

Direct Connect Best Practices Product Documentation



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Best Practices

Best Practices on Direct Connect High Availability and Hybrid Cloud Network

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Tencent Cloud direct connect maximizes the high availability of business in various failure scenarios, such as port exception/fiber optic component failure, network device failure, failure of data center at the access point etc. It provides [four-line dual access point \(recommended\)](#), [two-line dual access point](#), [two-line single access point](#) and other network architectures, where, the four-line dual access point network architecture provides higher level of [Tencent Cloud Direct Connect Service Level Agreement](#). In this document, we take four-line dual access point architecture as an example to describe the high availability design and practices of Tencent Cloud direction connect.

Network Architecture with High Availability

- User IDC accesses at least two Tencent Cloud direct connect access points through connections to achieve high availability and load balancing at the physical level.
- Direct connect gateway integrates with DSR clusters based on DSR system design. It acts as the bridge between Tencent Cloud and IDC to form a virtual dedicated tunnel together with the local router at IDC side and achieve resources intercommunication via Tencent Cloud VPC or CCN.
- DSR clusters provide two Tencent Cloud border IP addresses to implement active-active routing system at the control plane. Thus, the local router on IDC side has created BGP neighbor adjacency with the two clusters respectively via BGP protocol to effectively ensure high availability of business in case of DSR cluster upgrade or single cluster failure and avoid impact on business caused by single BGP neighbor adjacency interruption and route convergence.
- Meanwhile, DSR adjusts and removes exceptional service nodes dynamically through real-time monitoring mechanism in the cluster to ensure the availability of single cluster. It adopts large-scale cluster scaling technique to enable horizontal scaling among multiple clusters for the business to ensure availability across clusters.

Hot switching in case of failure

Switching in case of connection failure

The system switches the traffic to connection 2 automatically when it detects a failure in connection 1 to ensure normal operation of the business. The traffic will be switched back automatically when the failure is recovered.

Switching in case of exchange failure

The system switches the traffic to connection 2 automatically when it detects a failure in exchange 1 to ensure normal operation of the business. The traffic will be switched back automatically when the failure is recovered.

Switching in case of DSR failure

The system switches the traffic to connection 2 automatically when it detects a failure in the DSR cluster to ensure normal operation of the business. The traffic will be switched back automatically when the failure is recovered.

Switching in case of access point failure

The system switches the traffic to access point 2 automatically when it detects a failure in access point 1 to ensure normal operation of the business. The traffic will be switched back automatically when the failure is recovered.

Switching in case of over capacity

According to [capacity planning](#), the usage of each connection is not allowed to be over 50%. If the usage of connection 1 is over 50%, the system will switch traffic to connection 2 automatically. Then, the traffic will be switched back to connection 1 when the usage is below 50%.

Limits and Suggestions for Practices

Network layer (dedicated tunnel)

- BGP IP needs to be configured on both Tencent Cloud side and the user IDC side to establish a session, and BGP session must be kept in active-active status.
See the figure below for the configuration on Tencent Cloud side. For more information, see [Applying for a Dedicated Tunnel](#).
- BFD and NQA needs to be provided for health check to ensure robustness of the tunnel. For more information on the configuration of health check, see [Health Check for the Dedicated Tunnel](#).

Physical layer (connection)

On the IDC side, users can use the same port of an edge device to connect primary/secondary connections to ensure high availability of the connections, or use two edge devices to connect primary/secondary connections.

Migrating IDC to the Cloud Through CCN

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Step 1: Create a CCN-based Direct Connect Gateway

1. Log in to the [VPC console](#) and click **Direct Connect Gateway** on the left sidebar.
2. Click **Create**.
3. In the pop-up window, enter the gateway name, select **CCN** for the **Associate Network**, leave the **CCN instance** empty, and click **OK**.

Step 2: Add an IP Range to Publish to the Direct Connect Gateway

1. Locate the direct connect gateway just created and click the **ID/Name** to access its details page.
2. Select the **Publish IP Range** tab.
3. Click **Create** and enter a published IP range.

Step 3: Create a CCN Instance

For detailed directions, see [Creating a CCN Instance](#).

Step 4: Create a Dedicated Tunnel to Connect the CCN-based Direct Connect Gateway

1. Log in to the [Direct Connect console](#) and click **Dedicated Tunnels** on the left sidebar.
2. Click **+New**.
3. In the pop-up window, enter relevant information as prompted. Select **CCN** for the **Access Network** and then select the CCN-based direct connect gateway just created.

Step 5: Associate a Network Instance

Associate the network instances (including VPC and direct connect gateway) with the CCN instance for interconnection. For detailed directions, see [Associating Network Instances](#).

Accelerating Routing Convergence Through BGP+BFD (Layer 3)

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This document describes how to accelerate routing convergence between customer IDC and private network by initiating BGP routing protocol on the local IDC switch and configuring bidirectional forwarding detection (BFD) on Tencent Cloud Direct Connect gateway.

Background

Note :

In a connection using static routes, It's recommended that you use static route +BFD/NQA to achieve route convergence.

- The connection connects the IDC switch and the layer 3 network sub-interface of Tencent Cloud switch, thereby connecting IDC and Tencent Cloud network.
- Implement mutual access to resources through VPC/CCN.
- Implement routing convergence through BGP+BFD/NQA.

Prerequisites

- You have built a VPC as instructed in [Building Up an IPv4 VPC](#).
- You have applied for a connection as instructed in [Applying for Connection](#) and completed the preparatory construction.

Configuration Guide

Step 1. [Creating a Direct Connect gateway](#)

1. Log in to the Direct Connect Gateway console. Click **Direct Connect Gateway** in the left sidebar.

2. Select a region and VPC at the top of the **Direct Connect Gateway** page, and click **+New**.
3. Complete the configurations in the pop-up window and click **OK**.

Step 2. Creating a dedicated tunnel

1. Log in to the [Direct Connect - Dedicated Tunnel](#) console.
2. Complete basic configurations such as name, connection type, access network, region and associated direct connect gateway, and click **Next**.
3. Configure the following parameters on the **Advanced Configuration** page, and then click **OK**.

Step 3. Configuring health check as instructed in [Dedicated Tunnel Health Check](#)

1. Click the name of the created tunnel on the **Dedicated Tunnel** page.
2. Click **Edit** on the right of **Routing Modes** on the **Advanced Tunnels** tab of the tunnel details page.
3. Enable **Health Check**.
4. Configure the parameters of health check, and click **Save**.

Step 4. Completing the IDC local configuration as instructed in [Huawei NE Series Routers](#)

This document takes Huawei CE switch as an example. For other local configurations, see [Huawei NE Series Routers](#).

If you can't implement the layer 3 sub-interface connection due to special reasons, you can try layer 2 sub-interfaces. For details, see Mode 2.

• (Recommended) Mode 1: Layer 3 sub-interface+BGP:

```
# Set sub-interfaces for layer 3 connection
interfaces
<interface_number>.<sub_number>
description <interface_desc>
```

```

dot1q termination vid <vlan id>
ip address <subinterface_ipaddress>
<subinterface_netmask>
speed <interface_speed>
duplex full
undo negotiation auto
commit
# Set eBGP
bgp <as_number>
router-id <route_id>
peer <bgp_peer_address> as-number
<bgp_peer_as_number>
peer <bgp_peer_address> password cipher
<bgp_auth_key>
peer <bgp_peer_address> description
<bgp_desc>
ipv4-family unicast
peer <bgp_peer_address> enable
commit
# Set BFD configuration of eBGP
bgp <as_number>
router-id <route_id>
peer <bgp_peer_address> bfd min-tx-interval
1000 min-rx-interval 1000 detect-multiplier 3

```

• **Mode 2: Layer 2 Vlanif interface+BGP (It is recommended to disable STP of Layer 2 interfaces) :**

```

# Set ports
interfaces
<interface_number>
description
<interface_desc>
port link-type
trunk
undo shutdown
speed
<interface_speed>
duplex full
undo negotiation
auto
stp disable ** (****Disable****stp****STP****)**
commit
# Set virtual tunnels
VLAN
<subinterface_vlanid>

```

```
description
<subinterface_desc>
# Set logic interfaces
interface Vlanif
<subinterface_vlanid>
description <subinterface_desc>
ip address
<subinterface_ipaddress> <subinterface_netmask>
# Configure interface VLAN
interfaces
<interface_number>
port trunk
allow-pass vlan <subinterface_vlanid>
commit
# Set eBGP
bgp
<as_number>
router-id
<route_id>
peer
<bgp_peer_address> as-number <bgp_peer_as_number>
peer
<bgp_peer_address> password cipher <bgp_auth_key>
peer
<bgp_peer_address> description <bgp_desc>
ipv4-family
unicast
peer
<bgp_peer_address> enable
# Set BFD configuration of eBGP
bgp <as_number>
router-id <route_id>
peer <bgp_peer_address> bfd min-tx-interval
1000 min-rx-interval 1000 detect-multiplier 3
commit
```

IDC Local Configuration

BGP Routing Configuration Guide

Huawei NE Series Routers

Last updated : 2022-05-10 16:58:06

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
undo shutdown
speed <interface_speed>
duplex full
undo negotiation auto
commit
# Set virtual tunnels
interfaces <interface_number>.<subinterface_number>
description <subinterface_desc>
vlan-type dot1q <subinterface_vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
```

```
commit
# Set eBGP
bgp <as_number>
router-id <route_id>
peer <bgp_peer_address> as-number <bgp_peer_as_number>
peer <bgp_peer_address> password cipher <bgp_auth_key>
peer <bgp_peer_address> description <bgp_desc>
ipv4-family unicast
peer <bgp_peer_address> enable
commit
# Configure BFD for eBGP
bgp <as_number>
router-id <route_id>
peer <bgp_peer_address> bfd min-tx-interval <time value> min-rx-interval <time value> detect-multiplier <value>
```

Huawei CE Series Switches

Last updated : 2022-05-10 16:58:06

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
undo portswitch
undo shutdown
speed <interface_speed>
duplex full
undo negotiation auto
commit
# Configure virtual tunnels (layer 3 sub-interfaces)
interface <interface_number>.subinterface-number
description <subinterface_desc>
dot1q termination vid <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
# Set eBGP
bgp <as_number>
```

```
#router-id <route_id>
peer <bgp_peer_address> as-number <bgp_peer_as_number>
peer <bgp_peer_address> password cipher <bgp_auth_key>
peer <bgp_peer_address> description <bgp_desc>
ipv4-family unicast
peer <bgp_peer_address> enable
commit
# Configure BFD for eBGP
bgp <as_number>
router-id <route_id>
peer <bgp_peer_address> bfd min-tx-interval <time value> min-rx-interval <time value> detect-multiplier <value>
```


H3C S Series Switches

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Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
port link-mode route
undo shutdown
speed <interface_speed>
duplex full
# Configure layer 3 sub-interfaces
interface interface-number.subnumber
description <vlan_description>
dot1q termination vid <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
bfd min-transmit-interval <value> //BFD parameter
bfd min-receive-interval <value> //BFD parameter
bfd detect-multiplier <value> //BFD parameter
```

```
# Set eBGP
bgp <as_number>
#router-id <route_id>
peer <bgp_peer_address> as-number <bgp_peer_as_number>
peer <bgp_peer_address> password cipher <bgp_auth_key>
peer <bgp_peer_address> description <bgp_desc>
# Configure BFD for eBGP
peer <bgp_peer_address> bfd
```

Juniper MX Series Routers

Last updated : 2022-05-10 16:58:07

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
set interfaces <interface_number> description <interface_desc>
set interfaces <interface_number> vlan-tagging
set interfaces <interface_number> link-mode full-duplex
set interfaces <interface_number> speed <interface_speed> // Whether this command can be configured depends on whether the module supports it
set interfaces <interface_number> gigether-options no-auto-negotiation // This command is recommended to be used in combination with
Usage
commit
# Configure virtual tunnels
set interfaces <interface_number> unit <subinterface_number> vlan-id <subinterface_vlanid>
set interfaces <interface_number> unit <subinterface_number> description <subinterface_desc>
set interfaces <interface_number> unit <subinterface_number> family inet address
<subinterface_ipaddress>/<subinterface_netmask>
commit
# Set eBGP
```

```
set protocols bgp group ebgp type external // Define protocol group. Changing ebgp name is allowed.
set protocols bgp group ebgp neighbor <bgp_peer_address> local-as <as_number> // If not configured, the global AS number will be used
by default (set routing-options autonomous-system XX)
set protocols bgp group ebgp neighbor <bgp_peer_address> peer-as <bgp_peer_as_number>
set protocols bgp group ebgp neighbor <bgp_peer_address> authentication-key <bgp_auth_key>
set protocols bgp group ebgp neighbor <bgp_peer_address> description <bgp_peer_desc>
commit
# Configure BFD for eBGP
set protocols bgp group ebgp neighbor <bgp_peer_address> bfd-liveness-detection minimum-interval <value>
```

Cisco ASR Series Routers

Last updated : 2022-05-10 16:58:07

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
no shutdown
speed <interface_speed>
duplex full
no negotiation auto
commit

# Configure virtual tunnels
interfaces <interface_number>.<subinterface_number>
description <subinterface_desc>
encapsulation dot1q <subinterface_vlanid>
ipv4 address <subinterface_ipaddress> <subinterface_netmask>
bfd interval <value> min_rx <value> multiplier <value> //BFD parameter
commit

# Set eBGP
router bgp <as_number>
```

```
#bgp router-id <router_id>
neighbor <bgp_peer_address>
remote-as <bgp_peer_as_number>
password encrypted <bgp_auth_key>
description <bgp_peer_desc>
remote-as <bgp_peer_as_number> fall-over bfd //Configure BFD for BGP
commit
```

Cisco C Series Switches

Last updated : 2022-05-10 16:58:07

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
no shutdown
no switchport
speed <interface_speed>
duplex full
no negotiation auto
end
# Configure layer 3 sub-interfaces
interface interface-number.subnumber
description <vlan_description>
encapsulation dot1q <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
bfd interval <value> min_rx <value> multiplier <value> //BFD parameter
end
```

```
# Set eBGP
router bgp <as_number>
  bgp router-id <router_id>
  neighbor <bgp_peer_address> remote-as <bgp_peer_as_number>
  neighbor <bgp_peer_address> password encrypted <bgp_auth_key>
  neighbor <bgp_peer_address> description <bgp_peer_desc>
  neighbor <bgp_peer_address> activate
  neighbor <bgp_peer_address> fall-over bfd single-hop //Configure BFD for BGP
```


Cisco Nexus Series Switches

Last updated : 2022-05-10 16:58:07

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
no shutdown
no switchport
speed <interface_speed>
duplex full
no negotiation auto
end
# Configure layer 3 sub-interfaces
interface interface-number.subnumber
description <vlan_description>
encapsulation dot1q <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
bfd interval <value> min_rx <value> multiplier <value> //BFD parameter
end
```

```
# Set eBGP
router bgp <as_number>
  bgp router-id <router_id>
  neighbor <bgp_peer_address>
  remote-as <bgp_peer_as_number>
  password encrypted <bgp_auth_key>
  description <bgp_peer_desc>
  neighbor <bgp_peer_address> fall-over bfd single-hop //BFD configuration
commit
```

Static Routing Configuration Guide

Huawei NE Series Routers

Last updated : 2022-05-10 16:28:30

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
undo shutdown
speed <interface_speed>
duplex full
undo negotiation auto
commit

# Configure virtual tunnels
interfaces <interface_number>.<subinterface_number>
description <subinterface_desc>
vlan-type dot1q <subinterface_vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
commit

# Configure NQA detection for static routes
```

```
nqa test-instance <admin-name>< test-name>
test-type icmp //Default detection type
destination-address x.x.x.x (nexthop-address) //Detection address
interval seconds <value> //Detection interval
timeout <value> //Timeout period
probe-count <value> //Number of packets per detection
frequency <value> //Detection frequency
start now

# Configure static routing
# Configure global static routes
ip route-static <ip-address> <mask | mask-length> <nexthop-address> track nqa <admin-name>< test
-name>
//<ip-address>Destination IP ranges for users to access Tencent network services
such as ip route-static 172.16.0.192 255.255.255.192 10.128.152.1 track nqa user test

# Configure static routes for users to access Tencent Cloud in VRF mode
ip route-static <vpn-instance vpn-instance-name> <ip-address> <mask | mask-length> <nexthop-
address> track nqa <admin-name>< test-name>
such as ip route-static vpn-instance GLOBAL 9.0.0.0 255.0.0.0 10.128.152.1 track nqa user test
commit
```

Huawei CE Series Switches

Last updated : 2022-05-10 16:28:30

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
undo portswitch
undo shutdown
speed <interface_speed>
duplex full
undo negotiation auto
commit
# Configure virtual tunnels (layer 3 sub-interfaces)
interface <interface_number>.subinterface-number
description <subinterface_desc>
dot1q termination vid <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
# Configure NQA detection for static routes
nqa test-instance <admin-name>< test-name>
```

```
test-type icmp //Default detection type
destination-address x.x.x.x (nexthop-address) //Detection address
interval seconds <value> //Detection interval
timeout <value> //Timeout period
probe-count <value> //Number of packets per detection
frequency <value> //Detection frequency
start now

# Configure static routing
# Configure global static routes
ip route-static <ip-address> <mask | mask-length> <nexthop-address>track nqa <admin-name>< test-
name>//<ip-address>
Destination IP ranges for users to access Tencent network services
such as ip route-static 172.16.0.192 255.255.255.192 10.128.152.1 track nqa user test
# Configure static routes for users to access Tencent Cloud in VRF mode
ip route-static <vpn-instance vpn-instance-name> <ip-address> <mask | mask-length> <nexthop-
address>track nqa <admin-name>< test-name>
such as ip route-static vpn-instance GLOBAL 9.0.0.0 255.0.0.0 10.128.152.1 track nqa user test
commit
```

H3C S Series Switches

Last updated : 2022-05-10 16:28:30

Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
port link-mode route
undo shutdown
speed <interface_speed>
duplex full
# Configure layer 3 sub-interfaces
interface interface-number.subnumber
description <vlan_description>
dot1q termination vid <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
# Configure NQA detection for static routes
nqa entry <admin-name> < test-name>
type icmp-echo //Default detection type
destination-address x.x.x.x (nexthop-address) //Detection address
interval seconds 2 //Detection interval
```

```
frequency <value> //Detection frequency
history-record enable
probe count <value> //Number of packets per detection
probe timeout <value> //Timeout period
# Configure Track
track <number> nqa entry <admin-name>< test-name> //Associate Track with NQA
# Configure static routing
ip route-static <Destination_IP_address> <Mask_of_the-IP_address> <VLAN_interface> track <number>
```


Juniper MX Series Routers

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Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
set interfaces <interface_number> description <interface_desc>
set interfaces <interface_number> vlan-tagging
set interfaces <interface_number> link-mode full-duplex
set interfaces <interface_number> speed <interface_speed> // Whether this command can be configured depends on whether the module supports it
set interfaces <interface_number> gigether-options no-auto-negotiation // This command is recommended to be used in combination with
Usage
commit
# Configure virtual tunnels
set interfaces <interface_number> unit <subinterface_number> vlan-id <subinterface_vlanid>
set interfaces <interface_number> unit <subinterface_number> description <subinterface_desc>
set interfaces <interface_number> unit <subinterface_number> family inet address
<subinterface_ipaddress>/<subinterface_netmask>
commit
# Configure static routing
```

```
# Configure a static route to the user IP globally
set routing-options static route <customer_prefix/mask> next-hop <customer_interface_ip>
# Configure BFD for the static routes. To configure RPM for the static routes, consult equipment
vendors.
set routing-options static route <customer_prefix/mask>bfd-liveness-detection minimum-interval <v
alue>
such as set routing-options static route 1.1.1.0/24 next-hop 192.168.1.2 bfd-liveness-detection m
inimum-interval 1000
# Configure a static route to the user IP in VRF mode
set routing-instances <vrf_name> routing-options static route <customer_prefix/mask> next-hop
<customer_interface_ip>
such as set routing-instances cap routing-options static route 1.1.1.0/24 next-hop 192.168.1.2
commit
```

Cisco ASR Series Routers

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Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
no shutdown
speed <interface_speed>
duplex full
no negotiation auto
commit

# Configure virtual tunnels
interfaces <interface_number>.<subinterface_number>
description <subinterface_desc>
encapsulation dot1q <subinterface_vlanid>
ipv4 address <subinterface_ipaddress> <subinterface_netmask>
commit

# Configure IP SLA (NQA)
ip sla <operation-number>
icmp-echo x.x.x.x<nexthop_address> source-ip x.x.x.x <source_address>
```

```
frequency <value> //Set a detection frequency
timeout <value> //Set a timeout period
ip sla schedule <operation-number> life forever start-time now
en
# Configure Track-associated IP SLA
track <operation-number> ip sla <operation-number> reachability
end
# Configure static routing
router static
vrf <vrf-name> //If no VRF is specified, the static route is in the default VRF mode.
address-family <ipv4 | ipv6> unicast
<ip-prefix/netmask> <next_hop_ip> <interface_number> <description_text> <distance> <tag tag_value
> track <operation-number>
commit
```

Cisco C Series Switches

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Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
no shutdown
no switchport
speed <interface_speed>
duplex full
no negotiation auto
end
# Configure layer 3 sub-interfaces
interface interface-number.subnumber
description <vlan_description>
encapsulation dot1q <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
end
# Configure IP SLA (NQA)
```

```
ip sla <operation-number>
icmp-echo x.x.x.x<nexthop_address> source-ip x.x.x.x <source_address>
frequency <value> //Set a detection frequency
timeout <value> //Set a timeout period
ip sla schedule <operation-number> life forever start-time now
end
# Configure Track-associated IP SLA
track <operation-number> ip sla <operation-number> reachability
end
# Configure static routes and associate track
ip route <ip_prefix> <netmask> <interface_number | vlan_id> <next_hop_ip> <name nexthop_name> <di
stance> <tag tag_value> track <operation-number>
```

Cisco Nexus Series Switches

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Direct Connect connects Tencent Cloud with the user IDC with a dedicated physical line. After configuring the Direct Connect gateway and dedicated tunnel on the Tencent Cloud side, users need to configure routes on the local IDC. Using the layer-3 sub-interfaces to connect to Tencent Cloud is recommended.

Note :

This document only introduces the local routing configurations associated with Tencent Cloud Direct Connect. For other information, please see the local router documentation or consult your router provider.

Routing Configuration

Note :

It's recommended that you use the default configurations of `Keepalive` and `holdtime` for the BGP connection between the two peers. The `holdtime` is three times the interval at which keepalive messages are sent. The recommended `holdtime` value is 180s.

```
# Configure ports
interfaces <interface_number>
description <interface_desc>
no shutdown
no switchport
speed <interface_speed>
duplex full
no negotiation auto
end
# Configure layer 3 sub-interfaces
interface interface-number.subnumber
description <vlan_description>
encapsulation dot1q <vlanid>
ip address <subinterface_ipaddress> <subinterface_netmask>
end
# Configure IP SLA (NQA)
```

```
ip sla <operation-number>
icmp-echo x.x.x.x<nexthop_address> source-ip x.x.x.x <source_address>
frequency <value> //Set a detection frequency
timeout <value> //Set a timeout period
ip sla schedule <operation-number> life forever start-time now
end
# Configure Track-associated IP SLA
track <operation-number> ip sla <operation-number> reachability
end
# Configure static routes and associate track
ip route <ip_prefix/netmask> <interface_number | vlan_id> <next_hop_ip> <name nexthop_name><distance> <tag tag_value> track <operation-number>
```