A Comparison of the EZA interfaces as provided by BSI and IBM/CSI on z/VSE as they relate to the EZA interface on z/OS

Unless otherwize noted, all z/OS options documented in the following IBM manual are implemented by the BSI EZA interfaces:

z/OS Communications Server
IP Sockets Application Programming Interface Guide and Reference
Version 1 Release 9
Document Number SC31-8788-06

The use of "n/a" indicates that the item is not applicable to the interface as documented by IBM in the above manual.

General ECB rules:
The z/OS Implementation requires a work area of 104 bytes after every ECB fullword.
The IBM/VSE Implementation requires a work area of 156 bytes after every ECB fullword.
The BSI Implementation requires a work area of 28 bytes after every ECB fullword. Only 12 bytes as of Build 247.

NOTES:

1 The SUBTASK parameter defaults as follows:

Batch	VSE Task Indentifier (IJBTIK) converted to display format
CICS	CICS Task number

2 The TCPNAME parameter format is 'SOCKETnn' where nn is the TCP/IP stack ID. If TCPNAME is spaces, it will default to 'SOCKETyy' where yy is the extracted from the job SYSPARM value. If the SYSPARM value is not a valid stack ID, 'SOCKET00' will be used. The stack ID can also be supplied left or right justified with space fill.

3 The ADSNAME will default to the VSE syslog ID.

4 The IBM VSE MAXSNO value was originally limited to 256 in CICS and 2000 in batch. Later versions limit it to 8192. Prior to Build 249, the limit for the BSI Implimentationwas 4000 with a default value of 64. As of Build 249, the BSI Implementation allows a MAXSNO value of 8192

5 The returned CLIENTID includes the ADSNAME and SUBTASK values specified on the INITAPI function. Review the INITAPI function as to the defaults if not specified. BSI also returns the address of the token in positions 21-24 of the CLIENT structure for EZASOKET calls. This token can then be used by the 'shared socket' option of the CONNECT call (note 6).

6 In addition to the normal use of the CONNECT call, BSI supports a 'shared socket' extension (EZASOKET only). The extension allows multiple tasks within a single partition perform read and writes against the same connected socket. The original task is responsible for the final CLOSE of the socket. For this function, the NAME_FAMILY must be set to the characters 'SS'. NAME_PORT must be set to the original socket number. The first 4 bytes of NAME_IPADDRESS must be set to the token value returned from the GETCLIENTID call. (See note 5.) Contact BSI support for more information on this extension.

7 The returned HOSTENT struction does not return any ALIAS information. Host names can be up to 255 characters.

8 By RFC definitions, these calls are only valid for use with the IPv4. If used with an IPv6 stack, there must be a coupled IPv4 stack.

9 By RFC definitions, this call is only valid for use with the IPv4. If used with an IPv6 stack, there must be a coupled IPv4 stack. The value returned will be the IP address of the IPv4 coupled stack.

10 As of Build 247, the 'type' of stack is indicated in the second byte of each entry. x'01' indicates an IPv4 stack. x'02' indicates an IPv6 stack, x'03' indicates IBM LFP.

11 Prior to Build 2.47, the SHUTDOWN function worked the same as a CLOSE function call. As of build 2.47, the SHUTDOWN function closes the socket but does not release the socket storage allowing it to be reused for another CONNECT or ACCEPT request as per the z/OS documentation.

12 As of Build 249, BSI has implemented a special function to extract the IP address of a local TN3270 terminal. To use this special function, a normal name lookup is preformed (GETADDRINFO or GETHOSTBYNAME) using the luname of the terminal suffixed with '.LUNAME' (example: "T010.LUNAME"). Since GETHOSTBYNAME only supports IPv4 addresses, any GETHOSTBYNAME request for a terminal attached via IPv6 will return and address of 255.255.255.255.

13 BSI has implemented the ASYNC=EXIT in a fasion not compatable with MVS. When the INITAPI ASYNC=EXIT option is present, the routine address specified is used as a WAIT routine. All WAITs within the EZA interface will be passed to the exit routine. When the exit routine is involked, the registers are as follows:
R1 - Pointer to the parameter list
R13 - Pointer to save area
R14 - Return address
R15 - Address of the Exit routine

Parameter List:
Four byte Token from INITAPI EXIT= parameter
Address of wait ecb (if high order bit on) or the Address of a list of wait ecb's (with the last ecb address having it's high order bit on).

Upon return, if R15 is not 0 then ERRNO will be set to 10333
The exit needs to be 'CICS aware'.
The exit is involked with a BASSM so if the routine is 31 bit enabled, then the address passes on the INITAPI call should have the high order bit on.

Function	Option	Suboption	EZASOKET	EZASMI	BSI Implementation Notes	IBM/VSE 2.5+ EZA Implementation	IBM/VSE 4.3+ LFP EZA Implementation
ACCEPT	S						
	NAME						
	ERRNO						
	RETCODE						
	NS		n/a			Ignored	Ignored
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
BIND	S						
	NAME						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
CANCEL	CALAREA		n/a				
	ECB		n/a				
	ERRNO		n/a				
	RETCODE		n/a				
	ERROR		n/a				
	TASK		n/a				
CLOSE	S						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
CONNECT	S						
	NAME				See note 6		
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
FCNTL	S						
	COMMAND						
	REQARG						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
FREEADDRINFO	ADDRINFO					**Function not implemented**	**Function not implemented**
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				

GETADDRINFO	NODE					**Function not implemented**	**Function not implemented**
	NODELEN						
	SERVICE				Supported (build 2.49)		
	SERVLEN				Supported (build 2.49)		
	HINTS						
		PASSIVE			Supported (build 2.49)		
		CANONNAMEOK			Not Supported		
		NUMERICHOST			Supported (build 2.48)		
		NUMERICSERV			Supported (build 2.49)		
		V4MAPPED			Supported (build 2.48)		
		ADDRCONFIG			Not Supported		
	RES						
	CANNLEN						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETNAMEINFO	NAME					**Function not implemented**	**Function not implemented**
	NAMELEN						
	HOST						
	HOSTLEN						
	SERVICE				Not Supported		
	SERVLEN				Not Supported		
	FLAGS						
		DGRAM			Not Supported		
		NAMEREQD					
		NOFQDN			Not Supported		
		NUMERICHOST			Not Supported		
		NUMERICSCOPE			Not Supported		
		NUMERICSERV			Not Supported		
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETCLIENTID	CLIENT				See note 5	Different Defaults	Different Defaults
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETHOSTBYADDR	HOSTADR				See note 8		
	HOSTENT				See note 7	Limited - See VSE doc	
	RETCODE						
	ERROR		n/a				
	TASK		n/a				
GETHOSTBYNAME	NAMELEN				See note 8		
	NAME						
	HOSTENT				See note 7	Limited - See VSE doc	
	RETCODE						
	ERROR		n/a				
	TASK		n/a				
GETHOSTID	RETCODE				See note 9		Returns the configures IP address
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETHOSTNAME	NAMELEN						
	NAME				A limit of 128 bytes will be returned.	Limited to 64 bytes	
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETIBMOPT	COMMAND		n/a			**Function not implemented**	
		1	n/a		Returns only BSI stacks prior to build 2.48		Returns all stacks from all vendors
	BUF		n/a		See note 10		
	ERRNO		n/a				
	RETCODE		n/a				
	ERROR		n/a				
	TASK		n/a				
GETPEERNAME	S						
	NAME						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETSOCKNAME	S						
	NAME						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GETSOCKOPT	S						
	OPTNAME						
		so_reuseadd			Supported	Supported	Supported
		so_keepalive			Supported	Supported	Supported
		so_linger			Supported	Supported	Supported
		so_rcvbuf					Supported
		so_sndbuf			Supported	Not Supported	Supported
		so_error			Supported	Not Supported	Supported
		so_type			Supported	Not Supported	Supported
		so_v6_only			Supported	Not Supported	Not Supported
		so_debug			Supported (build 2.47)	Not Supported	Supported
		so_broadcast			Not Supported	Not Supported	Supported
		so_oobinline			Not Supported	Not Supported	Supported
		so_acceptcon			Supported (build 2.48)	Not Supported	Supported
	OPTVAL						
	OPTLEN						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GIVESOCKET	S				Can only give to another BSI EZA client	Can only give to another IBM client	Can only give to another LFP client
	CLIENT						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
GLOBAL			n/a	IGNORED	Not required in VSE		

INITAPI	MAXSOC				See note 4	Different - See VSE doc	
	SUBTASK				See note 1		
	IDENT						
		TCPNAME			See note 2	Ignored prior to zVSE 4.2	
		ADSNAME			See note 3	Interface name as of zVSE 4.1	
	MAXSNO				See note 4	Different - See VSE doc	
	ERRNO						
	RETCODE						
	APITYPE	1	n/a	Not Supported			
		2	n/a				
		3	n/a			Not Supported	Not Supported
	UEEXIT		n/a	Not Supported	VSE has no equivalent system service	Not Supported	Not Supported
	ASYNC		n/a		ASYNC=EXIT See note 13	Not Supported	Not Supported
	ERROR		n/a				
	TASK		n/a				
IOCTL	S						
	COMMAND						
		fionbio					
		fionread				Not Supported	Supported
	REQARG						FIONBIO, FIONREAD
	RETARG						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
LISTEN	S				Non-UDP connections require Bind first	Requires BIND first	Requires BIND first
	BACKLOG		Ignored	Ignored	Always set to 5 by stack		
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
NTOP	AF					**Function not implemented**	**ASM CONTROL SOCKET only**
	SRCADDR						
	DSTADDR						
	DSTLEN						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
PTON	AF					**Function not implemented**	**ASM CONTROL SOCKET only**
	SRCADDR						
	SRCLEN						
	DSTADDR						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
READ	S						
	NBYTE						
	BUF						
	ERRNO						
	RETCODE						
	ALET		n/a	Not Supported		Not Supported	Not Supported
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
READV	S					Function implemented as of z/VSE 4.2	
	IOV				Alets are not supported	Alets are not supported	Alets are not supported
	IOVCNT					Up to120 vectors	
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
RECV	S						
	FLAGS					All flags must be off	
		msg_oob	Not Supported	Not Supported	Not Allowed	Not Supported	Not Supported
		msg_peek				Not Supported	Not Supported
		msg_trunc			Not Supported	Not Supported	Supported
	NBYTE						
	BUF						
	ERRNO						
	RETCODE						
	ALET		n/a	Not Supported		Not Supported	Not Supported
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
RECVFROM	S						
	FLAGS					All flags must be off	
		msg_oob	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
		msg_peek				Not Supported	Not Supported
		msg_trunc			Not Supported	Not Supported	Supported
	NBYTE						
	BUF						
	NAME						
	ERRNO						
	RETCODE						
	ALET		n/a	Not Supported			Not Supported
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
RECVMSG			n/a		**Function not implemented**	**Function not implemented**	**Supported**
SELECT	MAXSOC				See note 4	Different - See VSE doc	
	TIMEOUT						
	RSNDMSK						
	RRETMSK						
	WSNDMSK						
	WRETMSK						
	ESNDMSK						
	ERETMSK						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
SELECTEX	MAXSOC				See note 4	Different - See VSE doc	
	TIMEOUT						
	RSNDMSK						
	RRETMSK						
	WSNDMSK						
	WRETMSK						
	ESNDMSK						
	ERETMSK						
	SELECB				255 ECBs allowed	254 ECBs allowed	254 ECBs allowed
	ERRNO						
	RETCODE						
	ERROR		n/a				
	TASK		n/a				

SEND	S						
	FLAGS					All flags must be off	All flags must be off
		msg_oob	Not Supported	Not Supported		Not Supported	Not Supported
		msg_dontroute	Not Supported	Not Supported		Not Supported	Not Supported
	NBYTE						
	BUF						
	ERRNO						
	RETCODE						
	ALET		n/a	Not Supported		Not Supported	Not Supported
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
SENDMSG			n/a		**Function not implemented**	**Function not implemented**	**Supported**
SENDTO	S						
	FLAGS					All flags must be off	All flags must be off
		msg_oob	Not Supported	Not Supported	Ignored	Not Supported	Not Supported
		msg_dontroute	Not Supported	Not Supported	Ignored	Not Supported	Not Supported
	NBYTE						
	BUF						
	NAME						
	ERRNO						
	RETCODE						
	ALET		n/a	Not Supported			
	ECB		n/a			Not Supported	Not Supported
	ERROR		n/a				
	TASK		n/a				
SETSOCKOPT	S						
	OPTNAME						
		so_keepalive			Ignored	Ignored	Supported
		so_linger			Not settable, always on	Different - See VSE doc	Supported
		so_oobinline	Not Supported	Not Supported		Not Supported	Supported
		so_reusaddr				Not settable, always on	Supported
		so_debug				Not Supported	Supported
		so_v6_only				Not Supported	Not Supported
		so_rcvbuf			Not Supported	Not Supported	Supported
		so_sndbuf			Not Supported	Not Supported	Supported
	OPTVAL						
	OPTLEN						
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
SHUTDOWN	S				Changed with build 2.47. See note 11		
	HOW					Different - See VSE doc	
		0	Not Supported	Not Supported	Not Supported	Not Supported	
		1	Not Supported	Not Supported	Not Supported	Not Supported	
		2					
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
SOCKET	AF						
	SOCTYPE						
		stream					
		datagram					
		raw			Supported (build 2.47)	Not Supported	Not Supported
	PROTO						
	ERRNO						
	RETCODE						
	NS		n/a			Ignored	Ignored
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
TAKESOCKET	SOCRECV				Can only take from another BSI EZA client	Can only take from another IBM client	Can only take from another LFP client
	CLIENT						
	ERRNO						
	RETCODE						
	NS		n/a			Ignored	Ignored
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
TASK			n/a				
TERMAPI	TASK		n/a				
WRITE	S						
	NBYTE						
	BUF						
	ERRNO						
	RETCODE						
	ALET		n/a	Not Supported		Not Supported	Not Supported
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				
WRITEV	S					Function implemented as of z/VSE 4.2	
	IOV				Alets are not supported	Alets are not supported	Alets are not supported
	IOVCNT				Up to 120 vectors	Up to 120 vectors	
	ERRNO						
	RETCODE						
	ECB		n/a				
	ERROR		n/a				
	TASK		n/a				

For questions, comments or corrections, please email Tony Thigpen - tony@vse2pdf.com

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