

# 180-210

## BROCADE PROFESSIONAL IP ADMINISTRATOR 2016



### HIGHLIGHTS

#### How to Register

Register at [Pearson Vue](#).

#### Cut Score

65% or more

#### Questions

70

#### Exam Duration

90 minutes

#### Prerequisites

Before attempting this certification exam, you should have completed these recommended courses or have equivalent working knowledge of:

- [Network Standards and Protocols Pre-assessment \(NSPP\)](#)
- [Brocade Network Industry Protocol \(NIP 200\)](#)
- [Brocade Professional IP Administrator \(BPIPA 200\)](#)

#### Target Audience

This certification is designed for network administrators, system administrators, network architects, systems engineers, and technical support engineers that are involved with advanced installation, configuration, maintenance, and basic troubleshooting of Brocade Layer 2/3 products.

### Exam Description

As a Brocade Professional IP Administrator, you must be able to describe and deploy Brocade IP hardware products for production; effectively manage IP hardware; provide effective solutions to network deficiencies using standard and Brocade proprietary protocols; and troubleshoot and improve network performance through advanced solutions and tuning.

#### Ideal Candidate

Before attempting the exam, you should have these critical competencies and experience:

- Understanding of advanced network Layer 2/3 protocols
- 5+ years of network experience or exposure
- Advanced network troubleshooting skills and experience

#### About this Guide

This guide summarizes the key topics on the exam for you in an easy-to-use format. It is organized closely around the exam objectives. Links to additional resources including practice exams, product documentation, and online forums are provided for your reference.

**Important!** The Study Guide is not intended as a substitute for classroom training or hands-on time with Brocade products.

## Exam Blueprint

The exam blueprint outlines the range of content that can be included in the exam. Not all objectives have associated questions. The weight indicates approximately how much of the exam content focuses on a section.

Weight	Section Name & Objectives
5%	<b>Section 1 – Foundational IP concepts and technologies</b> <ul style="list-style-type: none"><li>Describe Layer 2 discovery protocols.</li><li>Describe the functions of firewalls; functions and uses of load balancing.</li><li>Explain IP addressing concepts.</li><li>Define small network, enterprise campus LANs, and data center networks.</li><li>Explain the features and capabilities of Brocade IP switches and product use cases.</li></ul>
13%	<b>Section 2 – IP products and solutions</b> <ul style="list-style-type: none"><li>Describe the purpose and benefit of Multi-VRF.</li><li>Identify Brocade IP product families and their design purpose.</li><li>Define Brocade proprietary IP solutions.</li></ul>
26%	<b>Section 3 – Implementing an IP solution</b> <p>Routing</p> <ul style="list-style-type: none"><li>Configure - IPv4/IPv6 addressing on interfaces; static and default routes; basic BGP neighboring and route advertisement; dynamic routing protocol redistribution; PBR and route filtering; Multi-VRF in Brocade devices; DHCP.</li><li>Implement OSPF; identify and manipulate OSPF timers.</li><li>Customize Management VRF.</li></ul> <p>Layer 2</p> <ul style="list-style-type: none"><li>Configure - VLANs; discovery protocols including LLDP and FDP; Brocade proprietary protocols including MCT and topology groups.</li><li>Implement - Static and dynamic LAGs on Brocade IP switches; Spanning Tree.</li><li>Adjust STP parameters for root bridge selection and to control traffic flow.</li></ul> <p>General configuration</p> <ul style="list-style-type: none"><li>Configure - PoE/PoE+, CoS/QoS on Brocade IP devices; stacking using secure-stack and automatic stack configuration.</li><li>Analyze and configure memory profiles in NI routers.</li><li>Implement BFD.</li><li>Modify port level settings.</li></ul> <p>Multicast</p> <ul style="list-style-type: none"><li>Configure - IGMP; candidate rendezvous points, boot-strap routers.</li><li>Implement PIM Sparse and Dense modes.</li><li>Enable verify IGMP snooping.</li></ul>
17%	<b>Section 4 – Enhancing an IP solution</b> <p>Network optimization</p> <ul style="list-style-type: none"><li>Use - SNMP to gather info; sFlow to analyze and enhance a solution.</li><li>Optimize - QoS and CoS priorities; traffic flow using link metrics or route maps.</li><li>Modify STP/RSTP timers to reduce convergence time.</li><li>Implement OSPF route summarization.</li><li>Upgrade and downgrade firmware minimizing impact.</li></ul>

## Security

- Configure and verify – SSH; dynamic ARP inspection; DHCP snooping.
- Configure and implement local accounts and corresponding privilege levels.
- Demonstrate how to limit access to the device.
- Evaluate and explain hardening procedures for devices.
- Execute password recover procedures.

24%

## Section 5 – Troubleshooting and repairing an IP solution

### Data gathering and performance issues.

- Use show command outputs to perform basic troubleshooting.
- Collect and analyze – Command output from various tools; basic packet captures.
- Capture show tech support output from CLI.
- Configure port mirroring.
- Examine logs to identify security breaches or improperly configured rights.
- Diagnose high CPU, broadcast storms, and loops.
- Interpret interface errors.

### Layer 1 troubleshooting

- Troubleshoot physical layer connectivity issues.
- Diagnose cabling issues using FDP, LLDP, and LACP.
- Use command output to verify link states.

### Layer 2 troubleshooting

- Diagnose MAC address aging issues and stale ARP entries.
- Identify issues with Spanning Tree.
- Correct LAG and LACP issues.
- Troubleshoot – VLAN issues; Brocade proprietary L2 solutions.

### Layer 3 troubleshooting

- Interpret routing tables.
- Identify issues with VRRP-E configurations.
- Diagnose issues with OSPF configurations.
- Troubleshoot basic eBGP configurations.

15%

## Section 6 – Managing an IP solution

### IP management functions

- Describe the function and usage of management tools and data gathering tools.
- Describe the process to backup and restore switch configurations.
- Illustrate – How to use CLI commands and GUI tools to configure and manage the device; management of licenses on all Brocade IP devices.
- Explain the configuration tasks on standard and extended ACLS.
- Interpret and clear port statistics.
- Perform basic show commands to provide status.
- Identify unusual traffic conditions.
- Monitor PoE budget, set priorities and device types accordingly.
- Maintain a config repository aligned to change management and firmware upgrades.

### LAG and chassis management

- Explain the LACP parameters of a show command output.
- Describe – How to disable a port; the process of removing and adding a port while deployed.

## Study Materials

<b>Practice Exam</b>	<p><b>180-210 Brocade Professional IP Administrator 2016 Practice Exam</b></p> <p>The practice exam can be found at <a href="#">MyBrocade</a>.</p> <ol style="list-style-type: none"><li>1. Select <b>My Education</b> from within MyBrocade.</li><li>2. Click on <b>Brocade Training Portal</b>.</li><li>3. From the Portal landing page, select “<b>Browse</b>.”</li><li>4. Scroll down and click the <b>Test</b> icon (shaped like a clipboard) on the right-hand side of page.</li><li>5. From the available tests displayed, select the practice exam and then click on “<b>Request</b>” to launch. Upon completion of the practice exam, you will immediately see your score.</li></ol>
<b>Course Name and Description</b>	<p><b>Brocade Professional IP Administrator (BPIPA 200)</b></p> <p>This course provides an in-depth study of the Brocade Ethernet Switch/Router family of products and how they are utilized in an enterprise network. The course covers core competencies of configuration, operations, and maintenance of Brocade IP products including the FCX, ICX, and MLX family of devices. This course also covers core L2/L3 protocol configurations including STP family, OSPF, BGP, QoS, and Brocade proprietary protocols and technology including MCT, VRRPe, and FDP. Additional topics include the IPv6 protocol and Software Defined Networking (SDN) functions including Openflow, Netconf, and Yang.</p>
<b>Product Documentation</b>	<p>These resources are provided as secondary materials to assist in your exam preparation. If you did not take the BPIPA 200 course, you should review these materials as they were used to create the course. The course and exam were based on NetIron firmware version 5.6 and FastIron firmware version 8.0.10.</p> <p><b>Product Manuals</b></p> <ul style="list-style-type: none"><li>• Multi-Service Ironware Admin Guide (53-1003028-02)</li><li>• Brocade MLX Series and NetIron XMR Diagnostic Guide</li><li>• Multi-Service Ironware Multicast Configuration Guide (53-1003032-02)</li><li>• Multi-Service Ironware Routing Configuration Guide (53-1003033-02)</li><li>• Multi-Service Ironware Security Configuration Guide (53-1003035-02)</li><li>• Multi-Service Ironware Switching Configuration Guide (53-1003036-02)</li><li>• Multi-Service Ironware QoS and Traffic Management Configuration Guide (53-1003037-02)</li><li>• FastIron Ethernet Switch Administration Guide (53-1003075-01)</li><li>• FastIron Ethernet Switch Platform and Layer 2 Switching Configuration Guide (53-1003086-01)</li><li>• FastIron Ethernet Switch Layer 3 Routing Configuration Guide (53-1003087-01)</li><li>• FastIron Ethernet Switch Software Licensing Guide</li><li>• FastIron Ethernet Switch Stacking Configuration Guide (53-1003090-01)</li><li>• FastIron Ethernet Switch Traffic Management Guide</li><li>• FastIron Ethernet Switch Security Configuration Guide (53-1003088-01)</li><li>• Brocade FastIron SX, FCX, and ICX Diagnostic Reference</li></ul>
<b>Online Resources:</b>	<ul style="list-style-type: none"><li>• <a href="http://www.brocade.com">www.brocade.com</a></li><li>• <a href="#">MyBrocade</a></li><li>• <a href="#">Brocade Communities</a></li></ul>

## Course Outline for Brocade Professional IP Administrator (BPIPA 200)

### Module Name & Objectives

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#### Module 1 - Course Introduction

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#### Module 2 - Brocade IP Hardware

- Identify the various Brocade IP product families
  - Describe the capabilities of the Brocade IP switches and routers and their designed role in a network environment
  - Describe the various components used in IP chassis devices
  - CLI basics
  - FastIron Flash Partitions
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#### Module 3 - Access and Stacking

- Access Management
  - Configuration File Management
  - Describe stacking capabilities of various Brocade IP products
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#### Module 4 - Virtual LAN (VLAN) and Link Aggregation Groups (LAGs)

- Configure VLANs and associate tagged and untagged ports
  - Understand and configure aggregated VLANs (Q-in-Q)
  - Implement static and dynamic LAGs as well as effectively manage member ports
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#### Module 5 - Spanning Tree

- Identify supported Spanning Tree Protocols
  - Configure Spanning-Tree
  - Configure Rapid Spanning Tree
  - Identify Brocade enhanced features to Spanning Tree
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#### Module 6 - Layer 2 Discovery Protocols

- Describe LLDP supported features and configuration on Brocade IP platforms
  - Describe the Brocade proprietary protocol Foundry Discovery Protocol (FDP) and its configuration
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#### Module 7 - Layer 3 Fundamentals

- Discuss Applying IP Addresses
  - Discuss Layer 3 Features
  - Route-only
  - Virtual Interfaces (VE)
  - Static routes
  - Access Control Lists (ACLs)
  - Null Routes
  - Route-maps
  - Default route
  - Policy-Based Routing (PBR)
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#### Module 8 - Layer 3 Redundancy

- Describe the benefits of Brocade VRRP-E over VRRP
  - Understand and configure Brocade VRRP-E
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#### Module 9 - Routing Protocols

- Understand OSPF and BGP features and their benefits
  - Configure OSPF and BGP on Brocade IP devices
  - OSPFv2 and v3
  - BGPv4
  - Configure advanced OSPF features and troubleshoot
  - Describe and configure Multi-VRFs
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**Module 10 - Troubleshooting**

- General troubleshooting steps
- Discuss real time troubleshooting tools
- Discuss and configure Port Mirroring/Switched Port Analyzer (SPAN)
- Discuss troubleshooting LAG/LACP Issues
- Discuss troubleshooting Spanning Tree issues

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**Module 11 - Monitoring and Management**

- Describe various port monitoring tools
- Discuss system monitoring
- Discuss and issue Health Show commands
- Describe and configure sFlow
- Discuss device logging

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**Module 12 - Software Management**

- Describe and Perform Software Upgrades on:
  - FastIron Devices
  - NetIron Devices

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**Module 13 - Power over Ethernet (PoE)**

- Describe and configure PoE functions on Brocade IP products

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**Module 14 - Quality of Service (QoS)**

- Define the elements that make up QoS (Quality of Service)
- Describe QoS classification methods at both Layer 2 and Layer 3
- Explain QoS switch queues and weighting
- Differentiate between the different methods of QoS queue scheduling

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**Module 15 - Multi-Chassis-Trunking (MCT)**

- Describe the benefits of Multi Chassis Trunking
- Understand MCT terminology
- Understand the underlying protocols used to create MCT
- Discuss operation of MCT
- Configure MCT cluster and clients
- Understand MCT additional features
- Discuss MCT Network Failure Scenarios
- Troubleshoot MCT

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**Module 16 - Brocade IP SDN Functions**

- Describe the SDN features on Brocade NetIron IP devices
- Overview of OPENFLOW and its use of tables
- Discuss and configure Hybrid Ports
- Describe NETCONF and its role in SDN
- Describe YANG concepts and how it is used in conjunction with NETCONF

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**Module 17 - Multicast**

- Describe and configure Internet Group Management Protocol (IGMP)
  - Discuss and configure Protocol Independent Multicast (PIM)
    - Dense Mode
    - Sparse Mode
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