

# IBM z Systems I/O Feature Reference Table

Updated: Feb 18th, 2015

Feature, Secondary or RPQ	CCIN	Description	Ports	Fiber	Connector	Machine Family									
						z13 2964	zEC12 2827	zBC12 2828	z196 2817	z114 2818	z10 EC 2097	z10 BC 2098	z9 EC 2094	z9 BC 2096	
<b>Networking - Open System Adapters (OSA)</b>															
3366	QD8F	OSA-Express2 1000Base-T Ethernet	2		RJ-45					CF	CF	x	x	x	
3367	57AC	OSA-Express3 1000Base-T Ethernet (2 port/CHPID)	4		RJ-45		CF	CF	x	x	x	x			
3369	57AE	OSA-Express3 1000Base-T Ethernet (2 port/CHPID)	2		RJ-45			CF		x					
0408	57E9	OSA-Express4S 1000Base-T Ethernet (PCIe) (2 port/CHPID)	2		RJ-45	CF	x								
0417	59A8	OSA-Express5S mother card (PCIe)				x	x	x							
	E005	OSA-Express5S 1000Base-T Ethernet SFP+ (2 port/CHPID)	2		RJ-45	x	x	x							
3364	QD8E	OSA-Express2 GbE LX	2	SM	LC				CF	CF	x	x	x	x	
3365	QD8G	OSA-Express2 GbE SX	2	MM	LC				CF	CF	x	x	x	x	
3362	57A2	OSA-Express3 GbE LX (2 port/CHPID)	4	SM	LC	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x				
3363	57A1	OSA-Express3 GbE SX (2 port/CHPID)	4	MM	LC	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x				
3373	57AA	OSA-Express3 GbE SX (2 port/CHPID)	2	MM	LC			CF		CF <sup>RPQ4</sup>					
0404	57E8	OSA-Express4S GbE LX (PCIe) (2 port/CHPID)	2	SM	LC	CF	x	CF	x	x					
0405	57E7	OSA-Express4S GbE SX (PCIe) (2 port/CHPID)	2	MM	LC	CF	x	CF	x	x					
0413	59A8	OSA-Express5S mother card (PCIe)				x	x	x							
	E004	OSA-Express5S GbE LX SFP+ (2 port/CHPID)	2	SM	LC	x	x	x							
0414	59A8	OSA-Express5S mother card (PCIe)				x	x	x							
	E003	OSA-Express5S GbE SX SFP+ (2 port/CHPID)	2	MM	LC	x	x	x							
3368	QD8O	OSA-Express2 10GbE LR	1	SM	SC						CF	CF	x	x	
3370	57A3	OSA-Express3 10GbE LR	2	SM	LC	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x				
3371	57AD	OSA-Express3 10GbE SR	2	MM	LC	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x				
0406	57E5	OSA-Express4S 10GbE LR (PCIe)	1	SM	LC	CF	x	CF	x	x					
0407	57E6	OSA-Express4S 10GbE SR (PCIe)	1	MM	LC	CF	x	CF	x	x					
0415	59A8	OSA-Express5S mother card (PCIe)				x	x	x							
	E002	OSA-Express5S 10GbE LR SFP+	1	SM	LC	x	x	x							
0416	59A8	OSA-Express5S mother card (PCIe)				x	x	x							
	E001	OSA-Express5S 10GbE SR SFP+	1	MM	LC	x	x	x							
<b>Fibre Connection Architecture (FICON)</b>															
3319	QD8L	FICON Express2 LX	4	SM	LC						CF	CF	x	x	
3320	QD8A	FICON Express2 SX	4	MM	LC						CF	CF	x	x	
3321	2B71	FICON Express4 4Gb LX mother card					CF	CF	CF	CF	x	x	x	x	
	2B73	FICON Express4 4Gb LX daughter 10km (optics)	4	SM	LC	CF	CF	CF	CF	x	x	x	x	x	
3324	2B71	FICON Express4 4Gb LX mother card							CF	CF	x	x	x	x	
	2B20	FICON Express4 4Gb LX daughter 4km (optics)	4	SM	LC			CF	CF	x	x	x	x	x	
3322	2B71	FICON Express4 4Gb SX mother card					CF	CF	CF	CF	x	x	x	x	
	2B74	FICON Express4 4Gb SX daughter (optics)	4	MM	LC	CF	CF	CF	CF	x	x	x	x	x	
3323	2B21	FICON Express4 4Gb LX mother card 2-port							CF	CF	x	x	x	x	
	2B20	FICON Express4 4Gb LX daughter 4km (optics)	2	SM	LC				CF <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	RPQ2	x		
3318	2B21	FICON Express4 4Gb SX mother card 2-port							CF	CF	x	x	x	x	
	2B74	FICON Express4 4Gb SX daughter (optics)	2	MM	LC				CF <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	RPQ2	x		
3325	57E4	FICON Express8 mother card					CF	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x		
	57E0	FICON Express8 LX daughter 10km (optics)	4	SM	LC	CF	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x			
3326	57E4	FICON Express8 mother card					CF	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x		
	57E1	FICON Express8 SX daughter (optics)	4	MM	LC	CF	CF	CF	x <sup>RPQ4</sup>	CF <sup>RPQ4</sup>	x	x			
0409	58AC	FICON Express8S mother card (PCIe)				x	x	x	x	x					
	57E0	FICON Express8 LX daughter 10km (optics)	2	SM	LC	x	x	x	x	x					
0410	58AC	FICON Express8S mother card (PCIe)				x	x	x	x	x					
	57E1	FICON Express8 SX daughter (optics)	2	MM	LC	x	x	x	x	x					
0418	59A2	FICON Express16S mother card (PCIe)				x									
	59A9	FICON Express16S LX daughter 10km (optics)	2	SM	LC	x									
0419	59A2	FICON Express16S mother card (PCIe)				x									
	59A9	FICON Express16S SX daughter (optics)	2	MM	LC	x									
<b>Parallel Sysplex Connectivity</b>															
0217	QZ2A AA5C	ISC-Mother card							CF	CF	x	x	x	x	
0218	QZ2B	ISC-Daughter card (1 or 2 ports active LIC controlled)	2	SM	LC	CF	CF	x	x	x	x	x	x	x	
8P2197	QZ2C	ISC-Daughter card 10km to 20km (both ports active)	2	SM	LC	CF	CF	x	x	x	x	x	x	x	
0219		ISC 1-port enablement (LIC) on FC0218				CF	CF	x	x	x	x	x	x	x	
0993		ICB-3 Function (1 GB/s)										x	x		
3993	QZ83	ICB-3 eSTI-3 extender card (1 GB/s)	2		eSTI							x	x		
3393		ICB-4 Function (2 GB/s) (not z10 E64)										x	x	x	
0160	2A63	ICB-4 MBA Fan-out card (2 GB/s)	2		eSTI							x	x		
0164	2C07	ICB-4 MBA Fan-out card (2 GB/s) (not z10 E64)	2		eSTI							x	x		
0227	ST85	ICB-3 Peer-to-Peer Mode cable										x	x		
0231		ICB-3 Peer-to-Peer Mode cable for NRF										x			
0228	ST89	ICB-4 cable										x	x		
0232		ICB-4 cable for NRF										x			
0229	CBDX	ICB-4 cable z10 to z9EC,z9BC,z990,z990 (not E64)										x	x	x	
0230	CBXC	ICB-4 cable z10 to z10 (not E64)										x	x		
0167	2A64	HCA1-O Fan-out card 12x IFB SDR (link 3 GB/s)	2	OM3	MPO								x	x	
0163	295C	HCA2-O Fan-out card 12x IFB DDR (link 6 GB/s)	2	OM3	MPO	CF	CF	CF	x	x	x	x	x		
0171	58A8	HCA3-O Fan-out card 12x IFB DDR (link 6 GB/s)	2	OM3	MPO	x	x	x	x	x					
0172	C03A/ C03B	Integrated Coupling Adapter (ICA SR) 16x PCIe Gen3 (link 8 GB/s)	2	OM4	24x MTP	x									
0168	297B	HCA2-O LR Fan-out card 1x IFB DDR (link 5 GB/s)	2	SM	LC	CF	CF	CF	x	CF	x	x			
0170	58A9	HCA3-O LR Fan-out card 1x IFB DDR (link 5 GB/s)	4	SM	LC	x	x	x	x	x					
6155	2A68	External Time Reference (ETR)	1	MM	MT-RJ							x	x		
FPH601	2C05	External Clock Facility (ECF)	1	MM	MT-RJ BNC							Std			
FPH602	2D23	Oscillator / ETR card	1	MM	MT-RJ BNC							Std			
FPH603	58AF	Pulse Per Second (PPS) card	2		BNC		Std		Std						
FPH605	58E1	Oscillator card	2		BNC			Std		Std					

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<b>Special Function Cards (native PCIe)</b>														
0402	58C1	Flash Express (PCIe) (ordered in pairs)				CF	x	x						
0403	C042	Flash Express+ (PCIe) (ordered in pairs)				x								
0420	59AB	zEnterprise Data Compression (zEDC) Express (PCIe)				x	x	x						
0411	58A7	10GbE RDMA over Converged Ethernet (RoCE) Express (PCIe)	2	OM3	LC	x	x	1 port active	1 port active					
<b>Cryptography</b>														
0863	QD8C	PCIX Crypto Express2 (2 engine) (CEX2)									x	x	x	x
0870	2C40	PCIX Crypto Express2 (1 engine) (CEX2)									x		x	x
0864	57AA	PCIe-Crypto Express3 (2 engine) (CEX3)				CF	CF	x	x	x	x			
0871	57AB	PCIe-Crypto Express3 (1 engine) (CEX3)				CF		x	x	x	x			
0865	57EA	PCIe-Crypto Express4S (1 engine) (CEX4)				x	x							
0890	C03D	PCIe-Crypto Express5S (1 engine) (CEX5)				x								
3863	CRAF	CP Assist for Cryptographic Function (CPACF) enablement				x	x	x	x	x	x	x	x	x
0859		TKE Workstation 5.0									CF	CF	x	x
0839		TKE Workstation 5.x - h/w will support TKE 6.0 LIC prior to availability of FC0840									x	x	x	x
0840		TKE Workstation 6.0									x	x	x	x
0841		TKE Workstation 7.0 (z10 availability Nov 9, 2010)				x	CF	x	x	x	x	s	s	
0842		TKE Workstation				CF	x	x						
0894	C05B	4767 TKE Crypto adapter card for FC0842 to FC0847 conversion				x								
0847		TKE Workstation 8.0 (comes with 4767 TKE Crypto adapter card)				x								
0855		TKE 5.0 LIC										x	x	
0856		TKE 5.1 LIC										x	x	
0857		TKE 5.2 LIC									x	x	x	
0854		TKE 5.3 LIC - will support the z10 with a CEX2									x	x	x	x
0858		TKE 6.0 LIC - required to support CEX3									x	x	x	x
0860		TKE 7.0 LIC (z10 availability Nov 9, 2010)								x	x	x	s	s
0867		TKE 7.1 LIC (availability Sept 9, 2011)							x	x	x	x	s	s
0850		TKE 7.2 LIC				x								
0872		TKE 7.3 LIC				s	x	s	s					
0877		TKE 8.0 LIC				x								
0891	2A9F	TKE Smart Card Reader (FIPS cert)				x								
0892		TKE Additional Smart Cards (for use with FC0891)				x								
0885	2A9F	TKE Smart Card Reader (with support for 2048-bit signature keys)				CF	x	x	x	x	x	x	x	x
0884		TKE Additional Smart Cards (for use with FC0885)				CF	x	x	x	x	x	x	x	
0887	2A90	TKE Smart Card Reader (for attachment to TKE 5.x)									x	CF	x	x
0888		TKE Additional Smart Cards (for use with FC0887)									x	CF	x	x
<b>Enterprise Systems Connection Architecture (ESCON)</b>														
2323	QZ26	ESCON 16-port without sweep chip	15	MM	MT-RJ					CF	CF	CF	CF	x
2323	QZ25	ESCON 16-port with sweep chip	15	MM	MT-RJ				x	x	x	x	x	x
2324		ESCON channel enablement 4-ports (LIC)							x	x	x	x	x	x
<b>I/O Support</b>														
0160	2A63	MBA Fan-out card				eSTI							x	x
0325	290D	STI-MP Daughter card				eSTI							x	x
0162	295B	HCA2-C Fan-out card 12x IFB DDR (6GB/s)				IFB-C	CF	CF	x	x	x	x		
0326	2C08	IFB-MP Daughter card				IFB-C	CF	x	x	x	x	x		
0323	290E	STI-A8 Mother card (Cargo cage domain 0-5, slot 5, 14 or 23; Cayuga drawer slot 9)				CF	CF	x	x	x	x	x	x	x
0324	290F	STI-A4 Mother card (Cargo cage domain 6, slot 28)				CF	x	x	x	x	x	x	x	x
0169	58A0	PCIe Fan-out card				PCIe	x	x	x	x				
0173	C039	PCIe Fan-out card				PCIe	x							
0400	58A6	PCIe Interconnect (Seneca drawer)				PCIe	x	x	x	x				
0401		PCIe Interconnect (Seneca drawer)				PCIe	x							
FC1215	ST86	Internal eSTI cable 1.25m - to A01 front										x	x	
FC1216	ST87	Internal eSTI cable 2m - to Z01, Z15 front										x	x	
FC1217	ST88	Internal eSTI cable 3.5m - to A01, Z01, Z15 rear										x	x	
FC1219	CB1A	Internal IFB cable 1.5m - to A01 front				x								
FC1220	CB2Z	Internal IFB cable 2.5m - to Z01, Z15 front; drawers A06, A11, A16					CF	x	x	x	x			
FC1221	CB3A	Internal IFB cable 3.0m - to A01 rear				x						x	x	
FC1222	CB3Z	Internal IFB cable 3.5m - to Z01, Z15 rear; drawer A01				x						x	x	
FC1229	3A30	Internal IFB cable 2.0m				x								
FCS001	C001	Internal PCIe cable 1.5m				x	x	x	x					
FCS002	C002	Internal PCIe cable 2.0m				x	x	x	x					
FCS003	C003	Internal PCIe cable 2.5m				x	x	x	x					
FCS004	C004	Internal PCIe cable 3.0m				x	x	x	x					
FCS005	C005	Internal PCIe cable 3.5m				x								
0113	AFLW	ISC-Daughter airflow card				CF	CF	x	x	x	x	x	x	x
0114	AFLW	Full I/O airflow card				CF	CF	x	x	x	x	x	x	x
0161	AFLW	MBA fan-out airflow card										x	x	
0165	AFLW	MBA fan-out airflow card				CF	x	x	x	x	x	x	x	
0174	AFLW	Fan-out Airflow PCIe				x								
7942	OVRC	Top Exit I/O Cabling				x	x		x					
7920	OVRC	Top Exit cabling					x		x					

<u>Legend:</u>	
BNC	pulse/second coax attachment to NTP server
CCIN	custom card identification number
CF	carried forward on MES upgrade
HCA	Host Channel Adapter
ICB	Integrated Cluster Bus
IFB DDR	Infiniband Double Data Rate
IFB SDR	Infiniband Single Data Rate
IFB-C	Infiniband copper
IFB-MP	Infiniband Multiplexer
IFB-O	Infiniband optical; MPO connector; OM3 MM cable
LIC	Licensed Internal Code
LR	long reach
LX	long wavelength transmitter
MBA	Memory Bus Adapter
MPO	Multiple-fiber Push-On
MM	multi-mode fibre (orange)
MTP	Multiple-fiber Termination Push-on
NRF	Non-Raised Floor
OM3	multi-mode 50/125 µm "laser optimized" fiber (aqua)
PCIe	Peripheral Component Interconnect Express
RDMA	Remote Direct Memory Access
RJ-45	8 contact 'ethernet' connector
RPQ	Request for Price Quotation
RPQ2	can be CF from 2096 via RPQ
RPQ4	removed as optional features at z114 GA, z196 GA2 (Sept 9, 2011); remain available by RPQ 8P2534 only for certain MES configurations.
s	supported
SFP+	Small form-factor pluggable+ transceiver
SM	single mode fibre (yellow)
SR	short reach
Std	standard function
STI, eSTI	self-timed interconnect
eSTI-MP	self-timed interconnect multiplexer
SX	short wavelength transmitter
TKE	Trusted Key Entry
x	available on new build or MES
 This hashed gray background indicates that the feature, or entire machine, has been withdrawn from marketing and is no longer orderable new from IBM (based on Canadian announcements - other countries may be different).	

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## Greetings!

I would appreciate hearing from you if you have any suggestions or see any errors.

Thank you - Don Clarke

The latest version of this chart can be found at these web sites:

[\(IBM internal\)](http://w3.ibm.com/support/techdocs/atsmstr.nsf/WebIndex/TD102278)  
[\(external\)](http://www.ibm.com/support/techdocs/atsmstr.nsf/WebIndex/TD102278)

- | Update history:
- 18-Feb-15 - z13 announcement contents ("b" level corrections April 29 2015)
  - 28-Aug-14 - z196 & z114 withdrawn from marketing
  - 20-Sep-13 - zEC12 withdrawal from marketing of OSA Express4S and TKE features
  - 23-Jul-13 - zBC12 and zEC12 GA2 announcement contents; removed old OSA and FICON Express features; added "Special Function Cards" section
  - 28-Aug-12 - zEC12 announcement contents; z10 withdrawn from marketing; removed z890/z990
  - 24-Aug-11 - z114 and z196 GA2 announcement contents; Fiber type and connectors now in separate columns
  - 17-Sep-10 - z196 announcement contents; add withdrawn from marketing indicator; removed z800/z900; title change
  - 14-Jan-10 - z10 Crypto Express3 features; expanded the Crypto section with contributions from Greg Boyd, IBM ATS
  - 21-Jul-09 - z10 FICON Express8 features
  - 21-Oct-08 - z10 BC and z10 EC GA2 announcement contents
  - 06-May-08 - z10 EC OSA-Express3 features
  - 26-Feb-08 - z10 EC announcement contents; restructured to fit 2 pages
  - 20-Apr-07 - z9 BC GA2 & z9 EC GA3 announcement contents
  - 29-Jun-06 - z9 BC & z9 EC GA2 announcement contents
  - 27-Oct-05 - z9 EC announcement contents
  - 10-May-05 - initial version