

# ODR: Frequently Asked Questions

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## Introduction

This document contains frequently asked questions (FAQs) about On-Demand Routing (ODR).

### Q. What is ODR and who can use it?

A. On-Demand Routing is not a routing protocol. It uses Cisco Discovery Protocol (CDP) to propagate the IP prefix. ODR is a perfect solution for hub and spoke topology when the spoke routers act as stub routers by connecting to no other router other than the hub. If you only use Cisco routers in your network, running Cisco IOS® 11.2 or later, you can use ODR. If you are running dynamic protocols (for instance, if you are an ISP), ODR is not suitable for your network environment. For more detailed information, refer to *Configuring On-Demand Routing*.

### Q. How can I configure ODR?

A. Configure the **router odr** command in the hub router and turn off any dynamic routing protocols in the spoke routers. Spoke routers automatically start to advertise their subnets using CDP. You do not need the **router odr** command on spoke routers. For more information on configuring ODR refer to *Configuring On-Demand Routing*.

**Q. When a stub router running ODR sends a packet to a remote address, how does it determine the destination?**

A. Start ODR on the hub using the **router odr** command. The spoke then sends IP prefixes via CDP. This CDP extension contains 5 bytes, which can contain the IP address of the connected subnet plus 1 byte for the subnet mask.

**Q. Why does ODR not advertise IP subnets configured as secondary addresses?**

A. This limitation is fixed in Cisco IOS® Software Release 12.1 and later.

**Q. How can I run ODR over point-to-multipoint interfaces?**

A. To run ODR over point-to-multipoint interfaces, you need to enable CDP. By default CDP is disabled on point-to-multipoint interfaces. Use the **cdp enable** command to configure the interface to receive ODR updates.

**Q. Can I redistribute IGP or static routes into ODR?**

A. You cannot redistribute routes from either the hub side or the spoke side into ODR. You should not enable ODR on the spoke side and it is not required on the spoke side, since it uses CDP to propagate the IP prefix of the connected interface.

Once you have static routes in the spoke pointing somewhere other than the hub, the spoke no longer functions as a stub router; it becomes a transit router. ODR is not intended for transit routers, and it is not recommended to use ODR in such an environment.

Concerning the redistribution of routes from the hub to the spoke, if your spoke has only one exit point, it always relies on the default route that points toward the hub. Based on the Cisco IOS Software release used, this default route is either manually configured on the spoke or it learns from the hub through CDP once ODR is enabled on the hub. If you have two hub routers for redundancy, ODR still works well. You can either do load balancing or keep one link as a backup.

**Q. Can I run ODR in a multivendor situation?**

A. Yes, you can run ODR in a multivendor situation. The non-Cisco router must be used as a spoke. Since the hub router runs ODR, it does not receive any information about the non-Cisco routers that act as spokes. For this reason, Cisco recommends you use a standard routing protocol such as RIP or OSPF between the non-Cisco spokes and the hub. The hub router can still run ODR when rest of the spoke routers are Cisco routers. For more information, refer to the Designing Large-Scale Stub Networks with ODR white paper.

**Q. Is ODR CPU intensive?**

A. No, ODR is not CPU intensive because it uses CDP, which sends a small packet across Layer 2 every minute. Making the timers more aggressive does not increase CPU usage.

## Q. How many spokes can I have on a hub router running ODR?

A. Cisco has tested ODR with 1000 spokes and has seen the CPU usage go up to a maximum of 4 percent. The test was performed with a 150-MHz NPE processor on a Cisco 7206 router. For details about the testing, refer to the Designing Large-Scale Stub Networks with ODR white paper.

## Q. Can I adjust timers in ODR for faster convergence?

A. Yes, you can adjust ODR timers using the **timers basic** command. For details about how to do this, refer to the Designing Large-Scale Stub Networks with ODR white paper.

## Q. Can I have multiple hubs in ODR?

A. Yes, ODR works with multiple hubs. All hubs must be fully meshed and must run an IGP between them. This ensures that the spokes still have connectivity to the network backbone in the event that one of the hubs goes down.

## Q. Can I enable ODR and a dynamic routing protocol on the spoke routers?

A. No. When you enable any dynamic routing protocol in a spoke router, ODR does not work. When a spoke router sends its subnets to the hub through CDP, it checks to see if any routing protocol is enabled on the router. If it finds any dynamic routing protocol, it stops advertising its subnets.

## Q. Can I run ODR and a dynamic routing protocol in a hub router?

A. Yes. ODR and a dynamic routing protocol can be run on a hub router.

## Q. Can I redistribute ODR into any dynamic routing protocol?

A. Yes. You can redistribute ODR into any dynamic routing protocol. The redistribution can only happen in hub routers. For more information on ODR design, refer to the Designing Large-Scale Stub Networks with ODR white paper.

## Q. Do I need to configure a static default route in spoke routers?

A. You can configure a static default route in spoke routers only if you are using a Cisco IOS Software release earlier than 12.0.5T. In Cisco IOS Software Release 12.0.5T and later, there is a new feature that sends an automatic default route to spokes from the hub.

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## Related Information

- On-Demand Routing Commands
  - Configuring Cisco Discovery Protocol
  - Configuring On-Demand Routing
  - IP Routing Technology Support Page
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