

# Function set changes for virtualization and FCoE

Bob Nixon

**bob.nixon@emulex.com**

Version 1 In the description of the revised SMHBA2\_GetPortStatistics function, corrected the parenthetic note to identify the prior SMHBA\_GetPortStatistics function as the one that was accidentally deleted. The work group recommendation to add a function to get the WWN for a port given its port handle was omitted. On closer examination, the WWN is already available given a port handle via the revised SMHBA2\_GetPortAttributes function, within the SMHBA2\_FC\_Port structure that is returned.

Table 1 lists the changes to the SM-HBA-2 function set that I see as implied by the proposed virtualization/FCoE architecture (T11/10-510v1) and data structures (T11/11-125v2). It is based on the list of all SM-HBA-2 functions at the beginning of clause 7 of SM-HBA-2 version 0.77 (T11/10-218v1).

The main reasons that changes have been seen necessary include:

- a) the architecture identifies objects that did not exist before;
- b) the architecture suggests the separation of functions that provide object attributes from those that enumerate object relationships;
- c) certain current data structures were modified to provide consistent supporting services for new and existing objects.

Version 0.77 functions are listed with a comment explaining the reason for their proposed disposition. Their dispositions are one of:

- a) "keep", listed in black text, indicates the function appears to be useful with no change in parameterization needed;
- b) "replace", listed in ~~red-strikeout text~~, indicates the function appears to be useful but with change(s) in parameterization needed; or
- c) "discard", listed in ~~red-strikeout text~~, indicates the function appears to no longer be relevant.

Functions not present in version 0.77 are listed with a comment indicating their proposed parameterization. Their dispositions are one of:

- a) "revised", listed in blue text, indicates the function is a revision of an older function with necessary parameterization changes; or
- b) "new", listed in blue text, indicates the function meets needs unique to the new architecture, and had no closely related older function.

Table 1 — SM-HBA Function Summary and Requirements (part 1 of 6)

Function	disposition	comment
Library Control Functions		
<del>SMHBA_GetVersion</del>	replace	...else it would cause backward compatibility issues in a library that also supported SM-HBA.
SMHBA2_GetVersion	revised	No call parameters; return value is an error code; return parameter is a bit map that can indicate any combination of FC-HBA, SM-HBA, and SM-HBA-2
HBA_LoadLibrary	keep	still works
HBA_FreeLibrary	keep	still works
<del>SMHBA_RegisterLibrary</del>	replace	SM-HBA-2 returns a different function table.
SMHBA2_RegisterLibrary	revised	No call parameters; returns SM-HBA-2 function table
SMHBA_GetWrapperLibraryAttributes	keep	
SMHBA_GetVendorLibraryAttributes	keep	
HBA_GetNumberOfAdapters	keep	No call parameters; returns physical and/or virtual adapters as requested.
<del>HBA_RefreshInformation</del>	discard	require “semistatic” model
<del>HBA_RefreshAdapterConfiguration</del>	discard	require “semistatic” model
<del>SM HBA Adapter, FC_Port and SAS_Port Information Functions</del>		
Object attribute functions		
<del>HBA_OpenAdapterByIndex</del>	discard	Adapters don’t need to be opened
<del>HBA_CloseAdapter</del>	discard	Adapters don’t need to be opened
<del>SMHBA_GetAdapterAttributes</del>	replace	Inconsistent with new adapter attribute structure and adapter selection parameter
SMHBA2_GetAdapterAttributes	revised	Given an adapter handle, returns an SMHBA2 adapter attribute structure.

Table 1 — SM-HBA Function Summary and Requirements (part 2 of 6)

Function	disposition	comment
SMHBA2_GetAdapterBusAddress	new	Given an adapter handle, returns a bus address structure
SMHBA_GetNumberOfPorts	keep	Returns # of VN_Ports for FC. A physical adapter has zero, unless it does not support adapter virtualization. Then it has both ports and phys.
<del>SMHBA_GetPortType</del>	replace	Inconsistent with new port selection parameter
SMHBA2_GetPortType	revised	Given a port handle, returns a port type (i.e., FC or SAS)
<del>SMHBA_GetAdapterPortAttributes</del>	replace	Inconsistent with new port attribute structure and port selection parameter
<del>SMHBA_GetDiscoveredPortAttributes</del>	replace	Inconsistent with new port attribute structure and port selection parameter
SMHBA2_GetPortAttributes	revised	Given a port handle for either a local or discovered port, returns an SMHBA2 port attribute structure.
<del>SMHBA_GetPortAttributesByWWN</del>	replace	Inconsistent with new port attribute structure
SMHBA2_GetPortAttributesByWWN	revised	Given a port WWN, returns an SMHBA2 port attribute structure
<del>SMHBA_GetFCPhyAttributes</del>	replace	Numerous inconsistencies with new architecture
<del>SMHBA_GetSASPhyAttributes</del>	replace	Numerous inconsistencies with new architecture
SMHBA_GetPhyType	new	Given a Phy handle, returns a Phy type (i.e., FC, SAS, E'net)
SMHBA2_GetPhyAttributes	new	Given a Phy handle, returns an SMHBA2 Generic Phy attribute structure
SMHBA2_GetPhyCtrlAttributes	new	Given an N_Port Controller handle, returns a Generic N_Port Controller attribute structure

Table 1 — SM-HBA Function Summary and Requirements (part 3 of 6)

Function	disposition	comment
SMHBA2_GetFabricAttributes	new	Given a Fabric handle, returns a Fabric attribute structure
Object relationship functions		
SMHBA2_GetPortsOnAdapter	new	Given an adapter handle, returns a list of port handles. For FC, these are all VN_Ports.
SMHBA2_GetAdapterForPort	new	Given a port handle, returns an Adapter handle
SMHBA2_GetLEPForPort	new	Given a port handle for an FCoE port, returns the Link Endpoint addresses. For other ports, returns an error.
SMHBA2_GetDiscoveredPorts	new	Given a port handle, returns a list of port handles for ports discovered through the given port. (If the given port is not local, the list may be empty)
SMHBA2_GetPhysOnAdapter	new	Given an adapter handle, returns a list of Phy handles
SMHBA2_GetAdapterForPhy	new	Given a Phy handle, returns an Adapter handle
SMHBA2_GetPortsOnPhy	new	Given a Phy handle, returns a list of Port handles
SMHBA2_GetPhysForPort	new	Given a port handle, returns a list of Phy handles. For FC, there is just one.
SMHBA_GetCtrlrForPhy	new	Given a Phy handle, returns an N_Port Controller handle, or null for SAS
SMHBA_GetPhyForCtrlr	new	Given an N_Port Controller handle, returns a Phy handle
SMHBA_GetFabricsForCtrlr	new	Given an N_Port Controller handle, returns a list of Fabric handles
SMHBA_GetCtrlrsForFabric	new	Given a Fabric handle, returns a list of N_Port Controller handles
SMHBA_GetFabricForPort	new	Given a Port handle, returns a Fabric handle

Table 1 — SM-HBA Function Summary and Requirements (part 4 of 6)

Function	disposition	comment
SMHBA_GetPortsForFabric	new	Given a Fabric handle, returns a list of Port handles
Statistics functions		
SMHBA2_GetPortStatistics	revised	Given a port handle, returns port statistics  (SMHBA_GetPortStatistics was accidentally lost in the great purge of FCHBA functions)
<del>SMHBA_GetProtocolStatistics</del>	replace	Inconsistent with new port selection parameter
SMHBA2_GetProtocolStatistics	revised	Given a port handle and FC-4 type, returns protocol statistics
<del>SMHBA_GetPhyStatistics</del>	replace	Inconsistent with new Phy selection parameter
SMHBA2_GetPhyStatistics	revised	Given a Phy handle, returns Phy statistics
<del>SM-HBA</del> Target Information Functions		
SMHBA_GetBindingCapability	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_GetBindingSupport	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_SetBindingSupport	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_GetTargetMapping	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_GetPersistentBinding	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_SetPersistentBinding	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_RemovePersistentBindings	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_RemoveAllPersistentBindings	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_GetLUNStatistics	keep	Parameterization is a bit inconsistent, but it still works.

Table 1 — SM-HBA Function Summary and Requirements (part 5 of 6)

Function	disposition	comment
SCSI Information Functions		
SMHBA_ScsiInquiry	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_ScsiReportLuns	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_ScsiReadCapacity	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_ScsiManagementIn	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_ScsiManagementOut	keep	Parameterization is a bit inconsistent, but it still works.
Fabric and Domain Management Functions		
HBA_SendCTPassThruV2	keep	Parameterization is a bit inconsistent, but it still works.
HBA_SetRNIDMgmtInfo	keep	
HBA_GetRNIDMgmtInfo	keep	
HBA_SendRNIDV2	keep	Parameterization is a bit inconsistent, but it still works.
HBA_SendSRL	keep	Parameterization is a bit inconsistent, but it still works.
HBA_SendLIRR	keep	Parameterization is a bit inconsistent, but it still works.
HBA_SendRLS	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_SendTEST	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_SendECHO	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_SendSMPPassThru	keep	Parameterization is a bit inconsistent, but it still works.
Event Handling Functions		
SMHBA_RegisterForAdapterAddEvents	keep	
SMHBA_RegisterForAdapterEvents	keep	

Table 1 — SM-HBA Function Summary and Requirements (part 6 of 6)

Function	disposition	comment
SMHBA_RegisterForAdapterPortEvents	keep	Parameterization is a bit inconsistent, but it still works.
SMHBA_RegisterForAdapterPortStatEvents	keep	Parameterization is a bit inconsistent, but it still works.
<del>SMHBA_RegisterForAdapterPhyStatEvents</del>	replace	Parameterization is inconsistent, and relies on Phy index, which is now not defined.
SMHBA2_RegisterForAdapterPhyStatEvents	revised	Change Phy index to Phy handle, in two places. Remove adapter handle from the calling parameters, and the port WWN in two places.  This is admittedly inconsistent with the rest of the event functions.
SMHBA_RegisterForTargetEvents	keep	Parameterization is a bit inconsistent, but it still works.
HBA_RegisterForLinkEvents	keep	
HBA_RemoveCallback	keep	