

# How to deploy a virtual machine on a Granite Datastore

### Solution Guide

**Riverbed Technical Marketing** 

December 2013



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#### Introduction

This solution guide describes how to deploy a virtual machine on a Granite Datastore or in other words how to how to use Granite Edge Blockstore as ESX datastore.

#### Audience

This paper is written for server, storage, backup and network administrators familiar with administering and managing distributed office environments using common network and storage protocols such as iSCSI, SCSI, TCP, CIFS, HTTP, FTP, and NFS.

To understand the concepts presented in this document, the reader must also be familiar with:

- Riverbed Steelhead® appliance installation and configuration process
- Riverbed Steelhead management interface

#### **Additional Resources**

For a complete list and the most current version of Riverbed documentation log in to the Riverbed support website located at <u>https://support.riverbed.com</u>.

The Riverbed Knowledge Base is a database of known issues, how-to documents, system requirements, and common error messages. You can browse titles or search for key words and strings. To access the Riverbed Knowledge Base, log in to the Riverbed Support site located at <u>https://support.riverbed.com</u>.

#### How to provision an iSCSI LUN to VSP

**Note 1**: Make sure that the Granite Core is communicating with the storage system, the Granite Edge is communicating with the Core, and the steelhead appliances are optimizing Granite traffic.

**Note 2**: In this example the LUN on the storage system has been already formatted with the VMFS file system and a virtual machine has been deployed on the VMFS Datastore.

On the Core, provision the LUN to the Granite Edge and allow the VSP ESXi iSCSI initiator access to connect to this LUN.

 Navigate to Configure > Storage > LUNs and select the LUN to expose to the Granite Edge appliance. Under the Edge Mapping tab select the appropriate Granite Edge Identifier and click on the Update Mapping button.

riverbed   GRANITE CORE						core1 model V1000 Friday 23:42	5 / 10.32.147.165 0 / 2.0.0 (x86_64) ::13 GMT (+0000)
Interprise i	idmin Logout						
iSCSI Configuration LUNs Granite Edges CHAP Users Snapshots Failover Co	nfiguration						
Configure > Storage > LUNs 2							
Add an iSCSI LUN Filter by ISCSI Portal: Any							
LUN	Status	Portal	Size	Pinned	Prepop	Granite Edge	Remove
Cdrive (P3PdBZkuEIvW)	Connected	10.32.146.161, 10.32.146.162	78.1279 GB	No	Disabled	EdgeNewYork	Î
Cdrive2 (P3PdBZn4E/Tv)	Unmapped	10.32.146.161, 10.32.146.162	43.0049 GB	No	Disabled		Î
Details Alias Edge Mapping Failover MPIO Snapshots Pin/Pro Granite Edge: EdgeHA : Update Mapping	ерор						
Ddrive (P3PdBZl1XTRp)	Unmapped	10.32.146.161, 10.32.146.162	10.0045 GB	No	Disabled		Î
d01 (P3PdBZ11XSbk)	Connected	10.32.146.161, 10.32.146.162	10.0045 GB	No	Disabled	EdgeNewYork	ŵ

- 1. Log in to the Steelhead EX appliance.
- Navigate to Configure > Virtualization > Virtual Services platform and take note of the VSP ESXi server IQN.



#### Configure > Virtualization > Virtual Services Platform 2

Allocated Resources	VSP Status				
6 CPU cores 10.3 GB of memory 1.2 TB of disk space	Status: available ESXi Management IP Address: 10.32.160.164 IQN: iqn.1998-01.com.vmware:localhost-15af38f7				
ESXi Reinstallation Wizard This wizard will reinstall ESXi Launch ESXi Reinstallation Wiz	and allow you to reconfigure your VSP and ESXi settings.				
ESXi License					

- 3. Log back in to the Granite Core appliance and create an initiator record for the VSP ESXi server.
- 4. Navigate to Configure > Granite Edges, under the appropriate Granite Edge Identifier click on the

Initiators tab and click on the Add an Initiator button.

5. Type the VSP ESXi Server IQN and click on the Add Initiator button to commit the operation.

Granite Edge			Con	nection	Du	uration	
4	EdgeHA			Con	nected	20	i 3h 11m 56s
	Status	Target Settings	Initiators	Initiator Groups	LUNs	Prepopulation	
	🔽 Add ar	n Initiator					
	Initiator	Name: D1	com.vmware	:localhost-15af38f7			
	Add to I	nitiatior Group:	No Group		New Gro	oup	
	Authenti	ication:	None	<b>•</b>			
	Add In	itiator					
	Initia	tor					Δ.

By default LUN access is denied to all iSCSI initiators at the branch. Modify the access list to allow access.

- 6. Navigate to **Configure > Storage > Granite Edges**, select the appropriate Granite Edge Identifier and click on the **LUNs** button.
- 7. Click on Edit in the Initiators Granted Access box.
- 8. Grant VSP ESXi server permission by clicking the Add button.

G	Granite Edg	e		Co	nnection	Duration		IP A	ddress	Mapped LUNs	LUN Capacity	Remo
à 4	4 EdgeHA			Co	nnected	2d 3h 12i	n 50s	10.3	2.160.162	1 LUN	43.00 GB	Ô
	Status	Target Settings	Initiators	Initiator Groups	LUNs	Prepopulation						
	+ Map Ll	JNs to this Granite Ed	lge									
	LU	N					Size		Online/Offline	Accessible	Pinned	Unmap
	≣ .4 (	drive2 (P3PdBZn4	E/Tv)				43.00	49 GB	Online	No	No	Î
		Initiators Granted	Access			0 Hide	Not	iranted	m vmuara localhoct	15-52057		
		None					« Add	990-01.00	JII. VIII WALE. IOCAIIIUSC	-13013017		
							Remove »					
		().		Ca	nnected	1d 17b 1m	180	10.3	2 08 51	2 LUNe	98 13 CB	17

9. To import the LUN into the VSP ESXi server, log in using VMware vSphere client and navigate to the **Configuration** tab and open the **Properties** window from the left **Storage Adapters** menu.

Storage Adapters		Add Remov	/e Refresh	Rescan All
Device	Туре	WWN		
iSCSI Software Adapter				
📀 vmhba33	iSCSI	ign.1998-01.0	com.vmware:localh	ost-15af38f7:
PIIX4 for 430TX/440BX/MX	IDE Controller			
💿 vmhba0	Block SCSI			
ovmhba32	Block SCSI			
53c1030 PCI-X Fusion-MPT	Dual Ultra320 SCSI			
🚫 vmhba1	SCSI			
•	I	"		
Details				
vmhba33				Properties
Model: iSCSI	Software Adapter			
iSCSI Name: iqn. 19	998-01.com.vmware:loo	alhost-15af38f7		
iSCSI Alias:				
Connected Targets: 0	Devices: 0	Paths:	0	N
View: Devices Paths				5
Tient Derices Tues				
Name	Runtime Na	me Operati	ional State LUN	Туре
<				
	Storage Adapters       Device       iSCSI Software Adapter       Image: storage Adapter       Image: stor	Storage Adapters     Configuration       Device     Type       iSCSI Software Adapter     ISCSI       INTX4 for 430TX/440BX/MX IDE Controller     ISCSI       Image: Interpret of the second s	Storage Adapters       Add       Remov         Device       Type       WWN         ISCSI Software Adapter       Withba33       ISCSI       iqn.1998-01.4         PIIX4 for 430TX/440BX/MX IDE Controller       Withba33       ISCSI       iqn.1998-01.4         Viniba0       Block SCSI       Storage Adapter       Image: Storage Adapter         Viniba32       Block SCSI       Storage Adapter       Image: Storage Adapter         Viniba33       ISCSI Software Adapter       Image: SCSI Software Adapter         ISCSI Alias:       Image: Ign.1998-01.com.vmware:localhost-15af38f7       ISCSI Alias:         Connected Targets:       0       Devices:       0         Verw:       Devices       Paths:       View:       Operate         Vame       Runtime Name       Operate       Image: Image	Storage Adapters     Add     Remove     Refresh       Device     Type     WWN       iSCSI Software Adapter     winba33     iSCSI     ign.1998-01.com.vmware:localh       PIDK4 for 430TX/440BX/MX IDE Controller     winba32     Block SCSI       Image: Software Adapter     winba32     Block SCSI       Image: Software Adapter     Winba33     SCSI       Image: Software Adapter     Winba33     SCSI       Image: Vinba33     SCSI     Winba33       Image: Vinba33     SCSI Software Adapter       ISCSI Kalas:     Connected Targets: 0     Paths: 0       View: Devices     Paths     View: Devices     Paths       Image: Name     Runtime Name     Operational State     LUN

10. Navigate to the Dynamic Discovery tab of the iSCSI Initiator Properties window, click on the Add... button to enter the IP address of the primary interface of the Steelhead EX appliance into the iSCSI Server field and click OK.

General       Network Configuration       Dynamic Discovery       Static Discovery         Send Targets       Discover iSCSI targets dynamically from the following locations (IPv4, host name):         ISCSI Server Location       ISCSI Server Location         ISCSI Server Location       ISCSI Server Location
Send Targets Discover ISCSI targets dynamically from the following locations (IPv4, host name): ISCSI Server Location
Discover iSCSI targets dynamically from the following locations (IPv4, host name):  ISCSI Server Location  Add Send Target Server  ISCSI Server
ISCSI Server Location
Add Send Target Server
Add Send Target Server
10.32, 160 162
Port: 3260
Parent:
Authentication may need to be configured before a session can
<ul> <li>De established with any discovered targets.</li> </ul>
CHAP Advanced
OK Cancel Help
Add Remove Settings

**Note:** Do NOT use static discovery and do NOT add any VMkernel adapters on the network configuration tab. Just enter the IP address of the Steelhead EX /Granite Edge primary interface on the

Dynamic Discovery tab. ESX will automatically discover the Granite Edge IQN and all the MPIO paths.

**11.** Close the window, answer **Yes** to the request coming from the VMware ESX server to rescan the host bus adapter.

vd	Rescan	83
er re	À	A rescan of the host bus adapter is recommended for this configuration change. Rescan the adapter?
a		Y rs No
let	rucauori sen	Connected Targets: 0 Devices: 0

12. Navigate to the Storage menu of the ESX server Configuration tab, click on the Add Storage... link to open the Add Storage wizard.

Hardware	View: Datastores Devi	ices				
Health Status	Datastores		Refresh	Delete	Add Storage	Rescan Al
Processors	Identification 🗠	Device	Drive Type	Ca	pacity	Free Type
Memory	riverbed_000eb6	Local VMware, Di	Non-SSD	1	.13 TB 1.1	2 TB VMFS5
<ul> <li>Storage</li> </ul>						
Networking						
Storage Adapters			5			
Network Adapters						
Advanced Settings						
Power Management						
		III				
oftware	Datastore Details					Propertie
Licensed Features						Troperae
Time Configuration						
DNS and Routing						
Authentication Services						

**13.** In the first step of the wizard select the **RIVERBED iSCSI disk**.

🛃 Add Storage					- • <b>·</b>			
Select Disk/LUN Select a LUN to create a dat	tastore or expand the current one							
Disk/LUN Select Disk/LUN	Name, Identifier, Path ID, LUN, Capacity, Expandable or VMFS Label c • Clear							
File System Version	Name	Path ID	LUN 🗠	Drive Type	Capacity			
Current Disk Layout	Local VMware, Disk (mpx, vmhba1:C	vmhba1:C0:T0:L0	0	Non-SSD	7.50 GB			
Properties	RIVERBED iSCSI Disk (naa.6000eb6	iqn.2003-10.com.r	1	Non-SSD	43.00 GB			
Ready to Complete								
	1				Þ			
1								
Help			< Back	Next >	Cancel			

14. Under **Mount Options** select **Keep the existing Signature** if prompted. This means that the LUN has already been formatted with the VMFS file system.

🛃 Add Storage	
Select VMFS Mount Options Specify if you want to moun	t the detected VMFS volume with the existing signature, use a new signature, or format the disk
Disk/LUN Select Disk/LUN Mount Options Ready to Complete	Specify a VMFS mount option:
Help	< Back Next > Cancel

**15.** Right click on the **newly added Granite** datastore to browse it and add the pre installed virtual machine to the inventory

Getting Started Summary Virtu	al Machines Resource A	Allocation Performance Con	figuration Local L	Jsers & Gr	oupsEve	ents Pern	nissions
Hardware	View: Data	stores Devices					
Health Status	Datastores		Refresh	Delete	Add Stor	age I	Rescan
Processors	Identification	△ Device	Drive Type	C	apacity	Free	Туре
Memory	Granite	alun DTVEDRED (SOST	Non-SSD	42	2.75 GB	34.59 GB	VMFS
<ul> <li>Storage</li> </ul>	Br	owse Datastore	Non-SSD		1.13 TB	1.12 TB	VMFS
Networking	Re	- NG ename					
Storage Adapters	U	amount					
Network Adapters			_				
Advanced Settings	Re	fresh					
Power Management	Pr	operties					
oftware	C	opy to Clipboard Ctrl+C					
Descend Frank and	Datastore D	etails		Upgrade	to VMFS-5.		Proper
Licensed Features	Granitelun				42.75	GB Capa	acity
Time Configuration	Location:	/vmfs/volumes/4fe73f4f-55db	4977-f2d4-000c291	b2639	8 1A	GB ■ II	' Ised

16. Right click on OS .vmx file and click on Add to Inventory.

🕝 Datastore Browser - [Granitelun]						
🗗 🕅 🎁 🖗 🖗 🔁	<b>S</b>					
Folders Search	[Granitelun] wi	n2k832				
□· <b>[</b> ]	Name		Size	Provisioned Size	Туре	Path
win2k832	win2k ***		2.78 KB		Virtual Machine	[Granitelun] win2k83
	📇 win2k	dd to Inventory	5,584.00 KB	41,943,040.00 KB	Virtual Disk	[Granitelun] win2k83
	vmwa	Go to Folder	847.07 KB		Virtual Machine	[Granitelun] win2k83
	win2k	Cut	8.48 KB		Non-volatile me	[Granitelun] win2k83
	vmwa	Сору	235.06 KB		Virtual Machine	[Granitelun] win2k83
	win2k	Daste	0.26 KB		File	[Granitelun] win2k83
	win2k		0.00 KB		File	[Granitelun] win2k83
	win2k	Inflate	7,152.00 KB		File	[Granitelun] win2k83
		Download				

Edit the **virtual machine settings** and make sure the **Network Adapters** are connected and the appropriate network labels are selected. Select **rvbd\_pri\_vm\_network** to map the virtual machine network interface to the primary interface of the Steelhead EX appliance or **rvbd\_aux\_vm\_network** to map it to the aux interface.

**Note**: Do not select the **rvbd\_hpn\_vm\_network**, this is a private network used internally by RiOS to communicate with ESXi.

Device Status
Remove   Connected   Connect at power on     Adapter Type   Current adapter:   E1000     MAC Address   00:0c:29:0c:c9:f0   Outmatic   Manual   DirectPath I/O Status: Not supported <b>1</b> Network Connection Network label: rvbd_pri_vm_network Total pri_vm_network

.....

**18.** You can now boot and start using the virtual machine.

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#### How to provision a Local Granite LUN to VSP

- 1. Navigate to **Configure > Storage > LUNs** and click the **Add a LUN** button.
- 2. Select the Edge Local tab.
- 3. Select the appropriate **Granite Edge Identifier** from the dropdown box.
- 4. Select the size of the LUN.
- 5. Enter an **alias** name for the LUN.
- 6. Click the Add Local LUN button.

Home Configure - Reports - Support 🚭 Save • Healthy	
iSCSI Configuration LUNs Granite Edges CHAP Users Snapshots	Failover Configuration
Configure > Storage > LUNs ? Status of all configured luns.	
Add a LUN	
iSCSI Block Disk Edge Local	
Granite Edge: None +	
Size: 50 GB ‡ (minimum 8MB)	
Alias: LocalEdgeLUN	
Add Local Lun	
LUN †∔	Type †↓ Status †↓
FileCenterOCITIN (D3DdB7aT\/ATu)	iscer Connected

- 7. Navigate to **Configure > Storage > Granite Edges**, select the appropriate Granite Edge Identifier and click on the **LUNs** button.
- 8. Select the Local LUN just created.
- 9. Click on Edit in the Initiators Granted Access box.
- **10.** Grant VSP ESX server permission by clicking the **Add** button.

ISCSI Configuration LUNs Granite Edges CHAP Users Snapshots Failover Configuration Configure > Storage > Granite Edges Granite Edge Granite Edge Granite Edge Connection Duration IP Address Mapped LUNs LUN Capacity Connected 2d 3h 27m 19s 10.32.160.162 2 LUNs 123.00 GB Status Target Settings Initiators Initiator Groups LUNs Prepopulation Mapped LUNs to this Granite Edge LUN Size Online/Offline Accessible Pinned LUN Size Online/Offline Accessible Pinned LUN Size Online Ves No E 4 LocalLUNCdrive (3924362.31.69-4adb-ab41-4578cbe9358) 80 GB Online No No Manage Access Lists (To perform other operations on this LUN, click here.) Groups Granite Access INOR INTER Competition Offline Accessible Competition Offline Accessible Competition No	user: admin Log					ıy	port 🔄 Save 🔍 Healthy	✓ Reports ✓ Sup	lome Configure
Configure > Storage > Granite Edges					uration	shots Failover Config	ges CHAP Users Snaps	LUNs Granite Ed	SCSI Configuration
Granite Edge  Caranite Edge  Caranite Edge  Caranite Edge  Caranite Edge  Connection Duration IP Address Mapped LUNs LUN Capacity  Capacity Capacity Capacity  Capacity  Capacity Capacity  Capacit							e Edges 🔞	itorage > Granit	Configure > S
Granite Edge       Connection       Duration       IP Address       Mapped LUNs       LUN Capacity <ul> <li> </li> </li></li></li></li></li></li></li></li></li></li></li></li></li></li></ul> <li> <ul> <li> <li> <li> <li> <li> </li> <li> <li> <li> <li> <li> </li> <li> <li> </li> <li> <li> <li> </li> <li> <li> <li> </li> <li> <li> <li> </li> <li> </li> <li> <li> </li> <li> <li> <li> <li> <li> <li> <li> <li> <li> </li> <li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></ul></li>								Edge	Granite Edges
Image Access       Connected       2 d 3h 27m 19s       10.32.160.162       2 LUNs       123.00 GB         Status       Target Settings       Initiators       Initiator Groups       LUNs       Prepopulation         Image Access       Manage Access       Online       Yes       No         Initiators Granted Access       Initiators       Edit       None       No         Initiators Granted Access	ped LUNs LUN Capacity Remov	Mapped LUNs	Idress	IP Ad	Duration	Connection		ge	Granite Ed
Status       Target Settings       Initiators       Initiator Groups       LUNs       Prepopulation	INs 123.00 GB	2 LUNs	2.160.162	10.32	2d 3h 27m 19s	Connected		-	🚔 🔺 EdgeHA
LUN     Size     Online/Offline     Accessible     Pinned <ul> <li>&gt; Cdrvie2 (P3Pd8Zn4E/Tv)</li> <li>43.0049 GB</li> <li>Online</li> <li>Yes</li> <li>No</li> <li>Manage Access Lists (To perform other operations on this LUN, click here.)</li> <li>Groups Granted Access</li> <li>Edit</li> <li>Initiators Granted Access</li> <li>Mide</li> <li>None</li> <li>Initiators Granted Access</li> <li>Mide</li> <li>None</li> <li>State</li> <li>Mone</li> <li>Mone</li> <li>None</li> <li>Mone</li> <li>Mone</li></ul>					ulation	ups LUNs Prepop	Initiators Initiator Group	Target Settings UNs to this Granite Ed	Status + Map L
Image Access       Edit         None       Initiators Granted Access         Initiators Granted Access       Unice         Initiators       Initiators         Initiators	ccessible Pinned Unmap	ne Accessible	Online/Offline	Size				IN	LU
Image Access       Ist CoalLUNCdrive (399243c3-1c9a-4adb-ab41-4578cbe99358)       S0 GB       Online       No       No         Manage Access       Lists: (To perform other operations on this LUN, click here.)       Image Access       Ima	es No 💼	Yes	Online	43.0049 GB			Tv)	Cdrive2 (P3PdBZn4E/	
Manage Access Lists (To perform other operations on this LUN, click here.) Groups Granted Access Edit None Initiators Granted Access U Hide Not Granted None Katd Granted Katd Granted Katd Granted Katd Granted Katd Granted Katd Katd Katd Katd Katd Katd Katd Kat	No 📋	No	Online	80 GB		1-4578cbe99358)	9243c3-1c9a-4adb-ab41	LocalLUNCdrive (39	≣ 4
Groups Granted Access Edit None					ere.)	ions on this LUN, click h	(To perform other operation	anage Access Lists	м
None Distance Access Difie Not Granted Access Dified Not Granted (gr.1998-01.com.vmware:localhost-15af38f7 (k. Add ))					Edit 🕨		ress	Groups Granted Acc	
Initiators Granted Access 0 Hide Not Granted None igr.1998-01.com.vmware:localhost-15af38f7								None	
None (c) 1998-01.com.vmware:localhost-15at387				Not Granted	0 Hide		Access	Initiators Granted	
Remove »	JST /	pst=15af38f7	m.vmware:localhost-	»	« Add Remove »			None	

**11.** To import the LOCAL LUN into the VSP ESXi server, log in using VMware vSphere client and navigate to the **Configuration** tab and click the **Rescan All** button from the left **Storage Adapters** menu.

<ul> <li>10.32.160.164</li> <li>win2k832</li> </ul>	localhost.localdomain VMware E Getting Started Summary Virte	5 <b>Xi, 5.0.0, 8198</b> ual Machines Re	54 esource Allocation F	erformance Config	uration Local L	Jsers (	& Groups 🗐	Events Per	missions
	Hardware	View	Datastores Devi	ces					
	Health Status	Data	stores		Refresh	Dele	te Add S	torage	Rescan All.
	Processors	Ider	ntification 🗠	Device	Drive Type		Capacity	Free	Туре
	Memory		Granitelun	RIVERBED ISCSI	Non-SSD		42.75 GB	34.59 GE	VMFS3
	<ul> <li>Storage</li> </ul>	0	riverbed_000eb6	Local VMware, Di	Non-SSD		1.13 TB	1.12 TE	VMFS5
	Networking								
	Storage Adapters								
	Network Adapters								
	Advanced Settings								
	Power Management								

- 12. Click on the Add Storage... link to open the Add Storage wizard.
- 13. In the first step of the wizard, select the **RIVERBED iSCSI disk**.

Disk/LUN Select Disk/LUN	Name, Identifier, Path ID, LUN, Capaci	ty, Expandable or VMF	S Label c	•	Clear
File System Version	Name	Path ID	LUN 🛆	Drive Type	Capacity
Current Disk Layout	Local VMware, Disk (mpx.vmhba1:C	vmhba1:C0:T0:L0	0	Non-SSD	7.50 GB
Properties	RIVERBED iSCSI Disk (naa.6000eb6	iqn.2003-10.com.r	2	Non-SSD	80.00 GB
Ready to Complete	5				
ready to complete					

14. As Storage Type select **Disk/LUN** and as File System Version select **VMFS-3 or VMFS-5**, click on the **Finish** button to complete the operation.

#### How to deploy a VSP virtual machine on Local Granite LUN

The VSP ESXi server should now show a new Datastore.

View: Datastores Dev	ices			
Datastores		Refresh	Delete Add S	Storage Re
Identification 🗠	Device	Drive Type	Capacity	Free 1
Granitelun	RIVERBED ISCSI	Non-SSD	42.75 GB	34.54 GB
Local GraniteLUN	RIVERBED iSCSI	Non-SSD	79.75 GB	78.80 GB
riverbed_000eb6	Local VMware, Di	Non-SSD	1.13 TB	1.12 TB

One way to deploy a Windows server virtual machine into this new Datastore is to deploy an OVA file.

To do so from the ESX Server file menu select **Deploy OVF Template...**, browse to the location of the OVA file and follow the wizard. Make sure you select the newly added **local Granite LUN Datastore** as virtual machine location, and for disk format **Thick Provision Lazy Zeroed** is recommended.

🛃 Deploy OVF Template	
Source Select the source location.	
Source OVF Template Details Name and Location Storage Disk Format Ready to Complete	Deploy from a file or URL          C:W/2K3R2_eval.ova.ova <ul> <li>Browse</li> <li>Enter a URL to download and install the OVF package from the Internet, or specify a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.</li> </ul>

When the deployment process is finished you can power up the virtual file server, install any patches needed and install the Riverbed Granite Host Tools software package.



Make sure the **Network Adapters** are connected and the appropriate network labels are selected. Select **rvbd\_pri\_vm\_network** to map the virtual machine network interface to the primary interface of the Steelhead EX appliance or **rvbd\_aux\_vm\_network** to map it to the aux interface.

**Note**: Do not select the **rvbd\_hpn\_vm\_network**, this is a private network used internally by RiOS to communicate with ESXi.

win2k832 - Virtual Machine Proper	ties	
Hardware Options Resources		Virtual Machine Version: 7
Show All Devices	Add Remove	Device Status Connected
Hardware	Summary	Connect at power on
Memory     CPUs     Video card     VMCI device     SCSI controller 0     Hard disk 1     CD/DVD drive 1     Network adapter 1 (edite	2048 MB 1 Video card Restricted LSI Logic SAS Virtual Disk [] /vmfs/volumes/4ed7 VM Network	Adapter Type Current adapter: E1000 MAC Address 00:0c:29:32:2a:1a @ Automatic © Manual
E Floppy drive 1	Client Device	Status:     Not supported       Network Connection       Network label:       Invbd_aux_vm_network       rvbd_pn_vm_network       rvbd_pri_vm_network
Help		OK Cancel

#### Appendix

#### How to install MPIO on a Windows Server

- 1. Open **Server Manager**. To open Server Manager, click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
- 2. In the Server Manager tree, click Features.
- 3. In the Features area, click Add Features.
- 4. In the Add Features Wizard, on the **Select Features** page, select the **Multipath I/O** check box, and then click **Next**.
- 5. On the Confirm Installation Selections page, click Install.
- 6. When the installation has completed, on the **Installation Results** page, click **Close**. When prompted to restart the computer, click **Yes**.
- 7. After restarting the computer, the computer finalizes the MPIO installation.
- 8. Click Close

For more Info Check http://technet.microsoft.com/en-us/library/ee619752%28v=ws.10%29.aspx

#### Conclusion

Riverbed continues to help organizations gain better control over their IT infrastructure and consolidate more to lower costs and risks without impacting the performance required to ensure user productivity in branch offices. With the Granite solution, Riverbed enables a global storage infrastructure by intelligently accelerating storage across the WAN, enabling new efficiency with data management, protection, and recovery while ensuring performance at the edge. With Granite, organizations can:

- Reduce costs by eliminating storage from branch offices
- Improve management efficiency as maintenance and backup can take place at the data center
- Recover faster and more effectively since the data is stored centrally, protected more frequently, and can be streamed to the branch office as needed
- · Improve security of data assets via centralization and state-of-the-art encryption capabilities

#### **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.

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Riverbed Technology, Inc. 199 Fremont Street San Francisco, CA 94105 Tel: (415) 247-8800 www.riverbed.com Riverbed Technology Ltd. One Thames Valley Wokingham Road, Level 2 Bracknell. RG42 1NG United Kingdom Tel: +44 1344 31 7100 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