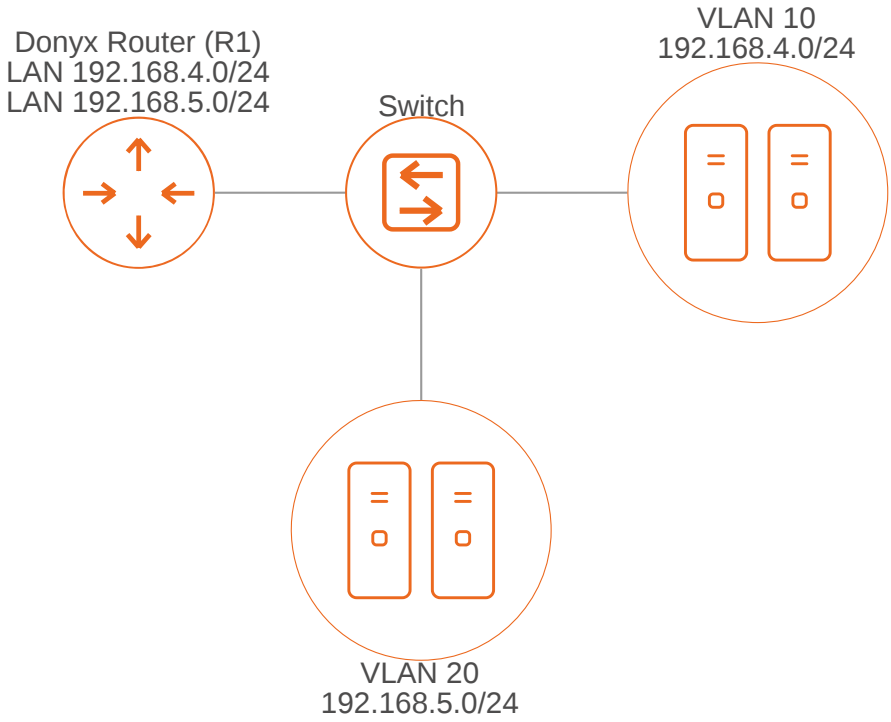
VLAN Configuration on Donyx Routers

The objective is to establish access to **VLAN**-based network segments on a Donyx router.

Network Topology for VLAN Configuration:

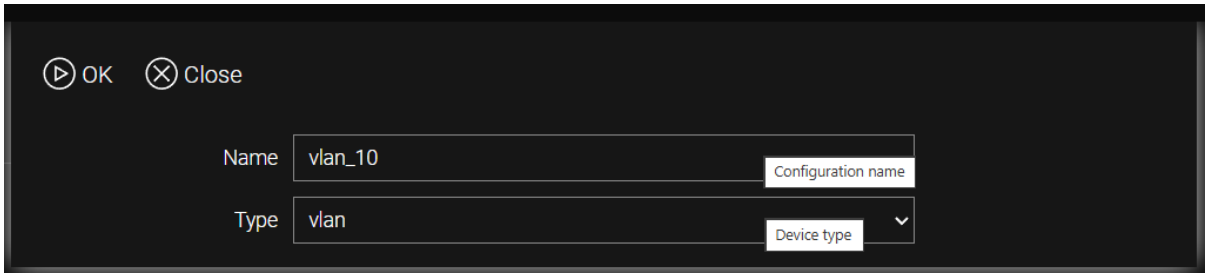


In this scenario, network clients are connected to a managed switch and isolated within two **VLANs**. Devices from the *192.168.4.0/24* subnet are assigned to **VLAN 10**, while those from the *192.168.5.0/24* subnet are assigned to **VLAN 20**.

The switch is connected to the router via a trunk link on physical **port 4** of router *R1*. Necessary bridges and interfaces are already pre-configured; the objective is to establish tagged packet transmission via **port 4**.

Creating VLANs on R1

1. In the */network/device* section, click **Add**.
2. In the **Name** field, enter the identifier for the new device (e.g., *vlan_10*) and select *vlan* in the **Type** field.



3. Complete the following parameters in the displayed menu.

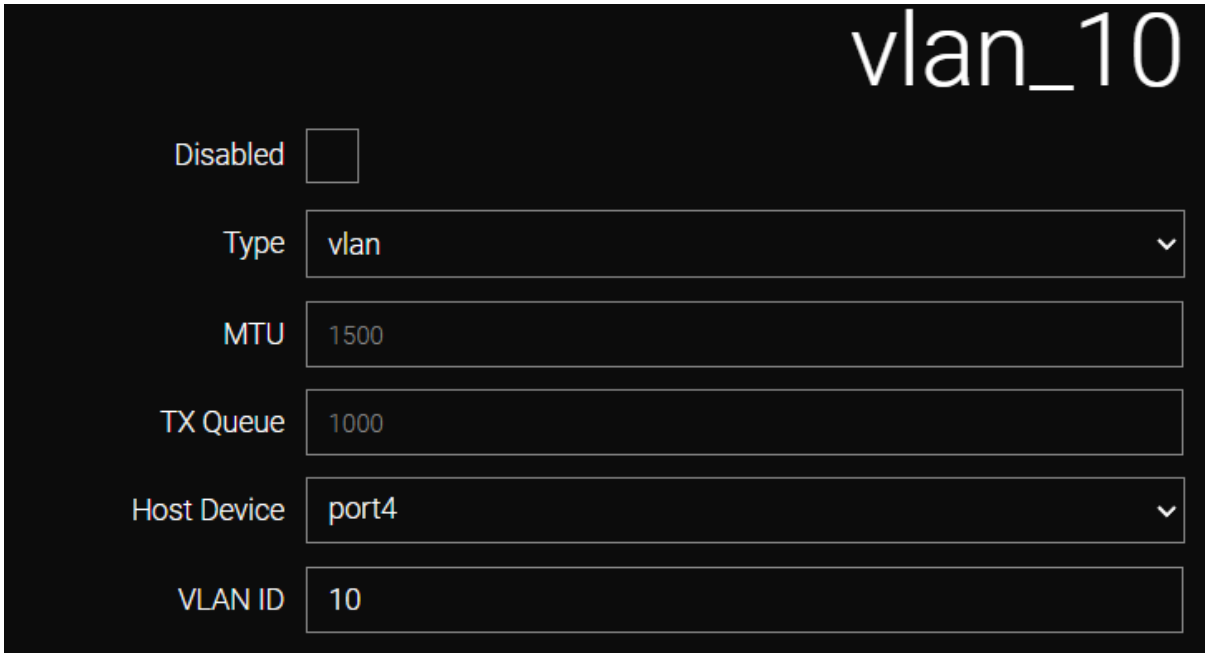


Table 1. VLAN Parameters for Router R1

Field	Value
Type	Virtual device type (*vlan*).
MTU	Maximum transmission unit (*1500* bytes by default). Modification is not recommended unless specifically required.
TX Queue	Maximum packet queue size. Modification is not recommended unless specifically required.
Host Device	The physical device on which the virtual **VLAN** subinterface is created. In this example, *port4* is used for the connection to the switch.
VLAN ID *	The **VLAN** tag identifier, which must match across the entire **VLAN** domain. In this example, the **VLAN ID** is set to *10*.

* Note that some lower-range identifiers are reserved for internal system use.

4. Click **Apply**.
5. The configuration for the *vlan_20* device is performed in a similar manner using *port4* with **VLAN ID 20**.

CLI Configuration

```
/network device add name=vlan_10 type=vlan
    device port4
    disabled -
    mtu 1500
    tx-queue-len 1000
    vid 10

/network device apply
```

```
/network device add name=vlan_20 type=vlan
    device port4
    disabled -
    mtu 1500
    tx-queue-len 1000
    vid 20

/network device apply
```

Connecting Local Clients to VLAN Network Segments

The following procedure is performed to connect local clients to **VLAN** network segments:

Identify the **IP** subnets assigned to the bridge interfaces in the */ip/interface* section. Then, add the corresponding **VLAN** interface to the specific bridge in the */network/bridge* section.

Example:

Assume bridge *LAN10* is assigned the *192.168.4.0/24* subnet. In this case, add the *vlan_10* port to the *LAN10* bridge in the */network/bridge* section.

If the *192.168.5.0/24* subnet corresponds to bridge *LAN20*, add the *vlan_20* port to the *LAN20* bridge.

CLI Configuration

```
/ip interface status
/network bridge LAN10 port vlan_10
/network bridge LAN10 apply
/network bridge LAN20 port vlan_20
/network bridge LAN20 apply
/system config commit
```

Isolated VLAN Routing on the Router (Router-on-a-Stick)

In this configuration, client devices are connected to a managed switch, while the router performs traffic routing between distinct **VLAN** segments and their corresponding subnets.

The setup procedure involves the following requirements:

- **Virtual Device Creation:** For each routed **VLAN**, a corresponding virtual device (subinterface) must be created in the */network/device* section.
- **Interface Configuration:** In the */ip/interface* section, individual interfaces must be created for each virtual device, with appropriate **IP** addresses and subnet masks assigned.
- **Gateway Assignment:** The **IP** address of the respective **VLAN** interface must be configured as the default gateway on all client devices within that **VLAN**.
- **DHCP Services:** If the *Donyx* router acts as a **DHCP** server, address allocation for the corresponding subnets must be configured in the */service/dhcp/server* section.

CLI Configuration

1. Example for **VLAN ID 10**, **VLAN 20**, and **VLAN 30** with router IP addresses *192.168.4.1/24*, *192.168.5.1/24*, and *192.168.6.1/24* respectively. **Port 4** is utilized as the tagged (trunk) port.

```
/network device add name=vlan_10 type=vlan
    device port4
    disabled -
    mtu 1500
    tx-queue-len 1000
    vid 10

/network device apply
```

```
/network device add name=vlan_20 type=vlan
    device port4
    disabled -
    mtu 1500
    tx-queue-len 1000
    vid 20

/network device apply
```

```
/network device add name=vlan_30 type=vlan
    device port4
    disabled -
    mtu 1500
    tx-queue-len 1000
    vid 30

/network device apply
```

```
/ip interface add device=vlan_10 type=static
    disabled -
    gateway -
    ip-address -
    ip-address 192.168.4.1/24
    metric 200
/ip interface apply
```

```
/ip interface add device=vlan_20 type=static
    disabled -
    gateway -
    ip-address -
    ip-address 192.168.5.1/24
    metric 200
/ip interface apply
```

```
/ip interface add device=vlan_30 type=static
    disabled -
    gateway -
    ip-address -
    ip-address 192.168.6.1/24
    metric 200
/ip interface apply
/system config commit
```

In this configuration, the router provides unrestricted access between all **VLAN** networks terminated on the device. Provided the router serves as the default gateway for hosts within the segments separated by **VLANs**, all such segments will be mutually accessible.

If access restrictions between **VLAN** networks are required, traffic filtering between logical interfaces must be configured in the */firewall/filter* section.

An **IP** address for an interface in the */ip/interface* section associated with a **VLAN** device can only be configured if the physical host port has an active link. Otherwise, the interface remains in an error state until a link is established on the physical port.

2. DHCP Configuration for VLAN Segments. The configuration of **DHCP** services for connected **VLAN** segments utilizes an address pool range from *x.x.x.100* to *x.x.x.200*.

```
/service dhcp server add interface=vlan_10
    disabled -
    dns-server -
    flags -
    leasetime 12h
    mode server
    ntp-server -
    option -
    pool -
    pool 192.168.4.100-192.168.4.200
    router 192.168.4.1
```

```
/service dhcp server add interface=vlan_20
    disabled -
    dns-server -
    flags -
    leasetime 12h
    mode server
    ntp-server -
    option -
    pool -
    pool 192.168.5.100-192.168.5.200
    router 192.168.5.1
```

```
/service dhcp server add interface=vlan_30
    disabled -
    dns-server -
    flags -
    leasetime 12h
    mode server
    ntp-server -
    option -
    pool -
    pool 192.168.6.100-192.168.6.200
    router 192.168.6.1

/service dhcp server apply
/system config commit
```

All modifications are permanently saved to the router configuration only after executing the */system config commit* command or clicking the **commit** button in the web interface.