riverbed®

Riverbed® Steelhead® Product Family with Granite

Model Specifications: Riverbed Steelhead CX Appliances

Model	Mid-Size Office Steelhead					Large Office or Data Center Steelhead		
	555 Series		755 Series			1555 Series		
Configurations	M	H	L	M	H	L	M	H
Profile	Desktop		Desktop			1U		
Upgradeable to	555 M	-	755 M	-	-	1555 M	-	-
Optimized WAN Capacity[a]	6 Mbps	10 Mbps	10 Mbps	10 Mbps	20 Mbps	45 Mbps	45 Mbps	90 Mbps
Optimized TCP Connections[b]	350	650	900	1,500	2,300	3,000	4,500	6,000
QoS Bandwidth[c]	10 Mbps	10 Mbps	45 Mbps	45 Mbps	45 Mbps	100 Mbps	100 Mbps	100 Mbps
QoS Rules/Classes[d]	500	500	1,000	1,000	1,000	2,000	2,000	2,000
Raw Capacity[e]	500 GB	500 GB	500 GB	500 GB	410 GB	2,000 GB	2,000 GB	1,320 GB
Data Store Capacity	80 GB	80 GB	100 GB	100 GB	160 GB SSD	400 GB	400 GB	320 GB SSD
Storage Fault Tolerance	-		-			RAID[f]	RAID[f]	RAID[f]
Hot Swappable Drives	-		-			4	4	4
RAM	2 GB		2 GB		4GB	8 GB		
Expansion Slots (PCI-e)[g]	-		-			2		
Onboard Bypass ports (Copper)	4		4			4		
Max # of Bypass Ports	4		4			12		

a. Outbound WAN capacity is up to the amount listed.
b. TCP Connections can be expected up to the amount listed
c. Maximum outbound QoS shaping capacity
d. Total of classes plus rules

e. Includes HDD's with SSD's
f. RAID 10 configuration for HDD, Data store uses fault tolerant striped (FTS) configuration for SSD/HDD
g. Optional Network Bypass cards: Dual and Quad LX and SX GigE Fiber GigE, Quad Copper GigE,

Power & Physical Specifications: Riverbed Steelhead CX Appliances

Model	Small Office Steelhead		Large Office or Data Center Steelhead
	555 Series	755 Series	1555 Series
Dual Power Supplies	-	-	✓
Power [Watts] (Typical)	40	50	175
BTU	145	165	605
Temperature	0 - 45 deg C / 32 - 113 deg F (Operating) -40 - 65 deg C / -40 - 149 deg F (Storage)		10 - 40 deg C / 50 - 104 deg F (Operating) -40 - 65 deg C / -40 - 149 deg F (Storage)
Relative Humidity[i]	20% - 80% non-condensing (Operating), 5% - 95% non-condensing (Storage)		
Operating Acoustic Noise (Typical)	45 dBA		62 dBA
System Dimensions (LxWxH)[ii]	7.1 x 12 x 1.65 in / 180.3 x 304.8 x 42 mm		25.4 x 17.2 x 1.71 in / 645.4 x 436 x 43.5 mm
Packaging Dimensions	17.5 x 12 x 3.87 in / 444.5 x 304.8 x 174.6 mm		36.25 x 23.38 x 12.5 in / 920.8 x 593.7 x 317.5 mm
Max Weight (without packaging)	4.7 Lbs / 2.15 Kg		36 Lbs / 16.36 Kg
Rail Information	Mounting ears included. Orderable spare part RMK-001		Mounting rail kit inlcuded. Orderable spare part RMK-002

i. Operating altitude up to 10,000 feet
ii. Length is without bezel
The availability, export or re-export of these products or specific features are subject to the export laws and regulations of the U.S. and the laws and regulations of any applicable foreign agency or authority.

Model Specifications: Riverbed Steelhead EX Appliances

	Small Office Steelhead				Mid-Size Office Steelhead		
Model	EX560 Series				EX760 Series		
Configurations	G	L	M	H	L	M	H
Profile	1U				1U		
Upgradeable to	560 L/M/H	560 M/H	560 H	-	760 M/H	760 H	-
Optimized WAN Capacity[a]	4 Mbps	4 Mbps	6 Mbps	10 Mbps	10 Mbps	10 Mbps	20 Mbps
Optimized TCP Connections[b]	N/A	250	350	650	900	1,500	2,300
QoS Bandwidth[c]	10 Mbps	10 Mbps	10 Mbps	10 Mbps	45 Mbps	45 Mbps	45 Mbps
QoS Rules/Classes[d]	500	500	500	500	1,000	1,000	1,000
Raw Storage Capacity	1080 GB				1160 GB		
Dara Store Capacity (SSD)	40 GB	40 GB	70 GB	70 GB	150 GB	150 GB	150 GB
VSP Partition[h]	N/A	up to 380 GB			up to 380 GB		
Granite Block Store[h]	380 GB	up to 380 GB			up to 380 GB		
Storage Fault Tolerance	-				-		
Hot Swappable Drives	-				-		
RAM (without Granite)	N/A	8 GB			16 GB		
Available for VSP	N/A	2 GB			6 GB		
RAM (with Granite)[g]	16 GB				16 GB		
Available for VSP[k]	N/A	7 GB			6 GB		
Expansion Slots (PCI-e)[i]	-				-		
Onboard Bypass Ports (Copper)	4				4		
Max # of Bypass Ports	4				4		

a. Outbound WAN capacity is up to the amount listed.
b. TCP Connections are up to the amount listed
c. Maximum outbound QoS shaping capacity
d. Total of classes plus rules
e. RAID 1 configuration for HDD, Data store uses fault tolerant striped (FTS) configuration for SSD
f. RAID 10 configuration for HDD, Data store uses fault tolerant striped (FTS) configuration for SSD
g. Granite requires extra memory. In some models - EX760 and EX1260 - the memory is always included. On other models, extra memory is needed to support Granite. EX560 requires 16GB of RAM when configured for Granite. EX1160 requires 20GB of RAM when configured for Granite
h. With the Granite license, this can grow to encompass the Granite blockstore. Increasing VSP partition decreases Granite block store and vice versa.
i. Optional Network Bypass cards: Dual & Quad LX/SX Fiber GigE, EX models support a max of 1 fiber NIC but no additional copper NICs
j. EX1260 memory can be upgraded to 32GB (2TB model) and 64GB (4TB model)

Model Specifications: Riverbed Steelhead EX Appliances

	Large OfficeSteelhead														
Model	EX1160 Series					EX1260 Series (2 TB)					EX1260 Series (4 TB)				
Configurations	G	L	M	H	VH	G	L	M	H	VH	G	L	M	H	VH
Profile	1U					2U					2U				
Upgradeable to	1160 L/M/H	1160 M/H	1160 H	-	-	1260 L/M/H	1260 M/H	1260 H	-	-	1260 L/M/H	1260 M/H	1260 H	-	-
Optimized WAN Capacity[a]	10 Mbps			20 Mbps	45 Mbps	10 Mbps			20 Mbps	45 Mbps	10 Mbps			20 Mbps	45 Mbps
Optimized TCP Connections[b]	N/A	900	1,500	2,300	4,000	N/A	900	1,500	2,300	4,000	N/A	900	1,500	2,300	4,000
QoS Bandwidth[c]	100 Mbps					100 Mbps					100 Mbps				
QoS Rules/Classes[d]	1,000					1,000					1,000				
Raw Storage Capacity	2,160 GB				2,320 GB	4,160 GB				4,320 GB	8,160 GB				8,320 GB
Data Store Capacity (SSD)	150 GB				300 GB	150 GB				300 GB	150 GB				300 GB
VSP Partition[h]	N/A	upto 415 GB				N/A	up to 860 GB				N/A	up to 1,860 GB			
Granite Block Store[h]	760 GB	up to 760 GB				1,580 GB	up to 1,580 GB				3,575 GB	up to 3,575 GB			
Storage Fault Tolerance	RAID[e]					RAID[f]					RAID[f]				
Hot Swappable Drives	4					6				8	10				12
RAM (without Granite)	N/A	16 GB		20 GB		N/A					N/A				
Available for VSP	N/A	8 GB				N/A					N/A				
RAM (with Granite)[g]	20 GB					24 / 32[j] GB					32 / 64[j] GB				
Available for VSP[k]	N/A	8 GB				9 / 17[j] GB				5 / 13[j] GB	12 / 44[j] GB				8 / 40[j] GB
Expansion Slots (PCI-e)[i]	2					4					4				
Onboard Bypass Ports (Copper)	4					4					4				
Max # of Bypass Ports	4					4					4				

a. Outbound WAN capacity is up to the amount listed.
b. TCP Connections are up to the amount listed
c. Maximum outbound QoS shaping capacity
d. Total of classes plus rules
e. RAID 1 configuration for HDD, Data store uses fault tolerant striped (FTS) configuration for SSD
f. RAID 10 configuration for HDD, Data store uses fault tolerant striped (FTS) configuration for SSD
g. Granite requires extra memory. In some models - EX760 and EX1260 - the memory is always included. On other models, extra memory is needed to support Granite. EX560 requires 16GB of RAM when configured for Granite. EX1160 requires 20GB of RAM when configured for Granite
h. With the Granite license, this can grow to encompass the Granite blockstore. Increasing VSP partition decreases Granite block store and vice versa.
i. Optional Network Bypass cards: Dual & Quad LX/SX Fiber GigE, EX models support a max of 1 fiber NIC but no additional copper NICs
j. EX1260 memory can be upgraded to 32GB (2TB model) and 64GB (4TB model)

Model Specifications: Granite

	Granite Core						
Model	VGC2000			GC2000			
Configurations	U	L	M	L	M	H	VH
Profile	Virtual			2U			
Upgradeable to	VGC2000 L/M	VGC2000 M	-	GC2000 M/H/VH	GC2000 H/VH	GC2000 VH	-
Front Swappable Drives	N/A			2			
RAM	N/A			24 GB			
Expansion Slots (PCI-e)[g]	N/A			4			
Included Ports (Copper)	N/A			6			
Max. # of Ports	N/A			6			
Branches	5	10	20	10	20	40	80
Data Set Size[1]	2 TB	5 TB	10 TB	5 TB	10 TB	20 TB	35 TB

1. Recommended size depending on data type

Power & Physical Specifications: Riverbed Steelhead EX and Granite Appliances

	Small Office Steelhead	Mid-Size Office Steelhead	Large Office or Data Center Steelhead	Data Center
Model	EX560/760 Series	EX1160 Series	EX1260 Series	GC2000
Dual Power Supplies	-	✓	✓	
Power [Watts] (Typical)	85	175	355	330
BTU	295	605	1,215	1,130
Temperature	10 - 40 deg C / 50 - 104 deg F (Operating) -40 - 65 deg C / -40 - 149 deg F (Storage)			
Relative Humidity[i]	20% - 80% non-condensing (Operating) 5% - 95% non-condensing (Storage)			
Operating Acoustic Noise (Typical)	57 dBA	62 dBA	65 dBA	
System Dimensions (LxWxH)[ii]	17.09 x 15.52 x 1.66 in 434.0 x 394.3 x 42.4 mm	25.4 x 17.2 x 1.71 in 645.4 x 436 x 43.5 mm	25.4 x 17.2 x 3.43 in 645.4 x 436 x 87.1 mm	
Packaging Dimensions	36.25 x 23.38 x 12.5 in 920.8 x 593.7 x 317.5 mm			
Max Weight (without packaging)	17.76 Lbs 8.06 Kg	36 Lbs 16.36 Kg	58 Lbs 23.36 Kg	
Rail Information	Mounting ears included. Orderable spare part RMK-005		Mounting rail kit inlcuded. Orderable spare part RMK-002	

i. Operating altitude up to 10,000 feet
ii. Length is without bezel
The availability, export or re-export of these products or specific features are subject to the export laws and regulations of the U.S. and the laws and regulations of any applicable foreign agency or authority.

Model Specifications: Riverbed Steelhead xx50 Series Appliances

Model	Small Office Steelhead			Mid-Size Office Steelhead								
Model	**250 Series**			**550 Series**		**1050 Series**				**2050 Series**		
Configurations	L	M	H	M	H	U	L	M	H	L	M	H
Profile	Desktop			Desktop		1U				1U		
Upgradeable to	250 M/H	250 H	-	550 H	-	-	1050 M/H	1050 H	-	2050 M/H	2050 H	-
Total Throughput Capacity[a]	1 Mbps	1 Mbps	2 Mbps	2 Mbps	4 Mbps	4 Mbps	8 Mbps[o]	10 Mbps[o]	20 Mbps[o]	45 Mbps[b]		
Optimized TCP and UDP flows[d]	30	125	200	300	600	600	800	1,300	2,300	2,500	4,000	6,000
Raw Capacity	120 GB			160 GB		250 GB	250 GB		500 GB	1 TB		
Data Store Capacity	40 GB			80 GB		100 GB	100 GB		200 GB	400 GB		
RSP Partition[k]	55 GB			55 GB		100 GB	100 GB (Default) 200 GB (RAID)		200 GB	75 GB		
RSP 64 Bit Packages	No					Yes				Yes		
Storage Fault Tolerance	-					-	Optional RAID			RAID		
Front Swappable Drives	-					1	1 (default) 4[g] (RAID)		2 (default) 4[g] (RAID)	4[g]		
RAM[m]	1 GB			2 GB		2 GB	2 GB	2 GB	4 GB	6 GB		
Expansion Slots (PCI-e)[h]	-					1				1		
Onboard Bypass ports (Copper)	2					4				4		
Max # of Bypass Ports	2					8				8		

Model	Large Office or Data Center Steelhead						Management		
Model	**5050**			**6050**	**7050**		**INT 9350**	**CMC 8150**	**SMC 8650**
Configurations	L	M	H		L	M			
Profile	3U			3U	3U		3U	1U	1U
Upgradeable to	5050 M/H	5050 H	-	-	7050 M	-	-	-	-
Total Throughput Capacity[a]	90 Mbps[b, o]	90 Mbps[b, o]	155 Mbps[b]	310 Mbps	1 Gbps[b, c, n]		40 Gbps[p]	NA	NA
Optimized TCP and UDP flows[d]	7,500	10,000	18,000	50,000	75,000	100,000	1,000,000	-	-
Raw Capacity	2 TB	2 TB	3 TB	8 TB	2.8 TB	5 TB	-	1 TB	1 TB
Data Store Capacity	600 GB	600 GB	800 GB	3.5 TB	2.2 TB SSD	4.4 TB SSD	-	NA	N/A
RSP Partition[k]	100 GB[e]	100 GB[e]	150 GB[e]	150 GB[e]	100 GB[e]	100 GB[e]	-	-	-
RSP 64 Bit Packages	Yes			Yes	Yes		-	-	-
Storage Fault Tolerance	RAID			RAID	RAID[f]		RAID	-	-
Front Swappable Disks	8[g]	8[g]	12[g]	16[g]	16[g]	30[g]	3[g]	2	2
RAM[m]	8 GB			24 GB	32 GB	48 GB	8 GB	6 GB	6 GB
Expansion Slots (PCI-e)[h]	4	4		4	4		4	-	-
Onboard Bypass ports (Copper)	4	4		4	4		4	-	-
Max # of Bypass Ports	20	20		20	20		20	-	-

a. Inbound (WAN to LAN) Steelhead capacity is unrestricted; outbound WAN capacity can be expected up to the amount listed. On the 2050, 5050, and 6050, total WAN capacity equals inbound traffic + outbound traffic

b. No enforced optimized WAN bandwidth limit

c. For Data Center to Data Center workloads, WAN capacity is up to 1 Gbps. For DC to remote office workloads, recommended WAN capacity is up to 622 Mbps

d. TCP and UDP flows can be expected up to the amount listed

e. No PFS support

f. Data store uses fault tolerant striped configuration

g. Hot swappable disks

h. Optional Network Bypass cards: Dual and Quad LX and SX GigE Fiber GigE, Quad Copper GigE, Dual 10GbE SR/LR

k. Raw disk capacity allocated to the RSP partition. About 7GB is used by RSP package and filesystem. Partner packages need additional storage (based on the size of the package)

m. RSP requires additional 2GB of memory, 6050 requires 4GB, 7050 requires 8GB. RSP packages on the 550 are limited to 1.5GB memory since the software is unable to use the full 2GB of additional memory.

n. Over 4Gbps of LAN performance with 2.5X data reduction when configured to use jumbo Ethernet frames.

o. The 5050L and the 1050 B/W increases require RiOS 5.5.7 or 6.0.2 onwards

p. Multiple inpath interfaces were used to achieve this throughput. Up to 40Gbps throughput (rx+tx traffic). Requires version INT 3.0 with XBridge enabled. WCCP and PBR configurations are not supported when XBridge is enabled.

Power & Physical Specifications: Riverbed Steelhead xx50 Series Appliances

	Small Office Steelhead	Mid-Size Office Steelhead		
Model	**250 Series**	**550 Series**	**1050 Series**	**2050 Series**
Configurations	L / M / H	M / H	U / L / M / H	L / M / H
Profile	Desktop	Desktop	1U	1U
Dual Power Supplies	-	-	(Optional)	✓
Power [Watts] (Typical)	40	66.5	138 / 151	197
BTU	135	227	471 / 515	672
Temperature	0 - 45 deg C / 32 - 113 deg F (Operating) -40 - 65 deg C / -40 - 149 deg F (Storage)		10 - 40 deg C / 50 - 95 deg F (Operating) -40 - 65 deg C / -40 - 149 deg F (Storage)	
Relative Humidity [i]	20% - 80% non-condensing (Operating)5% - 95% non-condensing (Storage)			
Operating Acoustic Noise	45 dBA Sound Pressure (Typical)		61 dBA Sound Pressure (Typical)	
System Dimensions (LxWxH) [ii]	12 x 7.1 x 1.65 in 304.8 x 180.3 x 42 mm		25.4 x 17.2 x 1.71 in 645.4 x 436 x 43.5 mm	
Packaging Dimensions	24.5 x 12 x 4 in 622 x 305 x 102 mm		33.6 x 22.9 x 8.6 in 854 x 582 x 219 mm	
Max Weight (without packaging)	4.7 Lbs / 2.15 Kg		29 Lbs / 13.1 Kg / 30 Lbs / 13.6 Kg	35 Lbs / 15.9 Kg
Rail Information	Mounting ears included. Orderable spare part RMK-001		Mounting rail kit included. Orderable spare part RMK-002	

	Large Office or Data Center Steelhead				Management		
Model	**5050**	**6050**	**7050**	**7050**	**INT 9350**	**CMC 8150**	**SMC8650**
Configurations	L / M / H		L	M			
Profile	3U	3U	3U		3U	-	-
Dual Power Supplies	✓	✓	✓		✓	-	-
Power [Watts] (Typical)	203 / 225	352	425	430	320		153
BTU	693 / 768	1670	1455	1470	1091		515
Temperature	10 - 40 deg C / 50 - 95 deg F (Operating) -40 - 65 deg C / -40 - 149 deg F (Storage)				10 - 35 dec C / 50-95 deg F (Operating) -40-70 deg C / -40-158 deg F (Storage)		
Relative Humidity [i]	20% - 80% non-condensing (Operating)5% - 95% non-condensing (Storage)						
Operating Acoustic Noise	61 dBA Sound Pressure (Typical)				Same as 1050		
System Dimensions (LxWxH) [ii]	25.72 x 17.0 x 5.2 in 653.4 x 431.6 x 131.9 mm				Same as 1050		
Packaging Dimensions	34.1 x 23.7 x 15.9 in 866 x 602 x 403 mm				Same as 1050		
Max Weight (without packaging)	59 Lbs / 26.7 Kg	64 Lbs / 29 Kg / 71 Lbs / 32.2 Kg	55 Lbs / 25 Kg	59 Lbs / 25.8 Kg	51 Lbs / 23.2 Kg		30 lbs / 13.6 kg
Rail Information	Mounting rail kit included. Orderable spare part RMK-003				Mounting rail kit included. Orderable spare part RMK-002		

i. Operating altitude up to 10,000 feet
ii. Length is without bezel
The availability, export or re-export of these products or specific features are subject to the export laws and regulations of the U.S. and the laws and regulations of any applicable foreign agency or authority.

System Requirements: Steelhead Mobile

Steelhead Mobile software optimizes application performance over the WAN for the mobile workforce.

Operating System	Windows 2000 SP4, XP SP2 (32 bit versions only); Vista and Windows 7 (32 bit and 64 bit versions). Mac OSX 10.5 and 10.6 (Intel only)
CPU	Celeron 650 MHz
Memory	256 MB
Disk Store	256 MB free disk space (min. required)
Steelhead Appliance[1]	Required
Steelhead Mobile Controller (SMC)	Required: Either Steelhead Mobile Controller Appliance or Steelhead Mobile Conroller Virtual Edition

1. At least one Steelhead appliance is required running RiOS version 4.x or higher.

Software Specifications: Steelhead Mobile

Concurrent Clients Supported per SMC	4000 (SMC-Appliance) / 100 (SMC-Virtual Edition)
Concurrent Clients Supported with SMC Cluster[2]	n x 4000
VPN Compatibility[3]	Cisco, Juniper, Nortel, OpenVPN, Microsoft, Aventail, Citrix, AT&T Netclient, Array, Checkpoint, F5, Sonicwall, Fortinet, WatchGuard
Wireless PC Card Compatibility[4]	Verizon, AT&T, Sprint

2. SMCs can operate in clustered mode to support additional Steelhead Mobile clients.
3. Partial listing. VPN compatibility may be impacted by vendor software version, client configuration, and other factors. Refer to detailed VPN specifications at http://www.riverbed.com/products/steelhead_mobile/vpn_specs/ for more information.
4. Partial listing. Wireless PC Card compatibility may be impacted dependent upon hardware and driver versions, bundled software and other factors. Refer to detailed wireless specifications at http://www.riverbed.com/products/steelhead_mobile/wireless for more information.

riverbed®

About Riverbed

Riverbed delivers performance for the globally connected enterprise. With Riverbed, enterprises can successfully and intelligently implement strategic initiatives such as virtualization, consolidation, cloud computing, and disaster recovery without fear of compromising performance. By giving enterprises the platform they need to understand, optimize and consolidate their IT, Riverbed helps enterprises to build a fast, fluid and dynamic IT architecture that aligns with the business needs of the organization. Additional information about Riverbed (NASDAQ: RVBD) is available at **www.riverbed.com**.

InfoWorld 2011 TECHNOLOGY OF THE YEAR AWARDS

2005, 2006, 2007, 2008, 2009, 2011

CRN TECH INNOVATOR AWARDS 2011

GCNLAB PRODUCTS OF THE YEAR

Riverbed Technology
199 Fremont Street
San Francisco, CA 94105
Tel: +1 415 247 8800
Fax: +1 415 247 8801
www.riverbed.com

Riverbed Technology Ltd.
One Thames Valley
Wokingham Road, Level 2
Bracknell RG42 1NG
United Kingdom
Tel: +44 1344 401900

Riverbed Technology Pte. Ltd.
391A Orchard Road #22-06/10
Ngee Ann City Tower A
Singapore 238873
Tel: +65 6508-7400

Riverbed Technology K.K.
Shiba-Koen Plaza Building 9F
3-6-9, Shiba, Minato-ku
Tokyo, Japan 105-0014
Tel: +81 3 5419 1990

SP-SHPF-02012012