



Type text to search here...

[Home](#) > Frame Relay Tutorial

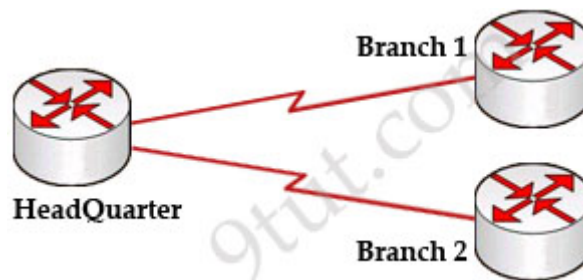
Frame Relay Tutorial

September 7th, 2011 [Go to comments](#)

Note: Frame Relay is no longer a topic in CCNAv3 200-125 exam.

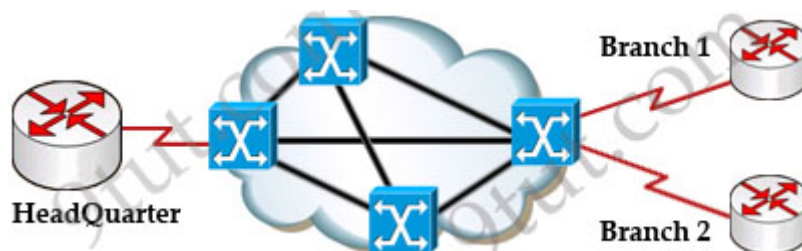
Let's start this article with the question: Why do we need Frame Relay?

Let's take a simple example. Suppose you are working in a big company and your company has just expanded to two new locations. The main site is connected to two branch offices, named Branch 1 & Branch 2 and your boss wants these two branches can communicate with the main site. The most simple solution is to connect them directly (called a leased line) as shown below:



To connect to these two branches, the main site router, HeadQuarter, requires two serial interfaces which a router can provide. But what happens when the company expands to 10 branches, 50 branches? For each point-to-point line, HeadQuarter needs a separate physical serial interface (and maybe a separate CSU/DSU if it is not integrated into the WAN card). As you can imagine, it will need many routers with many interfaces and lots of rack space for the routers and CSU/DSUs. Maybe we should use another solution for this problem? Luckily, Frame Relay can do it!

By using Frame Relay we only need one serial interface at the HeadQuarter to connect to all branches. This is also true when we expand to 10 or 50 branches. Moreover, the cost is much lesser than using leased-lines.



Frame Relay is a high-performance WAN protocol that operates at the physical and data link layers of the OSI reference model. It offers lower-cost data transfer when compared to typical point-to-point applications, by using virtual connections within the frame relay network and by combining those connections into a single physical connection at each location. Frame relay providers use a frame relay switch to route the data on each virtual circuit to the appropriate destination.

Maybe these terminologies of Frame Relay are difficult to understand so we will explain them in more detail in this article.

DCE & DTE

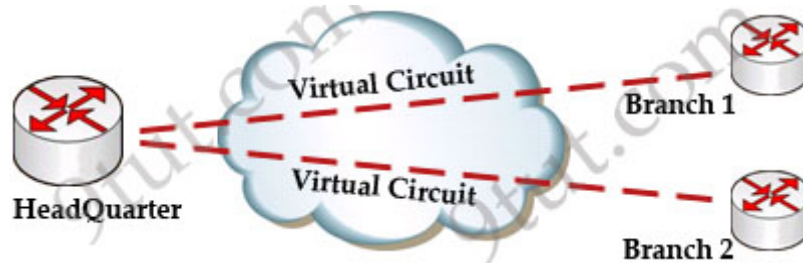
The first concept in Frame Relay you must grasp is about DTE & DCE:

- + Data terminal equipment (DTE), which is actually the user device and the logical Frame-relay end-system
- + Data communication equipment (DCE, also called data circuit-terminating equipment), which consists of modem and packet switch

In general, the routers are considered DTE, and the Frame Relay switches are DCE. The purpose of DCE equipment is to provide clocking and switching services in a network. In our example, HeadQuarter, Branch 1 & Branch 2 are DTEs while Frame Relay switches are DCEs.

Virtual Circuits

The logical connection through the Frame Relay network between two DTEs is called a virtual circuit (VC). The term “virtual” here means that the two DTEs are not connected directly but through a network. For example, the HeadQuarter & Branch 1 (or Branch 2) can communicate with each other as if they were directly connected but in fact they are connected through a Frame Relay network with many Frame Relay switches between them.



There are two types of VCs

- + **switched virtual circuits (SVCs)**: are temporary connections that are only used when there is sporadic data transfer between DTE devices across the Frame Relay network. SVC is set up dynamically when needed. SVC connections require call setup and termination for each connection.
- + **permanent virtual circuits (PVCs)**: A predefined VC. A PVC can be equated to a leased line in concept.

Nowadays most service providers offer PVC service only to save additional costs for signaling and billing procedures.

Pages: 1 [2](#) [3](#)

[Comments\(1\)](#) Comments

1. Anonymous
December 17th, 2019

Thank you! This information is very hard to find on the Internet

Add a Comment

<input type="text"/>	Name
<div></div>	

[Submit Comment](#)

[Subscribe to comments feed](#)

[Subnetting Tutorial – Subnetting Made Easy. Wireless Tutorial](#)

Premium Member Zone

Welcome [Gurjeet singh!](#)

- [Welcome Premium Member](#)
- [CCNA – New Questions Part 5](#)
- [CCNA – New Questions Part 6](#)
- [CCNA – New Questions Part 7](#)
- [CCNA – New Questions Part 8](#)
- [CCNA – New Questions Part 9](#)
- [Composite Quizzes](#)

- [Logout](#)

CCNA 200-301

- [Basic Questions](#)
- [Topology Architecture Questions](#)
- [Cloud & Virtualization Questions](#)
- [CDP & LLDP Questions](#)
- [Switch Questions](#)
- [VLAN & Trunking Questions](#)
- [VLAN & Trunking Questions 2](#)
- [STP & VTP Questions](#)
- [EtherChannel Questions](#)
- [TCP & UDP Questions](#)
- [IP Address & Subnetting Questions](#)
- [IP Routing Questions](#)
- [IP Routing Questions 2](#)
- [OSPF Questions](#)
- [OSPF Questions 2](#)
- [EIGRP Questions](#)
- [NAT Questions](#)
- [NTP Questions](#)
- [Syslog Questions](#)
- [HSRP Questions](#)
- [Access-list Questions](#)
- [AAA Questions](#)
- [Security Questions](#)
- [Security Questions 2](#)
- [DAI Questions](#)
- [IPv6 Questions](#)
- [DNS Questions](#)
- [QoS Questions](#)
- [Port Security Questions](#)
- [Wireless Questions](#)
- [Wireless Questions 2](#)
- [SDN Questions](#)
- [DNA Center Questions](#)
- [Drag Drop Questions](#)
- [Drag Drop Questions 2](#)
- [Drag Drop Questions 3](#)

- [VPN Questions](#)
- [DHCP Questions](#)
- [Automation Questions](#)
- [Miscellaneous Questions](#)
- [CCNA FAQs & Tips](#)
- [Share your new CCNA Experience](#)

CCNA Self-Study

- [Practice CCNA GNS3 Labs](#)
- [CCNA Knowledge](#)
- [CCNA Lab Challenges](#)
- [Puppet Tutorial](#)
- [Chef Tutorial](#)
- [Ansible Tutorial](#)
- [JSON Tutorial](#)
- [Layer 2 Threats and Security Features](#)
- [AAA TACACS+ and RADIUS Tutorial](#)
- [STP Root Port Election Tutorial](#)
- [GRE Tunnel Tutorial](#)
- [Basic MPLS Tutorial](#)
- [TCP and UDP Tutorial](#)
- [Border Gateway Protocol BGP Tutorial](#)
- [Point to Point Protocol \(PPP\) Tutorial](#)
- [WAN Tutorial](#)
- [DHCP Tutorial](#)
- [Simple Network Management Protocol SNMP Tutorial](#)
- [Syslog Tutorial](#)
- [Gateway Load Balancing Protocol GLBP Tutorial](#)
- [EtherChannel Tutorial](#)
- [Hot Standby Router Protocol HSRP Tutorial](#)
- [InterVLAN Routing Tutorial](#)
- [Cisco Command Line Interface CLI](#)
- [Cisco Router Boot Sequence Tutorial](#)
- [OSI Model Tutorial](#)
- [Subnetting Tutorial – Subnetting Made Easy](#)
- [Frame Relay Tutorial](#)
- [Wireless Tutorial](#)
- [Virtual Local Area Network VLAN Tutorial](#)
- [VLAN Trunking Protocol VTP Tutorial](#)
- [IPv6 Tutorial](#)
- [Rapid Spanning Tree Protocol RSTP Tutorial](#)
- [Spanning Tree Protocol STP Tutorial](#)
- [Network Address Translation NAT Tutorial](#)
- [Access List Tutorial](#)
- [RIP Tutorial](#)
- [EIGRP Tutorial](#)
- [OSPF Tutorial](#)

Network Resources

- [Free Router Simulators](#)
 - [CCNA Website](#)
 - [ENCOR Website](#)

- [ENSDWI Website](#)
- [ENARSI Website](#)
- [DevNet Website](#)
- [CCIE R&S Website](#)
- [Security Website](#)
- [Wireless Website](#)
- [Design Website](#)
- [Data Center Website](#)
- [Service Provider Website](#)
- [Collaboration Website](#)

[Top](#)



Copyright © 2021 CCNA Training

[Site Privacy Policy](#). Valid XHTML 1.1 and CSS 3.H