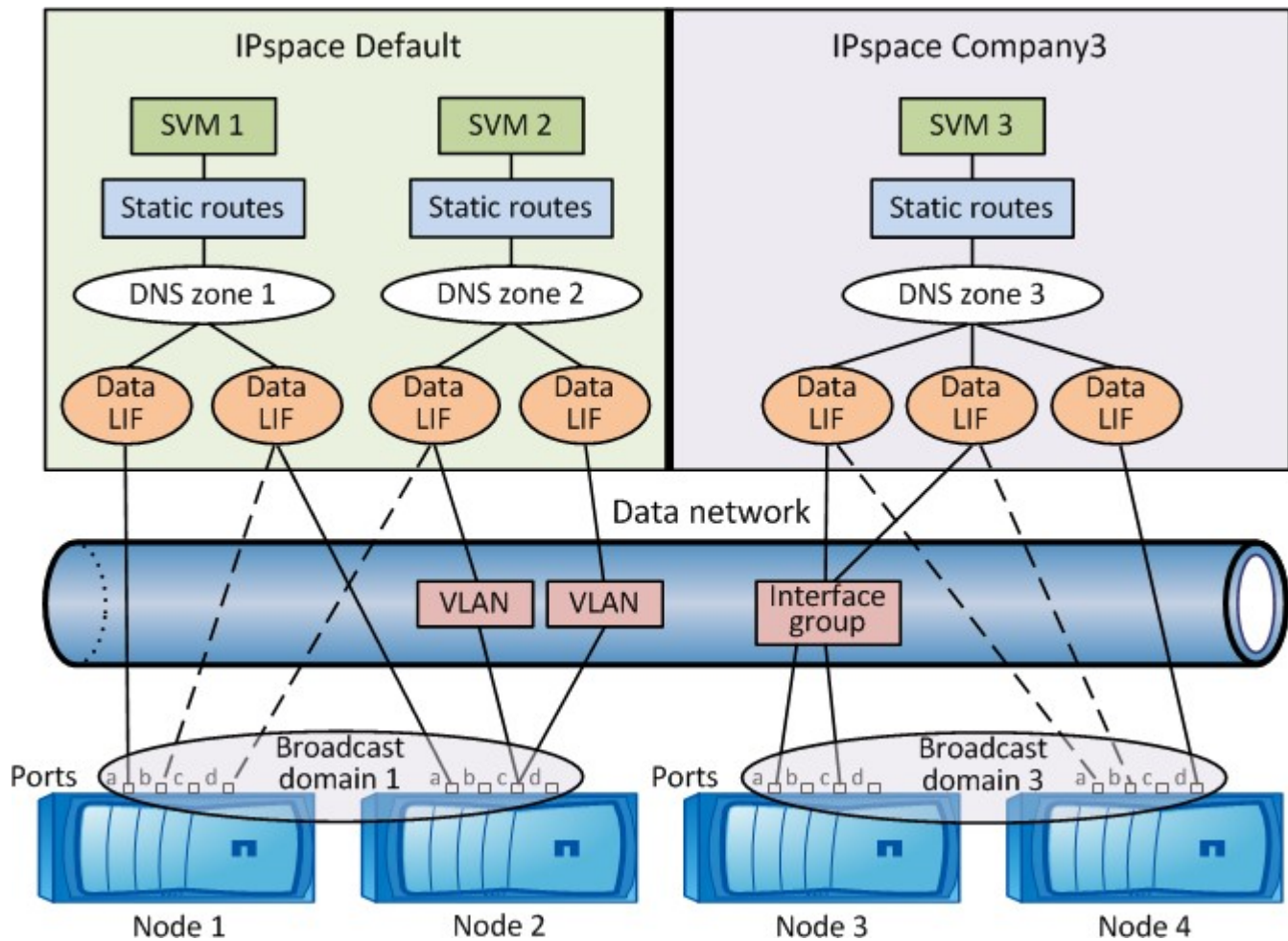
distribute IP addresses for the name according to load.

SVMs can have multiple DNS zones.

- Routing

Each SVM is self-sufficient with respect to networking. An SVM owns LIFs and routes that can reach each of the configured external servers.

The following figure illustrates how the different networking components are associated in a four- node cluster:



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