



# Spirent TestCenter DHCP Base Package

## Product Overview

The assignment and allotment of IP addresses is a critical step in any network design. The most common method used for issuing IP addresses is through Dynamic Host Configuration Protocol (DHCP). With the rapid expansion of cable modems and wireless hotspots, which both require IP addresses, the demand placed on DHCP-compliant equipment is growing, and the importance of DHCP testing grows with it. Service providers need to verify that a network equipment manufacturer's solution will scale as their customer base expands, and operates correctly as DHCP lease times expire.

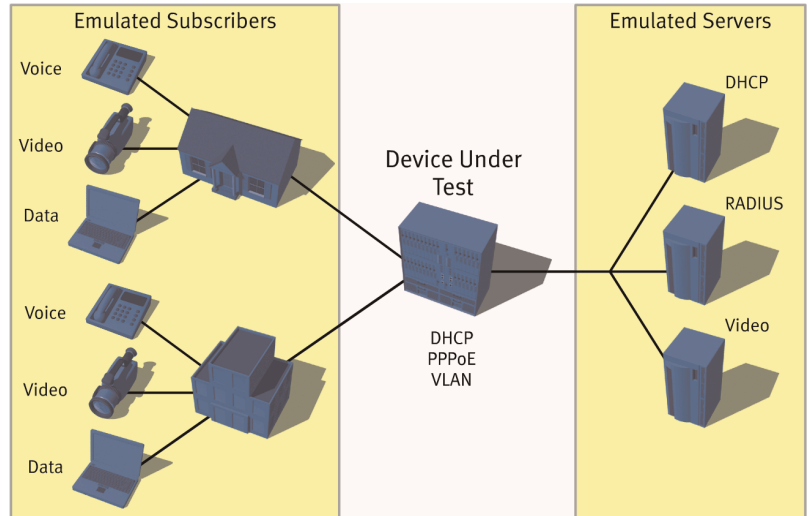
The DHCP Base Package helps service providers and network equipment manufacturers validate subscriber scalability in an unmatched port density solution. This integrated component of the Spirent TestCenter simplifies large-scale test configurations to identify issues involving equipment selection, setting competitive service level agreements and planning growth with confidence. Service providers use the DHCP Base Package to determine the correct amount of equipment necessary for meeting their customers' needs—avoiding over- and under-deployment

## Applications

Spirent TestCenter customers use the DHCP Base Package to emulate thousands of subscribers using different services across multiple ports. The package helps them to determine QoS per subscriber at different subscriber capacities and to determine capacity at a set QoS bandwidth. It can simulate typical or extreme subscriber traffic load conditions for minutes, hours or days, and evaluate key performance parameters of Ethernet aggregation devices under controlled conditions. For Triple Play testing, this package supports testing of multiple services per subscriber.

## Benefits

- *Enhanced realism*—Real world scenarios have devices being issued an IP address via DHCP before upper layer protocols such as IGMP are used



- *Fault analysis*
  - *IP duplication*—Help determine impact when multiple users have the same IP address
  - *Address table management*—Help determine the effect when there are no available IP addresses and additional users connect
- *Detailed analysis*—Data plane analysis down to the client (1 stream per client). This is essential in quickly identifying and resolving intermittent performance issues that occur in only a small number of subscribers
- *Scalable tests*—Customers can test on the more applicable scale of 2K to 4K subscribers per 10/100 port, while still exceeding the typical capacity of 64K subscribers on large devices

## GET IT DONE FASTER WITH Spirent TestCenter

- Create traffic patterns to test Triple Play
- Set QoS settings for subscribers
- Simulate up to 32K subscribers per port
- Save rack space with up to 8 ports per module and 12 modules per chassis
- Use interactive session flapping for real-time troubleshooting
- Analyze detailed results in real time, HTML or export to CSV
- Use IP multicast for enhanced realism
- Combine with other Spirent TestCenter base packages

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- Reduced test time**—Set up flapping test with clients connecting (acquire) and disconnecting (release) to validate system performance in realistic, unstable environments rather than an environment optimized for pure performance. Many of the device faults, such as memory leaks in control processors and poor login time, will only be visible under dynamic testing conditions

## Key Features

- 32K subscribers per port with up to eight ports per test module
  - 256K subscribers per test module
  - 3 million subscribers per chassis
- Detailed analysis: up stream, down stream and peer-to-peer analysis per subscriber or port
- Interactive feature allows functional and negative testing including connecting and disconnecting groups of subscribers
- Integrated protocol counters allow user to track protocol messaging
- Real-time event log allows user to view actual protocol messaging on a per-port basis
- Duplicate and copy/paste feature allows quick setup of many multicast groups
- Flap scheduler provides integrated control plane connect and disconnect and data plane events allowing the users to graphically see the result of a control plane event in real-time
- Integrated capture feature allows user to capture and decode control plane and data plane enabling deep functional troubleshooting

Port	Session Block	State	# of Sessions	# of Clients	Sessions per VLAN	Hostname	Request List [56]	Relay Agent [82]	MAC Start	MAC Step	VLAN
Honolulu 66-1	sub1	Abone	1000	1000	1	client_@p-@b-@s	Subnet	< Not enabled >	00-10-94-01-00-01	00-00-00-00-01	1
	sub2	Abone	1000	1000	1	client_@p-@b-@s	Router	LocalIP=10.0.0.0	00-10-94-02-00-01	00-00-00-00-01	1
			2000								
Honolulu 66-2	sub1	Abone	1000	1000	1	client_@p-@b-@s	DNS	LocalIP=10.10.0.0	00-10-94-03-00-01	00-00-00-00-01	1
	sub2	Abone	2000	1000	2	client_@p-@b-@s	DomainName	LocalIP=10.20.0.0	00-10-94-04-00-01	00-00-00-00-01	2
			3000								
Honolulu 66-3	sub1	Abone	1000	1000	1	client_@p-@b-@s	StateRoute	LocalIP=10.30.0.0	00-10-94-05-00-01	00-00-00-00-01	1
	sub2	Abone	1000	1000	1	client_@p-@b-@s	NetBIOSServer	LocalIP=10.40.0.0	00-10-94-06-00-01	00-00-00-00-01	1
			2000								
Honolulu 66-4	sub1	Abone	4000	1000	4	client_@p-@b-@s	NetBIOSServer	LocalIP=10.50.0.0	00-10-94-07-00-01	00-00-00-00-01	3
	sub2	Abone	5000	1000	5	client_@p-@b-@s	NetBIOSType	LocalIP=10.60.0.0	00-10-94-08-00-01	00-00-00-00-01	4
			9000								
Honolulu 66-5	sub1	Abone	1000	1000	1	client_@p-@b-@s	PLeaseTime	LocalIP=10.70.0.0	00-10-94-09-00-01	00-00-00-00-01	1
	sub2	Abone	1000	1000	1	client_@p-@b-@s	ServerID	LocalIP=10.80.0.0	00-10-94-0A-00-01	00-00-00-00-01	1
			2000								
Honolulu 66-6	sub1	Abone	8000	1000	8	client_@p-@b-@s	ServerID	LocalIP=10.90.0.0	00-10-94-0B-00-01	00-00-00-00-01	5
	sub2	Abone	5000	500	10	client_@p-@b-@s	RenewTime	LocalIP=10.100.0.0	00-10-94-0C-00-01	00-00-00-00-01	6
			13000								
Honolulu 66-7	sub1	Abone	1000	1000	1	client_@p-@b-@s	RebindingTime	LocalIP=10.110.0.0	00-10-94-0D-00-01	00-00-00-00-01	1
	sub2	Abone	1000	1000	1	client_@p-@b-@s	Subnet.Router	LocalIP=10.120.0.0	00-10-94-0E-00-01	00-00-00-00-01	1
			2000								
Honolulu 66-8	sub1	Abone	4000	200	20	client_@p-@b-@s	DNS.DomainName	LocalIP=10.130.0.0	00-10-94-0F-00-01	00-00-00-00-01	7
	sub2	Abone									
			4000								

## Test Results

The DHCP Base package provides both real-time and end-of-test results using spreadsheets and graphical formats. These results can be exported in comma separated value (.CSV) file format or HTML for spreadsheet or browser-based analysis and reporting.

You can select from several methods for tracking data plane traffic. Tracking options include PPP Session ID, VLAN and QoS value.

The DHCP Base package will display real time results per session block with session counters, message counters, failed sessions and rates.

## Technical Specifications

### Configurable options include

- Bind / Renew rate
- Release rate
- Number subscribers
- VLAN ID
- VLAN priority

Port	Session Block	State	# of Sessions	# of Clients	Sessions per VLAN	Hostname	Request List [55]	Relay Agent [82]	MAC Start	MAC Step	VLAN ID St
Honolulu 66-1	sub1	Discovering/Requesting	1	1	1	client_@p-@b-@s	Subnet;DNS;Doma...	< Not enabled >	00-10-94-01-00-01	1	1
	sub2	Discovering/Requesting	1	1	1	client_@p-@b-@s	Subnet;DNS;Doma...	< Not enabled >	00-10-95-02-00-01	1	1
	sub3	Discovering/Requesting	1	1	1	client_@p-@b-@s	Subnet;DNS;Doma...	< Not enabled >	00-10-96-03-00-01	1	1
	sub4	Discovering/Requesting	1	1	1	client_@p-@b-@s	Subnet;DNS;Doma...	< Not enabled >	00-10-97-04-00-01	1	1
	sub5	Discovering/Requesting	1	1	1	client_@p-@b-@s	Subnet;DNS;Doma...	< Not enabled >	00-10-98-05-00-01	1	1
				5							

- VLAN subscriber count
- Host name with variables
- Option 55 – request list
  - Subnet mask (1)
  - Routers (3)
  - Domain name servers (6)
  - Domain name (15)
  - Static routes (33)
  - NetBIOS name servers (44)
  - NetBIOS node type (46)
  - NetBIOS scope (47)
  - IP address lease time (51)
  - Server Identifier (54)
  - Renewal time (58)
  - Rebinding time (59)
- Option 82 – relay agent
  - Local IP
  - Server IP
  - Enable circuit ID
  - Circuit ID
  - Enable remote ID
  - Remote ID
- MAC address
- Per test options
  - Suggested lease time
  - Message timeout
  - Number of retries
  - Maximum DHCP message size

#### Flap events include

- DHCP bind
- DHCP renew
- DHCP release

#### Interactive actions include

- Bind
- Renew
- Release
- Pause
- Resume
- Retry
- Abort

#### Data plane configuration

- Duration: seconds, packet burst, or continuous
- Load Options: %bandwidth of port, frames per second, Mbps, Kbps, bps
- Frame Size: individually set, fixed, random, step, custom step list
- Load: individually set, fixed, random, step, custom step list

## RFCs Supported

- RFC 2131 DHCP
- RFC 2132 DHCP Options
- IEEE 802.1 (.p/.q)VLAN tagging

## Supported Modules

Module	Description
CPR-1001A	10/100/1000 Copper RJ-45, 8 Port
EDM-1001A	10/100/1000 Dual Media, 4 Port
XFP-1001A	10G XFP, 1 Port
FBR-1001A	1G Fiber SFP, 8 Port
CPR-2002A	10/100 Copper RJ-45, 8 Port
CPR-2001A	10/100/1000 Copper RJ-45, 8 Port
EDM-2001A	10/100/1000 Dual Media, 4 Port
XFP-2001A	10G XFP, 1 Port
FBR-2001A	1G Fiber SFP, 8 Port

## Requirements

- An SPT-2000A Spirent 2U chassis and controller or SPT-5000A Spirent 5U chassis and controller with the appropriate hardware modules
- Pentium™ or greater PC running Windows® 2000 SP4 or XP SP1/1A/2 with mouse/color monitor required for GUI operation

## Ordering Information

BPK-1008A	DHCP Base Package A
BPK-1008B	DHCP Base Package B

BPK-1008A is a performance-limited version, available at lower cost. BPK-1008B, the full-performance version, should be used with Series 2000 test modules.

#### Other related Spirent TestCenter software available

BPK-1003A	IGMP/MLD Host IP Multicast Base Package
BPK-1007A	PPPoX Base Package A
BPK-1007B	PPPoX Base Package B
SPK-0003B	Ethernet Access Concentrator Test Solution B

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