

ETERNUS SF Storage Cruiser

SNIA HBA API Library Installation Guide

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Preface

Purpose

This guide describes how to install and configure the SNIA HBA API library to manage HBAs with ETERNUS SF Storage Cruiser.

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Check with your sales representative to see the model name in your area.

Japan	Other countries
GP7B8FC1	GP7B8FC1U
PG-FC102	SNP:SY-F2244E2-P, SNP:SY-F2244E2-A, SNP:SY-F2244L2-P
PG-FC105	S26361-F2624-E1
PG-FC106	S26361-F2843-E1
PG-FC107	S26361-F3141-E10, S26361-F3141-E210
PG-FC201	S26361-F3141-E1

Japan	Other countries
PG-FC202(L)	S26361-F3306-E1, S26361-F3306-E201
PG-FC203(L)	S26361-F3961-E1, S26361-F3961-E201
PY-FC201(L)	
PG-FC204(L)	S26361-F3961-E2
PY-FC202(L)	
PG-FCD101	S26361-F3023-E1
PG-FCD201	S26361-F3306-E601
PG-FCD202	S26361-D2865-A100
PY-FCD02	
PG-FC205(L)	S26361-F3631-L1
PY-FC211(L)	
PG-FC206(L)	S26361-F3631-L2
PY-FC212(L)	
PG-292B(L)	S26361-F3592-L2, S26361-F3592-L202
PY-CN202(L)	
PG-CND201	S26361-F3592-L502
PW008FC2	PW008FC2U
PW008FC3	PW008FC3U
SE0X7F11F	SE0X7F11X
SE0X7F12F	SE0X7F12X
SE0X7F21F	SE0X7F21X
SE0X7F22F	SE0X7F22X
SE0X7F31F	SE0X7F31X
SE0X7F32F	SE0X7F32X
XSEFC401AF	XSEFC401AU, XSEFC401AX
XSEFC402AF	XSEFC402AU, XSEFC402AX

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Chapter 1 Support Matrix of HBAs/CNAs

Check OS, HBA/CNA model, HBA/CNA's driver version and Storage Cruiser Agent level, and refer to appropriate case from Chapter 2 onward.

According to the procedure corresponding to the model of HBA/CNA referring to the following tables, install the SNIA HBA API library.

OS	HBA/CNA model	Driver version	Storage Cruiser's agent level *1		Reference in Chapter 2 and later
			15.x	16.x	
Solaris 10 OS (Only global zone is supported)	PW008FC2A PW008FC2-G PW008FC3 GP7B8FC1A GP7B8FC1-G GP7B8FC1	FUJITSU PCI Fibre Channel 3.0	YES	YES	Solaris-Case 1
	Emulex LP9802 Emulex LP10000	6.01f	YES	YES	Solaris-Case 2
	SE0X7F11F SE0X7F12F	FUJITSU PCI Fibre Channel 4.0 or later	YES	YES	Solaris-Case 3
	SE0X7F21F SE0X7F22F	SunFC QLogic FCA v20081115-2.29	YES	YES	Solaris-Case 4
	SE0X7F31F SE0X7F32F	SunFC emlx FCA v20100108-2.50o	YES	YES	
	XSEFC401AF XSEFC402AF	2.11i	YES	YES	
	SG-XPCI1FC-QF2 SG-XPCI1FC-QL2 SG-XPCI2FC-QF2 SG-XPCI2FC-QF2-Z	SunFC QLogic FCA v20061215-2.18	YES	YES	
	SG-XPCI1FC-QF4	SunFC QLogic FCA v20060630-2.16	YES	YES	
	SG-XPCIE2FC-QF8	SunFC QLogic FCA v20080617-2.29	YES	YES	
	SG-XPCIE2FC-EM4	SunFC emlx FCA v20080116-2.30h SunFC emlx FCA v20080327-2.30j	YES	YES	
	SG-XPCIE2FC-EM8	SunFC emlx FCA v20080616-2.31h	YES	YES	
	SP1X7FAA2F	160208-5.05	-	YES	
	SP1X7FBA2F	2.80.8.0	-	YES	
	SP1X7FAB2F	160208-5.05 161028-5.06	-	YES	
Solaris 11 OS (Only global zone is supported)	SE0X7F21F SE0X7F22F	SunFC QLogic FCA v20110321-3.05	15.1 or later	YES	Solaris-Case 4
	SE0X7F31F SE0X7F32F	SunFC emlx FCA v20111108-2.60h	15.1 or later	YES	
	SP1X7FAR2F SP1X7FAS2F SP1X7FAA2F	20121128-4.02 160208-5.05	15.1 or later	YES	
	SP1X7FBR2F SP1X7FBS2F SP1X7FBA2F	2.80.8.0	15.1 or later	YES	
	SP1X7FAB2F	160208-5.05 161028-5.06	-	YES	
	SP1X7FAC2F	-	-	YES	
Microsoft® Windows	PG-FC202 PG-FC202L	Storport Miniport Driver v2.01a4 / v2.10a7 / v2.20.006 /	YES	16.7 or	Windows-Case 1

Server ® 2008 (32-bit)(64-bit)	PG-FC203 PG-FC203L PG-FC204 PG-FC204L PG-FCD201 PG-FCD202 PY-FCD02 PY-FC201 PY-FC201L PY-FC202 PY-FC202L	v2.41.003 / v2.50.007		earlier	
	MC-0JFC11 MC-0JFC1L MC-0JFC21 MC-0JFC2L	Storport Miniport Driver v2.20.006 / v2.41.003 / v2.50.007	YES	16.7 or earlier	
	PG-292B PG-292BL PG-CND201 PY-CN202 PY-CN202L	PG-292B/PG-CND201 Driver v5.0.66.5	YES	16.7 or earlier	
	PG-FC205 PG-FC205L PG-FC206 PG-FC206L PY-FC211 PY-FC211L PY-FC212 PY-FC212L	PG-FC205/206 Driver v9.1.8.25	YES	16.7 or earlier	Windows-Case 2
Microsoft® Windows Server ® 2008 R2	PG-FC202 PG-FC202L PG-FC203 PG-FC203L PG-FC204 PG-FC204L PG-FCD201 PG-FCD202 PY-FCD02 PY-FC201 PY-FC201L PY-FC202 PY-FC202L MC-0JFC11 MC-0JFC1L MC-0JFC21 MC-0JFC2L	Storport Miniport Driver v2.01a4 / v2.10a7 / v2.20.006 / v2.41.003 / v2.50.007	YES	16.7 or earlier	Windows-Case 1
	PG-292B PG-292BL PG-CND201 PY-CN202 PY-CN202L	PG-292B/PG-CND201 Driver v5.0.66.5	YES	16.7 or earlier	
	PG-FC205 PG-FC205L PG-FC206 PG-FC206L PY-FC211 PY-FC211L PY-FC212 PY-FC212L	PG-FC205/206 Driver v9.1.8.25 PG-FC205/206 Driver v9.1.9.25	YES	16.7 or earlier	Windows-Case 2
Microsoft® Windows	PG-FC202	Storport Miniport Driver v2.72.012.001 / v2.72.205.2 /	15.2 or	YES	

Server® 2012	PG-FC202L PG-FC203 PG-FC203L PG-FC204 PG-FC204L PG-FCD201 PG-FCD202 PY-FCD02 PY-FCD12 PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC221 PY-FC222 MC-0JFC11 MC-0JFC1L MC-0JFC21 MC-0JFC2L MC-0JFC31 MC-0JFC41 MC-0JFC71 MC-0JFC7L MC-0JFC81 MC-0JFC8L MC-0JFC91 MC-0JFCA1	v2.74.9.1	later		Windows-Case1
	PG-FC205 PG-FC205L PY-FC211 PY-FC211L PY-FC311 PY-FC312 PY-FC321 PY-FC322 PG-FC206 PG-FC206L PY-FC212 PY-FC212L MC-0JFC51 MC-0JFC61	STOR Miniport Driver V9.1.9.205	15.2 or later	YES	Windows-Case2
	PG-292B PG-292BL PG-CND201 PY-CN202 PY-CN202L PY-CND02	PG-292B/PG-CND201 Driver v2.72.12.1	15.2 or later	YES	
	PY-CN302	Drivers supported with PRIMERGY PRIMEQUEST	15.2 or later	YES	
	PY-FC331 PY-FC332	Drivers supported with PRIMERGY PRIMEQUEST	-	16.6 or later	
Microsoft® Windows Server® 2012 R2 Standard Microsoft® Windows Server® 2012 R2 Datacenter	PY-FCD02 PY-FCD12 PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC221 PY-FC222 MC-0JFC11 MC-0JFC1L MC-0JFC21 MC-0JFC2L MC-0JFC31	Drivers supported with PRIMERGY and PRIMEQUEST	-	YES	Windows-Case1

	MC-0JFC41 MC-0JFC71 MC-0JFC7L MC-0JFC81 MC-0JFC8L MC-0JFC91 MC-0JFCA1				
	PY-FC211 PY-FC211L PY-FC212 PY-FC212L PY-FC311 PY-FC312 PY-FC321 PY-FC322 PY-FC341 PY-FC342 PY-FC351 PY-FC352 MC-0JFC51 MC-0JFC61 MC-0JFCL1 MC-0JFCK1 MC-0JFCK2 MC-0JFCQ1 MC-0JFCQ2 MC-0JFCP1 MC-0JFCP2 MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2	Drivers supported with PRIMERGY and PRIMEQUEST	-	YES	Windows-Case2
	PY-CN302	Drivers supported with PRIMERGY and PRIMEQUEST	-	YES	
	PY-FC331 PY-FC332 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2	Drivers supported with PRIMERGY and PRIMEQUEST	-	16.6 or later	
Microsoft® Windows Server® 2016 Standard Microsoft® Windows Server® 2016 Datacenter	PY-FCD02 PY-FCD12 PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC221 PY-FC222 MC-0JFC11 MC-0JFC1L MC-0JFC21 MC-0JFC2L MC-0JFC31 MC-0JFC41 MC-0JFC71 MC-0JFC7L MC-0JFC81 MC-0JFC8L MC-0JFC91 MC-0JFCA1	Drivers supported with PRIMERGY and PRIMEQUEST	-	YES	Windows-Case1
	PY-FC211 PY-FC211L PY-FC212 PY-FC212L PY-FC311 PY-FC312 PY-FC321 PY-FC322	Drivers supported with PRIMERGY and PRIMEQUEST	-	YES	Windows-Case2

	PY-FC341 PY-FC342 PY-FC351 PY-FC352 MC-0JFC51 MC-0JFC61 MC-0JFCL1 MC-0JFCK1 MC-0JFCK2 MC-0JFCQ1 MC-0JFCQ2 MC-0JFCP1 MC-0JFCP2 MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2				
	PG-292B PG-292BL PG-CND201 PY-CN202 PY-CN202L PY-CN302 PY-CND02	Drivers supported with PRIMERGY and PRIMEQUEST	-	YES	
	PY-FC331 PY-FC332 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2	Drivers supported with PRIMERGY and PRIMEQUEST	-	16.6 or later	
Microsoft® Windows Server® 2019 Standard Microsoft® Windows Server® 2019 Datacenter	PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC211 PY-FC211L PY-FC212 PY-FC212L PY-FC221 PY-FC222 PY-FC311 PY-FC312 PY-FC321 PY-FC322 PY-FC331 PY-FC332 PY-FC341 PY-FC342 PY-FC351 PY-FC352 MC-0JFCL1 MC-0JFCK1 MC-0JFCK2 MC-0JFCQ1 MC-0JFCQ2 MC-0JFCP1 MC-0JFCP2 MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2	Drivers supported with PRIMERGY and PRIMEQUEST	-	16.7 or later	Windows-Case2

Red Hat Enterprise Linux 5 (for x86) Red Hat Enterprise Linux 5 (for Intel64)	PG-FC107 PG-FC201 PG-FC202 PG-FC202L PG-FCD201	v8.1.10.3-1 v8.1.10.9 v8.2.0.22 v8.2.0.33.3p v8.2.0.48.2p v8.2.0.63.3p v8.2.0.87.1p v8.2.0.96 v8.2.0.96.2p v8.2.0.108.4p	YES	16.7 or earlier	Linux-Case 1
	PG-FC203 PG-FC203L PG-FC204 PG-FC204L PY-FC201 PY-FC201L PY-FC202 PY-FC202L	v8.2.0.22 v8.2.0.33.3p v8.2.0.48.2p v8.2.0.63.3p v8.2.0.87.1p v8.2.0.96 v8.2.0.96.2p v8.2.0.108.4p	YES	16.7 or earlier	
	PG-FCD202 PY-FCD02 MC-0JFC11 MC-0JFC1L MC-0JFC21 MC-0JFC2L	v8.2.0.33.3p v8.2.0.48.2p v8.2.0.63.3p v8.2.0.87.1p v8.2.0.96 v8.2.0.96.2p v8.2.0.108.4p	YES	16.7 or earlier	
	PG-292B PG-292BL PG-CND201 PY-CN202 PY-CN202L PG-FC206	PG-292B/PG-CND201 Driver v5.0.66.5	YES	16.7 or earlier	
			YES	16.7 or earlier	Linux -Case 3
	PG-FC206L PY-FC211 PY-FC211L PY-FC212 PY-FC212L	v8.03.01.05.05.06-k v8.03.07.03.05.07-k v8.03.07.09.05.08-k	YES	16.7 or earlier	Linux -Case 3
Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 6 (for Intel64)	PG-FCD202 PY-FCD02 PG-FC203 PG-FC203L PG-FC204 PG-FC204L PY-FCD02 PY-FCD12 PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC221 PY-FC222 PY-FC351 PY-FC352 MC-0JFC31 MC-0JFC41 MC-0JFC71 MC-0JFC7L MC-0JFC81 MC-0JFC8L MC-0JFC91 MC-0JFCA1	v8.3.5.17 v8.3.5.30.1p v8.3.5.45.4p V8.3.5.68.5p v11.0.0.4	YES	Red Hat Enterprise Linux 6 (for x86):16.8 or earlier Red Hat Enterprise Linux 6 (for Intel64):YES	Linux-Case 1
	PY-FC331 PY-FC332	v11.0.0.5	-	16.6 or later	

	PG-FC205 PG-FC205L PG-FC206 PG-FC206L PY-FC211 PY-FC211L PY-FC212 PY-FC311 PY-FC312 PY-FC321 PY-FC322 PY-FC341 PY-FC342 PY-FC212L MC-0JFC51 MC-0JFC61	v8.03.01.05.06.0-k8 v8.03.07.03.06.1-k v8.03.07.05.06.2-k V8.04.00.04.06.3-k v8.07.00.26.06.8-k	YES	Hat Enter prise Linux 6 (for x86):1 6.8 or earlier Red Hat Enter prise Linux 6 (for Intel6 4):YE S	Linux-Case 3
	PY-CN302	Drivers supported with PRIMERGY and PRIMEQUEST	YES	Hat Enter prise Linux 6 (for x86):1 6.8 or earlier Red Hat Enter prise Linux 6 (for Intel6 4):YE S	
Red Hat Enterprise Linux 7 (for Intel64)	PY-FCD02 PY-FCD12 PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC221 PY-FC222 MC-0JFC31 MC-0JFC41 MC-0JFC71 MC-0JFC7L MC-0JFC81 MC-0JFC8L MC-0JFC91 MC-0JFCA1	V10.2.405.26-2 V10.6.193.21.4fts-1.el7.2	-	16.2 or later	Linux-Case1
	PY-FC331 PY-FC332	v11.4.0.4	-	16.6 or later	
	PY-FC211 PY-FC211L PY-FC212 PY-FC212L PY-FC311 PY-FC312 PY-FC321 PY-FC322 PY-FC341 PY-FC342 MC-0JFC51 MC-0JFC61 MC-0JFCL1 MC-0JFCK1 MC-0JFCK2 MC-0JFCQ1	Drivers supported with PRIMERGY and PRIMEQUEST	-	16.2 or later	Linux-Case3

	MC-0JFCQ2 MC-0JFCP1 MC-0JFCP2				
	PY-FCD02 PY-FCD12 PY-FC201 PY-FC201L PY-FC202 PY-FC202L PY-FC221 PY-FC222 PY-FC351 PY-FC352 MC-0JFC31 MC-0JFC41 MC-0JFC71 MC-0JFC7L MC-0JFC81 MC-0JFC8L MC-0JFC91 MC-0JFCA1 MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2	Drivers supported with PRIMERGY and PRIMEQUEST	-	16.4 or later	Linux-Case1
	PY-CN302	Drivers supported with PRIMERGY PRIMEQUEST	-	16.2 or later	
	PY-FC331 PY-FC332 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2	Drivers supported with PRIMERGY PRIMEQUEST	-	16.7 or later	
	MC-0JFCF*	v12.0.0.*	-	16.7 or later	
Red Hat Enterprise Linux 8 (for Intel64)	PY-FC321 PY-FC322 PY-FC341 PY-FC342 MC-0JFCL1 MC-0JFCK1 MC-0JFCK2 MC-0JFCQ1 MC-0JFCQ2 MC-0JFCP1 MC-0JFCP2	Drivers supported with PRIMERGY PRIMEQUEST	-	16.8 or later	Linux-Case3
	PY-FC331 PY-FC332 PY-FC351 PY-FC352 MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2	Drivers supported with PRIMERGY PRIMEQUEST	-	16.8 or later	Linux-Case1
	PY-FC441 PY-FC442	Drivers supported with PRIMERGY PRIMEQUEST	-	16.9 or later	Linux-Case1
Red Hat Enterprise Linux 9 (for Intel64)	PY-FC331 PY-FC332 PY-FC351 PY-FC352 PY-FC441 PY-FC442	Drivers supported with PRIMERGY PRIMEQUEST	-	16.9 or later	Linux-Case1

	MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2				
SUSE Linux Enterprise Server 12 Service Pack 1 for AMD64 & Intel64	PY-FC212	v.8.07.00.18-k	-	16.5 to 16.7	Linux-Case 2
	PY-FC202	v.10.5.0.2	-	16.5 to 16.7	Linux-Case 2
SUSE Linux Enterprise Server 12 Service Pack 4 for AMD64 & Intel64	PY-FC212	v.10.00.00.11-k	-	16.8 or later	Linux-Case 2
	PY-FC202	v12.0.0.*	-	16.8 or later	Linux-Case 2
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	PY-FC202 PY-FC331 PY-FC332 PY-FC351 PY-FC352 MC-0JFCN1 MC-0JFCN2 MC-0JFCM1 MC-0JFCM2 MC-0JFCG1 MC-0JFCG2 MC-0JFCF1 MC-0JFCF2	Drivers supported with and PRIMERGY PRIMEQUEST	-	16.8 or later	Linux-Case 2
VMware vSphere	HBAs of PRIMERGY or PRIMEQUEST that supports the VMware vSphere	Drivers provided with VMware	YES	YES	Agent less
HP-UX 11i v3 HP 9000 server	A6795 A6826A AB378A AB378B AB379A AB379B	B.11.31.0809	YES	YES	HP-UX-Case 1
HP-UX 11i v3 (IPF) HP Integrity server	AD355A AD299A A6795A A6826A AB378A AB378B AB379A AB379B	B.11.31.0809	YES	YES	HP-UX-Case 1
	AH401A	B.11.31.0812	YES	YES	
AIX V6.1 IBM Power Systems Server	FC5735	6.1.6.15	15.1 or later	16.7 or earlier	AIX-Case 1
AIX V7.1 IBM Power Systems Server	FC5735	7.1.0.15	15.1 or later	YES	

[Note]

Read the fiber channel card that starts from the name of PYBFC in a different way as the fiber channel card of this number that starts from the name of PY-FC. Support for Fibre Channel cards starting with PYBFC includes support for PYBFC***L.

Chapter 2 Solaris OS

To manage HBA/CNA installed on Solaris OS server nodes, it is necessary to install and configure the following HBA vendor's SNIA HBA API library.

2.1 Solaris OS – Case 1

By installing the driver (FUJITSU PCI Fibre Channel 2.2.1 or 3.0), the SNIA HBA API library is installed. Additionally, for FUJITSU PCI Fibre Channel 2.2.1, it is required to apply patch 912069-17 or later. FUJITSU PCI Fibre Channel 2.2 is not supported.

2.2 Solaris OS – Case 2

Refer to the driver manual, and install HBAnyware (SNIA HBA API).

2.3 Solaris OS – Case 3

After installing the driver (FUJITSU PCI Fibre Channel 4.0 or later), the SNIA HBA API library must be changed using the following procedures:

1. Change the link between /usr/lib/libfchba.so and /opt/FJSVpfca/lib/libfchba.so to /opt/FJSVpfca/lib/libfchba1.so.
rm /usr/lib/libfchba.so
ln -s /opt/FJSVpfca/lib/libfchba1.so /usr/lib/libfchba.so
2. Reboot.
/usr/sbin/shutdown -y -i6 -g0

2.4 Solaris OS – Case 4

SNIA HBA API library installation procedure is not required as it is included in the driver distributed with the operating system.

Chapter 3 Linux/VMware

To manage HBA/CNA installed on a Linux/VMware server node, install the following HBA vendor's HBA API library.

3.1 Linux – Case 1

3.1.1 HBA API library installation check

3.1.1.1 For Red Hat Enterprise Linux 9 environments

Check whether the following condition is met to determine the installation status. If the condition is met, the HBA API library has been installed.

- All the following files exist:
 - /usr/lib64/libHBAAPI.so (*1)
 - /usr/lib64/libemulexhbaapi.so (*1)
 - /etc/hba.conf

*1: If these files do not exist after the HBA API library is installed, confirm that the following files exist and then manually create the symbolic link files.

- /opt/emulex/ocmanager/lib64/libHBAAPI.so
- /opt/emulex/ocmanager/lib64/libemulexhbaapi.so

Refer to "[3.1.2 HBA API library installation](#)" for information on how to create a symbolic link file.

3.1.1.2 For other than Red Hat Enterprise Linux 9 environments

Check whether the following two conditions are met to determine the installation status. If both the conditions are met, the HBA API library has been installed.

- All the following files exist:
 - [For 32bit OS]
 - /usr/lib/libHBAAPI.so
 - /usr/lib/libemulexhbaapi.so
 - /etc/hba.conf
 - [For 64bit OS]
 - /usr/lib/libHBAAPI.so
 - /usr/lib64/libHBAAPI.so
 - /usr/lib64/libemulexhbaapi.so
 - /etc/hba.conf
- An integer larger than or equal to "1" is displayed as a result of the following command execution.
 - [For 32bit OS]

```
# egrep -c ['[:blank:]]+['[:blank:]]+/usr/lib/libemulexhbaapi.so /etc/hba.conf
```
 - [For 64bit OS]

```
# egrep -c ['[:blank:]]+['[:blank:]]+/usr/lib64/libemulexhbaapi.so /etc/hba.conf
```

3.1.2 HBA API library installation

3.1.2.1 VMware

Download the SNIA HBA API library (included in Ipfcutil, HBAnyware, OneCommand Manager or Emulex HBA Manager) appropriate for the VMware version and driver version from the website of Emulex. Then, install according to the document attached to the SNIA HBA API library.

3.1.2.2 Linux

For the SNIA HBA API library, OneCommand Manager (OCManager) or Emulex HBA Manager for Linux, driver kit, download it from following Website with using OS, HBA version and driver version you used, and then install it.

(<http://support.ts.fujitsu.com/download/Index.asp>)

[Download procedures]

- Case "Product selection (manually search)"
 1. Select the product information.
 2. Select the operating system information.
 3. Select the Fibre Channel information and download the file.

For a Red Hat Enterprise Linux 9 environment, if the following files do not exist, create symbolic link files after the installation.

- /usr/lib64/libHBAAPI.so
- /usr/lib64/libemulexhbaapi.so

Execute the following commands to create the symbolic link files.

```
# ln -s /opt/emulex/ocmanager/lib64/libHBAAPI.so /usr/lib64/libHBAAPI.so
# ln -s /opt/emulex/ocmanager/lib64/libemulexhbaapi.so /usr/lib64/libemulexhbaapi.so
```

Execute the following commands to confirm that the symbolic link files have been created.

```
# ls -l /usr/lib64/libHBAAPI.so /usr/lib64/libemulexhbaapi.so
lrwxrwxrwx. 1 root root 40 Jul 19 22:46 /usr/lib64/libHBAAPI.so -> /opt/emulex/ocmanager/lib64/libHBAAPI.so
lrwxrwxrwx. 1 root root 46 Jul 19 22:46 /usr/lib64/libemulexhbaapi.so -> /opt/emulex/ocmanager/lib64/libemulexhbaapi.so
#
```

When uninstalling the HBA API library, manually delete the created symbolic link files.

3.2 Linux – Case 2

3.2.1 HBA API library installation check

Check whether the following two conditions are met to determine the install status. If both the conditions are met, the HBA API library has been installed.

- All the following files exist:
 - /usr/lib/libHBAAPI.so
 - /usr/lib/libqlsdrm.so
 - /etc/hba.conf
- An integer larger than or equal to "1" is displayed as a result of the following command execution.

```
# egrep -c [^[:blank:]]+[:blank:]]+/usr/lib/libqlsdrm.so /etc/hba.conf
```


3.2.2 HBA API library installation

1. SNIA HBA API library is included in HBA driver. Install SNIA HBA API (32-bit version) according to the HBA driver's manual.
2. For /opt/FJSVssage/lib/libHBAAPI.so, create a copy in /usr/lib, or create a symbolic link with the following command.

```
# ln -s /opt/FJSVssage/lib/libHBAAPI.so /usr/lib/libHBAAPI.so
```

3.3 Linux – Case 3

3.3.1 HBA API library installation check

Check whether the following two conditions are met to determine the install status. If both the conditions are met, the HBA API library has been installed.

- All the following files exist:
[For 32bit OS]
 - /usr/lib/libHBAAPI.so
 - /usr/lib/libqlsdrm.so
 - /etc/hba.conf
[For 64bit OS]
 - /usr/lib/libHBAAPI.so (Not required with Red Hat Enterprise Linux 7 or later)
 - /usr/lib64/libHBAAPI.so
 - /usr/lib64/libqlsdrm.so
 - /etc/hba.conf
- An integer larger than or equal to "1" is displayed as a result of the following command execution.
[For 32bit OS]

```
# egrep -c [^[:blank:]]+[:blank:]]+/usr/lib/libqlsdrm.so /etc/hba.conf
```


[For 64bit OS]

```
# egrep -c [^[:blank:]]+[:blank:]]+/usr/lib64/libqlsdrm.so /etc/hba.conf
```

3.3.2 HBA API library installation

SNIA HBA API library is included in HBA driver. Install SNIA HBA API according to the HBA driver's manual.

Refer to "[3.1.2 HBA API library installation](#)" for download procedures.

Chapter 4 Windows

To manage the HBA/CNA installed in a Windows server node, install the following HBA vendor's SNIA HBA API library.

4.1 Windows – Case 1

Install HBAware, OneCommand Manager (includes SNIA HBA API) or Emulex HBA Manager according to the HBA/CNA card's instruction manual or the driver's manual.

When Operating System is set up by using ServerView Installation Manager, OneCommand Manager is installed with the installation of the HBA driver. Therefore, this step is unnecessary.

If OneCommand Manager or Emulex HBA Manager is not installed, install it.

Change the \$INS_DIR/Agent/bin/HBAAPI.dll to another name (for example, HBAAPI.dll.bak).

If the \$INS_DIR/Agent/bin/HBAAPI.dll does not exist, file name change is not necessary.

(\$INS_DIR means "Program Directory" specified at the Agent installation.)

4.2 Windows – Case 2

Change the \$INS_DIR/Agent/bin/HBAAPI.dll to another name (for example, HBAAPI.dll.bak).

If the \$INS_DIR/Agent/bin/HBAAPI.dll does not exist, file name change is not necessary.

(\$INS_DIR means "Program Directory" specified at the Agent installation.)

Chapter 5 HP-UX

5.1 HP-UX – Case 1

SNIA HBA API library installation procedure is not required as it is included in the driver distributed with the operating system.

Chapter 6 AIX

6.1 AIX – Case 1

SNIA HBA API library installation procedure is not required as it is included in the driver distributed with the operating system.