Migrating to New OSA Feature? Multiport and OSA/SF Considerations

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Room Aspen

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Created by Gwen Dente

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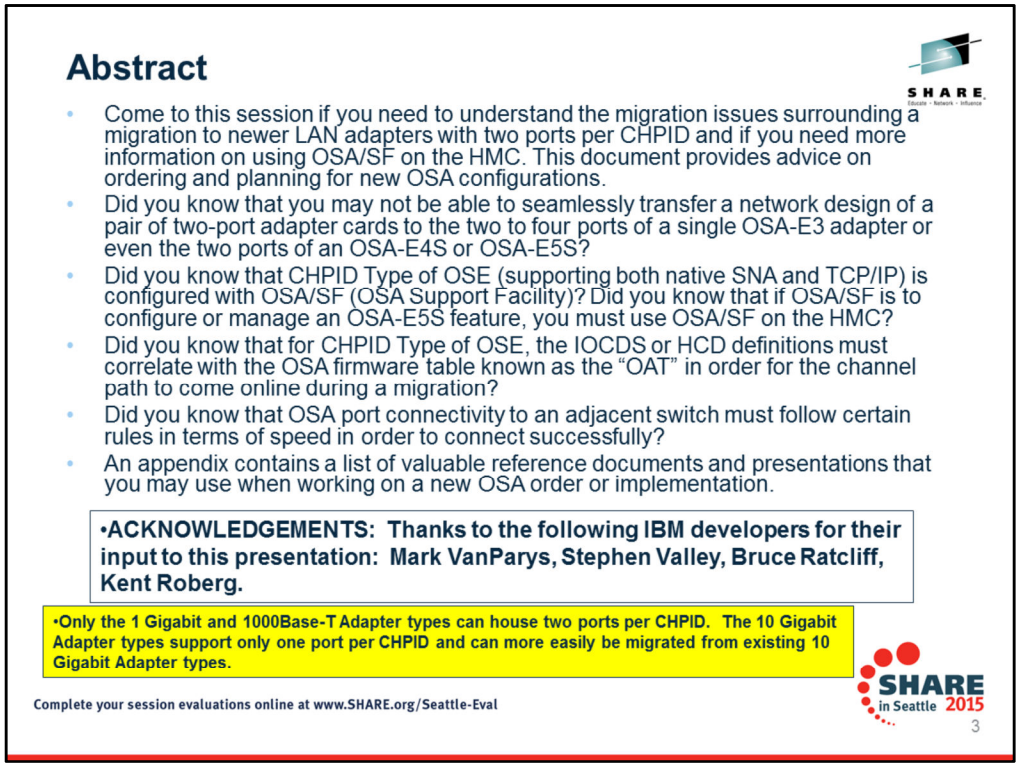
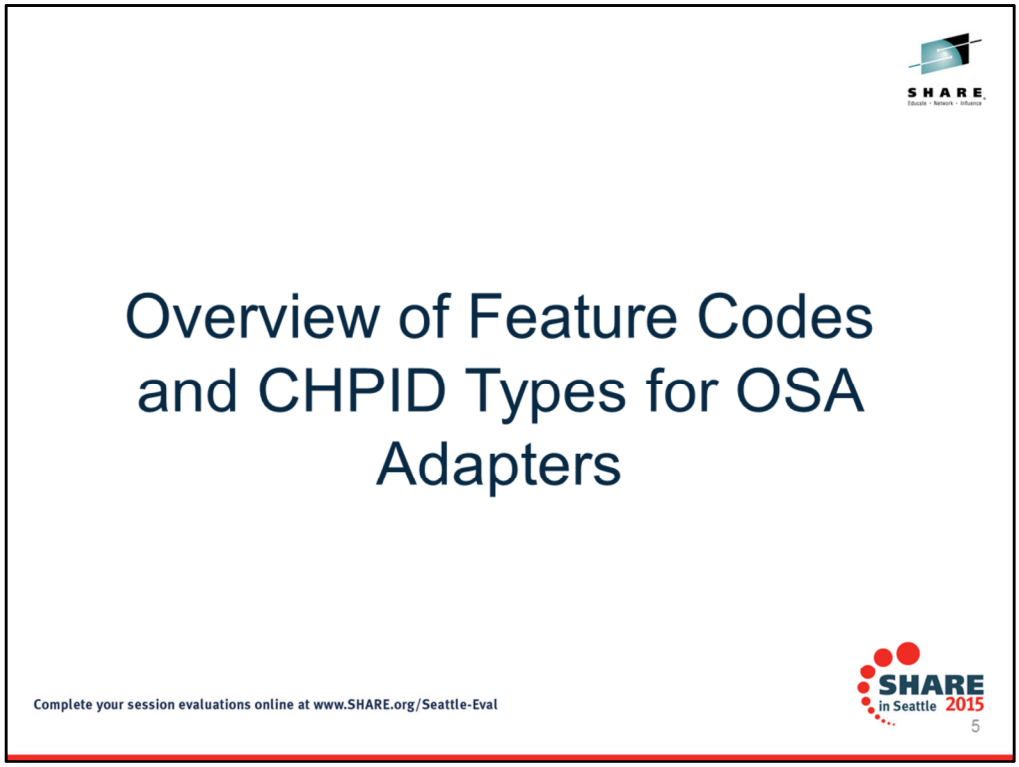


The OSA-E5S is merely a technology upgrade over the OSA-E4S. Therefore the OSA-E4S and OSA-E5S are similar in their performance and their software support.

WARNING: One BIG DIFFERENCE exists when configuring the 1000Base-T adapters (OSA-E2, OSA-E3, OSA-E4, and OSA-E5) to run as a CHPID Type of OSE. The OSA-E2 and E3 must be configured for SNA Link Station Architecture (LSA) and/or for TCP/IP LAN Channel Station (LCS) architecture (non-QDIO) using a separate OSA management tool in the z/OS, zVSE, or zVM operating systems called OSA/SF (Support Facility). Prior to the introduction of the OSA-E5S OSA/SF was delivered as a host-specific tool which provided functions that were used to configure and manage the OSA. With the advent of the OSA-E5S on October 31, 2013 for General Availability 2 (GA2) of the zEC12 and for GA1 of the zBC12, the OSA/SF functions necessary to configure, manage and display the OSAs are being moved to the HMC. Driver 15F or higher is necessary to support the OSA-E5S.) OSA/SF on the HMC is required for the OSA-Express5S features. Either OSA/SF on the HMC or the OSA/SF operating system component can be used for the OSA-Express4S features. The OSA/SF operating system component must be used for the OSA-Express3 features. OSA/SF on the HMC can be used to configure channel path identifier (CHPID) type OSE. It can be used to manage (query/display) CHPID types OSD, OSE, and OSN.

For information on configuring OSA/SF from the HMC, see *"zEnterprise System Open Systems Adapter/Support Facility on the Hardware Management Console"* (SC14-7580-00). For information on configuring OSA/SF with the operating system took, see "*Open Systems Adapter-Express Customer's Guide and Reference"* (SA22-7935).

Table of Contents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Overview of Feature Codes and CHPID Types for OSA Adapters
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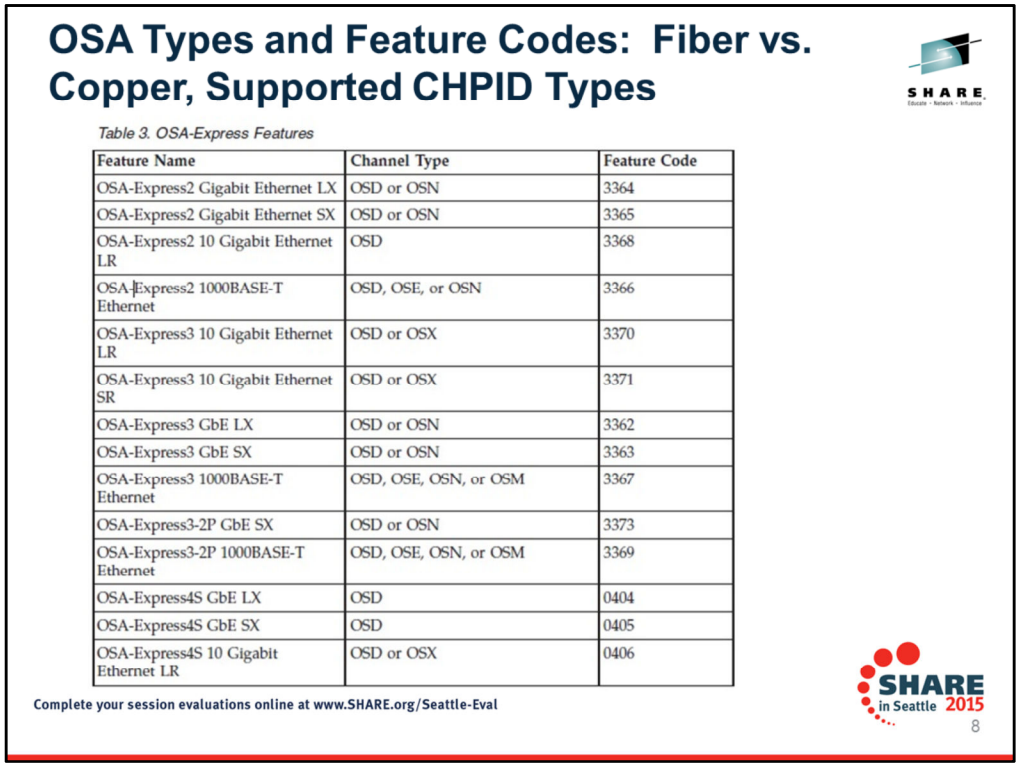
Ordering/Implementing New OSA Ports

- You must know the obvious:
  - Copper (1000Base-T) or Fiber Connection Type?
  - If Fiber, then long or short reach?
  - If Fiber, then 1 Gigabit or 10 Gigabit?
- The Biggest Problem:
  - Thinking that a customer requirement for "x" number of OSA ports can immediately be mapped into new OSA ports on a multiport-per-adapter card
  - You must also know the less obvious to make a proper assessment of what to order:
    - Number of pre-migration OSA Ports per CHPID Types
    - Whether or not Customer wants port consolidation onto multi-port cards despite
      - additional administrative steps
      - possible impact on adapter redundancy

Ordering/Implementing (continued)

- Confusion over:
  - "Adapter," "Port, " "Feature Code"
  - Adapter with one Port per CHPID vs.
  - Adapter with two Ports per CHPID
    - Also known as "multi-port per CHPID" cards or "multi-port" cards
  - Multi-port CHPID Types and the IOCDS
  - Multi-port CHPID Types and Operating System Definitions
- Correlation between …
    - CHPID Type "OSE" and
    - OSA Address Table (OAT)
    - TCP/IP and SNA Configuration in Operating System



OSA Types and Feature Codes: Fiber vs. Copper, Supported CHPID Types

Table 3. OSA-Express Features

Feature Name	Channel Type	Feature Code
OSA-Express2 Gigabit Ethernet LX	OSD or OSN	3364
OSA-Express2 Gigabit Ethernet SX	OSD or OSN	3365
OSA-Express2 10 Gigabit Ethernet LR	OSD	3368
OSA-Express2 1000BASE-T Ethernet	OSD, OSE, or OSN	3366
OSA-Express3 10 Gigabit Ethernet LR	OSD or OSX	3370
OSA-Express3 10 Gigabit Ethernet SR	OSD or OSX	3371
OSA-Express3 GbE LX	OSD or OSN	3362
OSA-Express3 GbE SX	OSD or OSN	3363
OSA-Express3 1000BASE-T Ethernet	OSD, OSE, OSN, or OSM	3367
OSA-Express3-2P GbE SX	OSD or OSN	3373
OSA-Express3-2P 1000BASE-T Ethernet	OSD, OSE, OSN, or OSM	3369
OSA-Express4S GbE LX	OSD	0404
OSA-Express4S GbE SX	OSD	0405
OSA-Express4S 10 Gigabit Ethernet LR	OSD or OSX	0406

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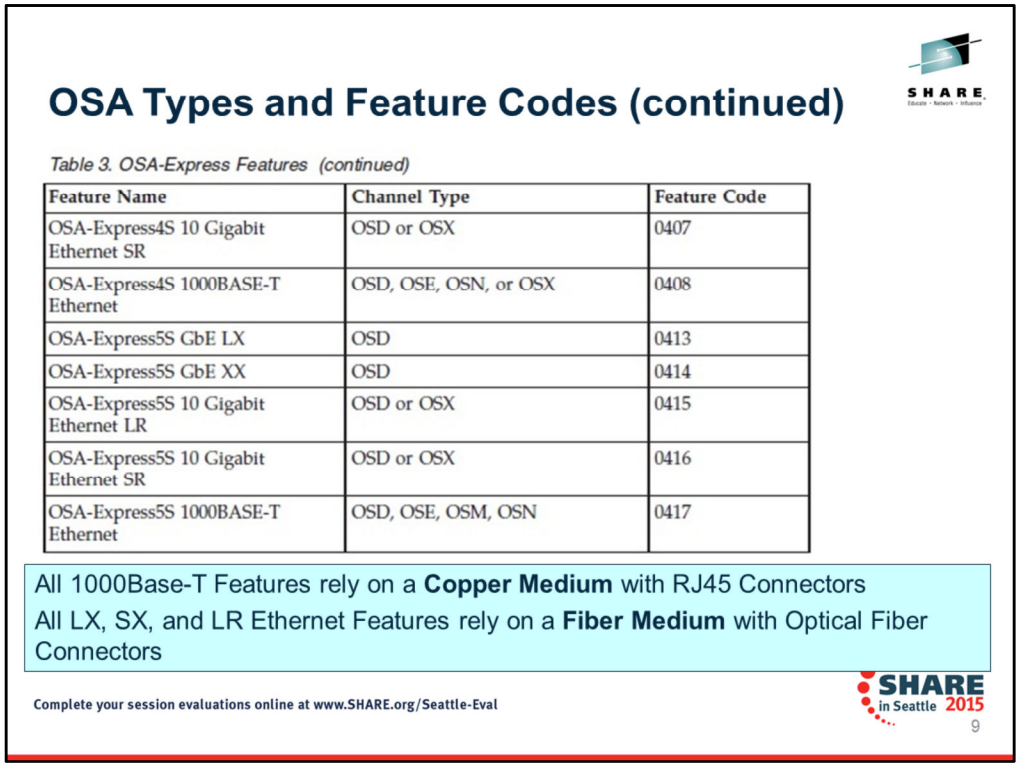
Table taken from OSA Customer Guide and Reference (SA22-7935-16).
Notice the column labelled **"Feature Name."** We distinguish between Copper and Fiber models:

- All 1000Base-T Features rely on a **Copper Medium** with RJ45 Connectors
- All LX, SX, and LR Ethernet Features rely on a **Fiber Medium** with Optical Fiber Connectors
- The Platform medium adjacent to the OSA determines whether your infrastructure will support a Copper or a Fiber OSA Adapter type. That is, the adjacent switch's or router's transceiver type will dictate whether you need a copper or a fiber-based OSA adapter. Transceivers are also known as Gigabit Interface Couplers (GbICs) or mini-GbICs, which are small form-factor pluggable transceivers (SFP) that allow devices to be adapted for either a copper or a fiber connection.

Notice the column labelled **"Channel Type."** This column shows you the System z Channel or CHPID type that is supported and coded in the HCD and IOCDS for this Feature Name.
Notice the column labelled **"Feature Code."** This column shows you the Feature Code associated with the Feature Name. Certain Feature Codes are available on only certain models of System z.



OSA Types and Feature Codes (continued)

Table 3. OSA-Express Features (continued)

Feature Name	Channel Type	Feature Code
OSA-Express4S 10 Gigabit Ethernet SR	OSD or OSX	0407
OSA-Express4S 1000BASE-T Ethernet	OSD, OSE, OSN, or OSX	0408
OSA-Express5S GbE LX	OSD	0413
OSA-Express5S GbE XX	OSD	0414
OSA-Express5S 10 Gigabit Ethernet LR	OSD or OSX	0415
OSA-Express5S 10 Gigabit Ethernet SR	OSD or OSX	0416
OSA-Express5S 1000BASE-T Ethernet	OSD, OSE, OSM, OSN	0417

All 1000Base-T Features rely on a **Copper Medium** with RJ45 Connectors
All LX, SX, and LR Ethernet Features rely on a **Fiber Medium** with Optical Fiber Connectors

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9

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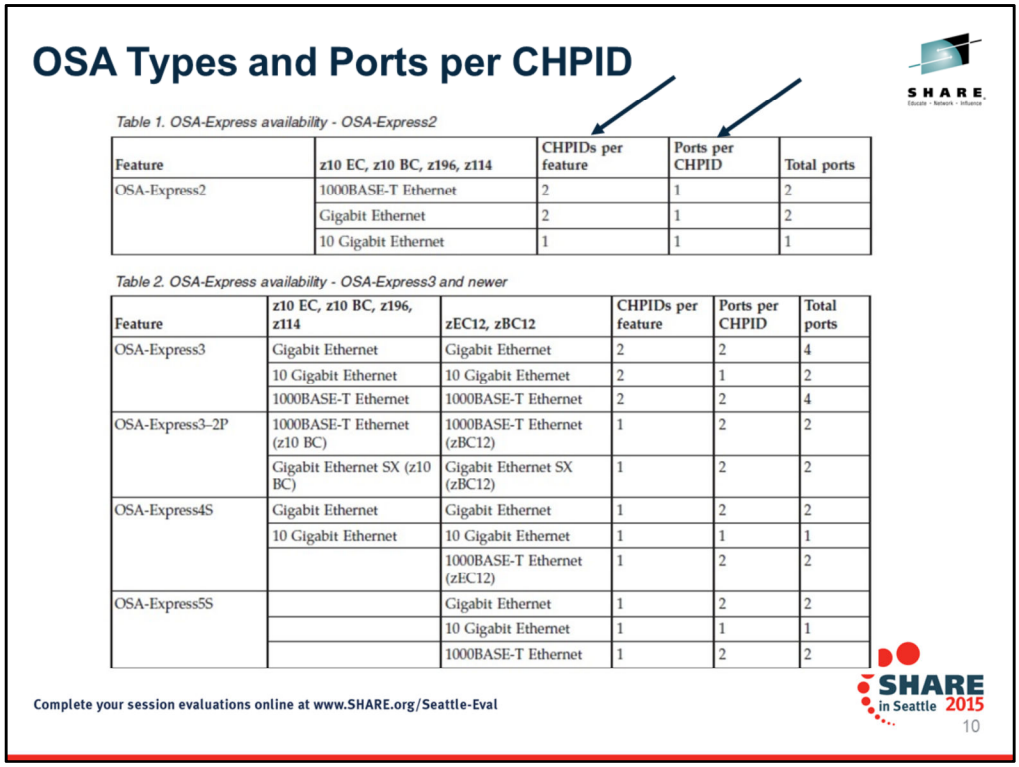

OSA Types and Ports per CHPID

Table 1. OSA-Express availability - OSA-Express2

Feature	z10 EC, z10 BC, z196, z114	CHPIDs per feature	Ports per CHPID	Total ports
OSA-Express2	1000BASE-T Ethernet	2	1	2
	Gigabit Ethernet	2	1	2
	10 Gigabit Ethernet	1	1	1

Table 2. OSA-Express availability - OSA-Express3 and newer

Feature	z10 EC, z10 BC, z196, z114	zEC12, zBC12	CHPIDs per feature	Ports per CHPID	Total ports
OSA-Express3	Gigabit Ethernet	Gigabit Ethernet	2	2	4
	10 Gigabit Ethernet	10 Gigabit Ethernet	2	1	2
	1000BASE-T Ethernet	1000BASE-T Ethernet	2	2	4
OSA-Express3–2P	1000BASE-T Ethernet (z10 BC)	1000BASE-T Ethernet (zBC12)	1	2	2
	Gigabit Ethernet SX (z10 BC)	Gigabit Ethernet SX (zBC12)	1	2	2
OSA-Express4S	Gigabit Ethernet	Gigabit Ethernet	1	2	2
	10 Gigabit Ethernet	10 Gigabit Ethernet	1	1	1
		1000BASE-T Ethernet (zEC12)	1	2	2
OSA-Express5S		Gigabit Ethernet	1	2	2
		10 Gigabit Ethernet	1	1	1
		1000BASE-T Ethernet	1	2	2

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10

Table taken from OSA Customer Guide and Reference (SA22-7395-16).
Notice the column labelled “CHPIDs per feature.” Older models of the OSA-Express often feature two CHPIDs per feature.
Focus also on the column labelled “Ports per CHPID.” Older models of 1000Base-T and 1 Gigabit Ethernet housed only a single port per CHPID. Later models of 1000Base-T and 1 Gigabit Ethernet started housing 2 ports per CHPID. The latter did not negatively affect performance, but it affected your planning for a migration to any of the models that supported two ports per CHPID.

Connectivity Rules for Connection to Adjacent Switches

Best Practice: Consult the IBM Manual for Speed/ Mode Connectivity between OSA Port and Switch

Open Systems Adapter-Express Customer's Guide and Reference, SA22-7395-16

- Appendix A. Physical connection information
  - Physical ports and status indicators
    - OSA-Express2
    - OSA-Express3
    - OSA-Express4S
    - OSA-Express5S
  - Fiber optic cabling
  - Cabling for 1000BASE-T Ethernet

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12

Always begin your planning for physical connectivity between the OSA port and your switch by consulting the appropriate Customer Guide and Reference for your OSA Feature Code.
This visual shows you the name of the IBM manual that provides information for every still-support OSA Feature code from the OSA-Express2 through the OSA-Express5S.
Note the important Appendix information that you will need to provide to your OSA and Switch administrators.

Best Practice

OSA-Express Feature-LAN Transmission Matrix

OSA NIC port type	OSA NIC Configuration (via Advanced Facilities or OSA/SF)	Partner NIC Configuration
Copper	Autonegotiate	Autonegotiate
Copper	Forced speed X and mode Y where X and Y are the SAME for both partner ports	Forced speed X and mode Y where X and Y are the SAME for both partner ports
Fiber (1Gb)	N/A – not user configurable	Autonegotiate (IEEE Clause 37 for Cisco backplane) ** OR ** Forced (no negotiate, which is legacy)
Fiber (10Gb)	N/A – not user configurable	N/A - IEEE Fiber 10G does not support (speed/mode) configuration

- Speed X: 10, 100, 1000 Mbps.
  Note: OSA-Express5S 1000BASE-T supports 100 and 1000 Mbps exclusively.
- Mode Y: Half duplex / Full duplex.
  Note: OSA-Express5S 1000BASE-T supports full duplex operation exclusively.

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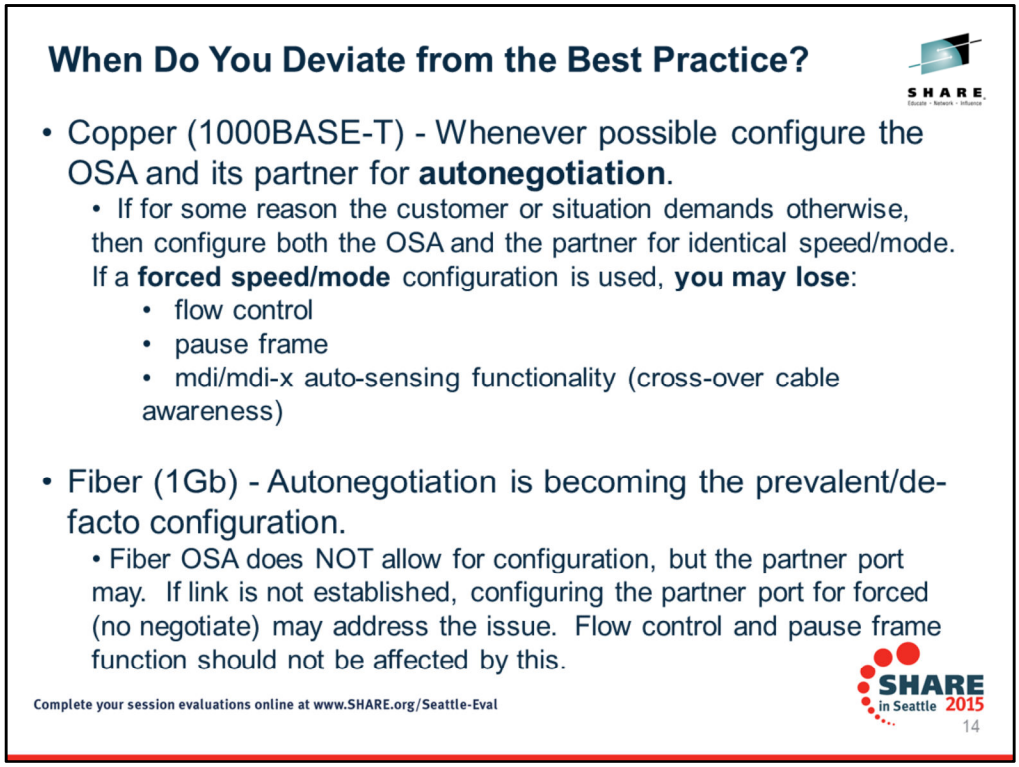
13

This is a table based on what is published as Table 32 in Appendix B of the OSA Customer Guide and Reference (SA22-7395-16), but it contains more details about fiber connectivity.
Note: OSA Fiber speed/mode is not configurable because the NICs address link establishment internally/automatically.
When connecting the OSA to the adjacent (partner) platform's NIC, always begin with this BEST PRACTICE. However the engineering and microcode (firmware) in vendor equipment may cause you to deviate from this BEST PRACTICE!



Choosing Autonegotiate or Forced (Speed and Mode):
Remember: IEEE Fiber 10Gb does not support negotiation and so on this page we address only IEEE Fiber 1Gb, which does support negotiation via support of Clause 37 (Cisco backplane). The OSA 1 Gb NIC hardware/firmware performs link establishment, including mitigation between autonegotiate and forced.

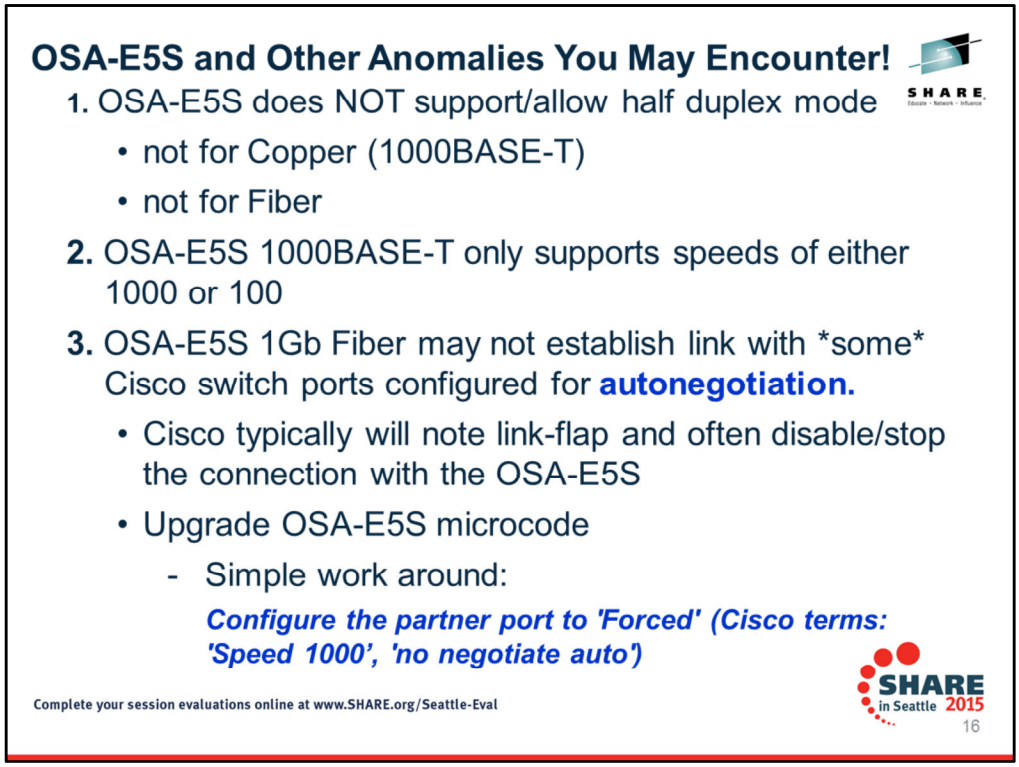
Appendix A of the ***OSA Customer Guide and Reference (SA22-7395-15)*** discusses much of what is in this visual.
Question: "What if 1000BASE-T is not configured same-to-same"?
Answer: There is no fixed answer, you may or may not get a link, if you do get a link it may be horrendous/unusable.
IEEE states/suggests: Port configured for autonegotiation, when connected to a 'Forced' partner should:

- Adopt/use the speed of the partner
- Adopt/use half duplex mode
  - If the partner using 'forced' was using 'half duplex' - you may wind up with a functional Speed x, half duplex mode link
  - If the partner using 'forced' was using 'full duplex' - you may wind up with no link, or a virtually unusable link where:
    - **>>>** one part is using half duplex, and the other is using full duplex

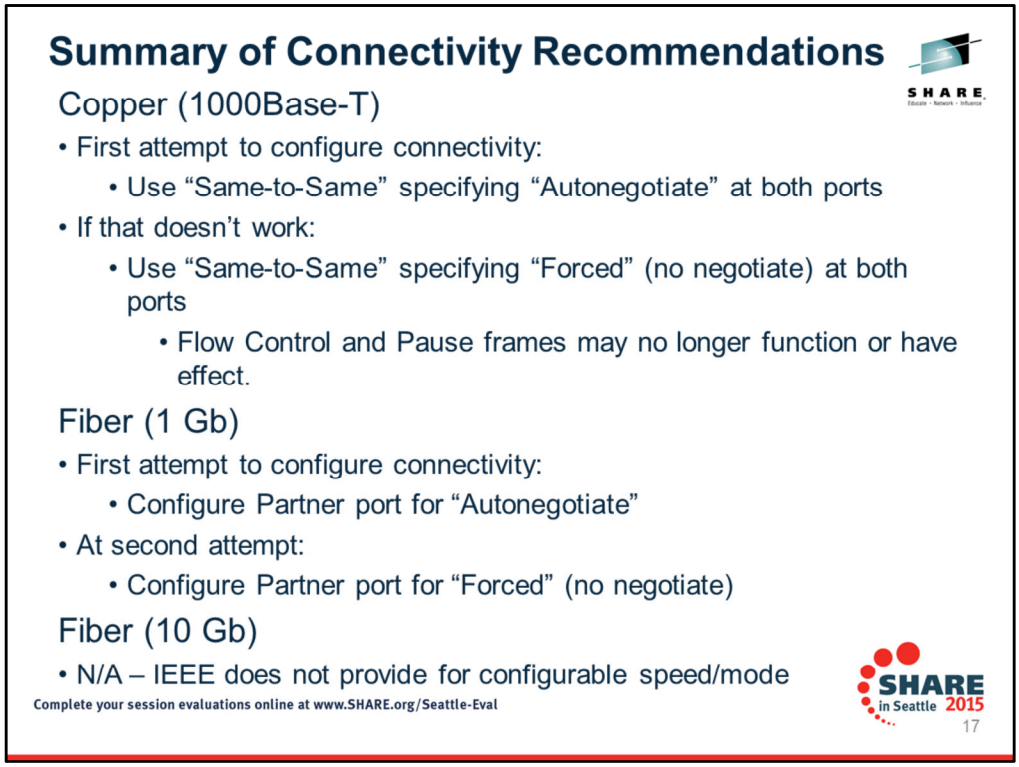
Information on OSA Flow Control and Pause Frames

OSA Flow Control and Pause Frames

- OSAs are implemented to enable and make use of flow control and pause frames whenever the environment and partner configuration allow.
  - **Fiber (1Gb and 10Gb)** - OSA will always participate in flow control and use pause frames as the situation permits and demands
  - **Copper (1000BASE-T)** - **ONLY** when OSA and its partner are configured for **autonegotiation**, OSA will participate in flow control and use pause frames as the situation permits and demands



Bullet #1 above is already noted in **Appendix A** of the ***OSA Customer Guide and Reference (SA22-7395-16).***
Bullet #2 above is already noted in the body of the ***OSA Customer Guide and Reference (SA22-7395-16).***
Bullet #3 relates to IBM Level 2 documentation that is communicated to customers who report a problem to IBM when attempting to establish connectivity with the OSA fiber port. Historically IEEE dictated “Forced/Forced” speed and mode negotiation for 10G and 10G optical fiber media. Recently vendors of networking equipment have been introducing suggestions to the IEEE to permit a form of autonegotiation for Fiber adapters.



The following paragraphs are included in **Appendix A** of the ***OSA Customer Guide and Reference (SA22-7395-15).***

"Choosing Autonegotiate or Forced (Speed and Mode):

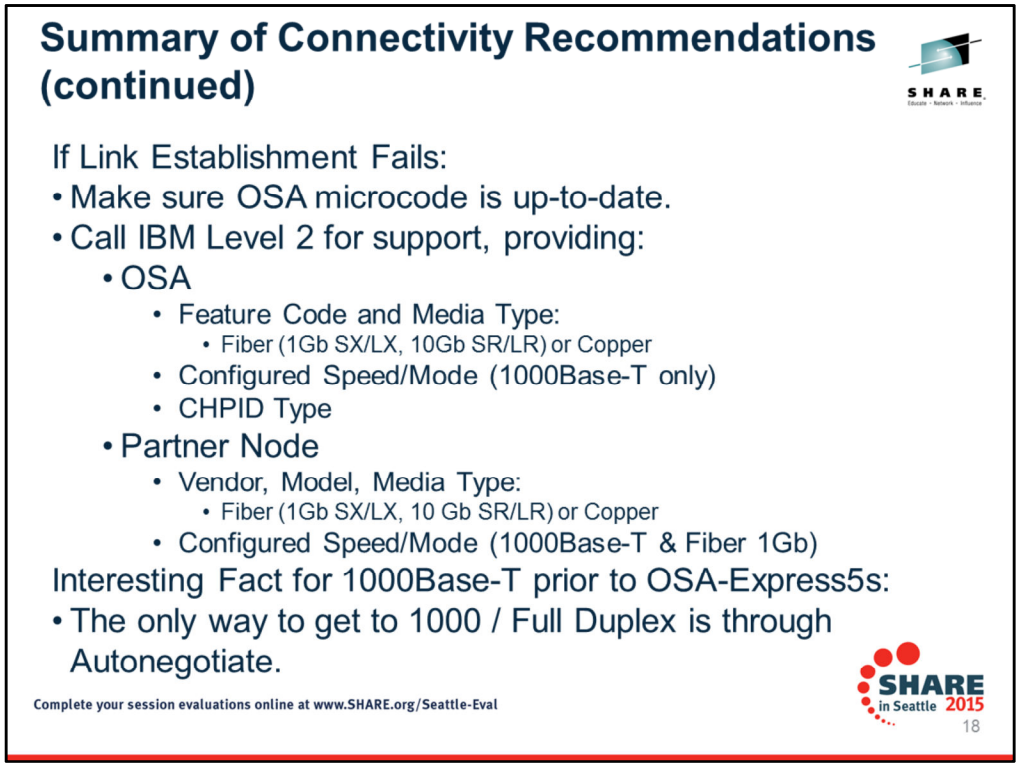
"Ethernet autonegotiation addresses more than just Speed and Mode. Other specifications such as Flow control and Pause frame behavior are examples of other functions that rely on the Ethernet negotiation process to be correctly achieved. 'Forced' settings typically do not lead to other Ethernet functions, or the established link cannot use those functions. For OSA-Express features, the parameters outside of speed and mode are not user-changeable.

"The IEEE standards fully define link establishment and behavior when Copper ports are linked to their partner port in a 'same-to-same' fashion (for example, Autonegotiation-to-Autonegotiation, 10HDX-to-10HDX, 100FDX-to-100FDX, and so on).

"**Copper ports** often establish links to partners configured in an unlike way, but the results and performance can vary greatly, including the possibility that they may not function at all. Having the OSA configured differently than its partner may result in no connection and no data transfer.

"**Fiber ports**, which are not user-configurable on OSA, can connect to partner ports that are in Force or Autonegotiate mode. If running to a switch that is in Forced mode, you may lose some of the Flow control and Pause frame type negotiated parameters.

"IBM recommends specifying the OSA parameters and partner parameters as Autonegotiate."



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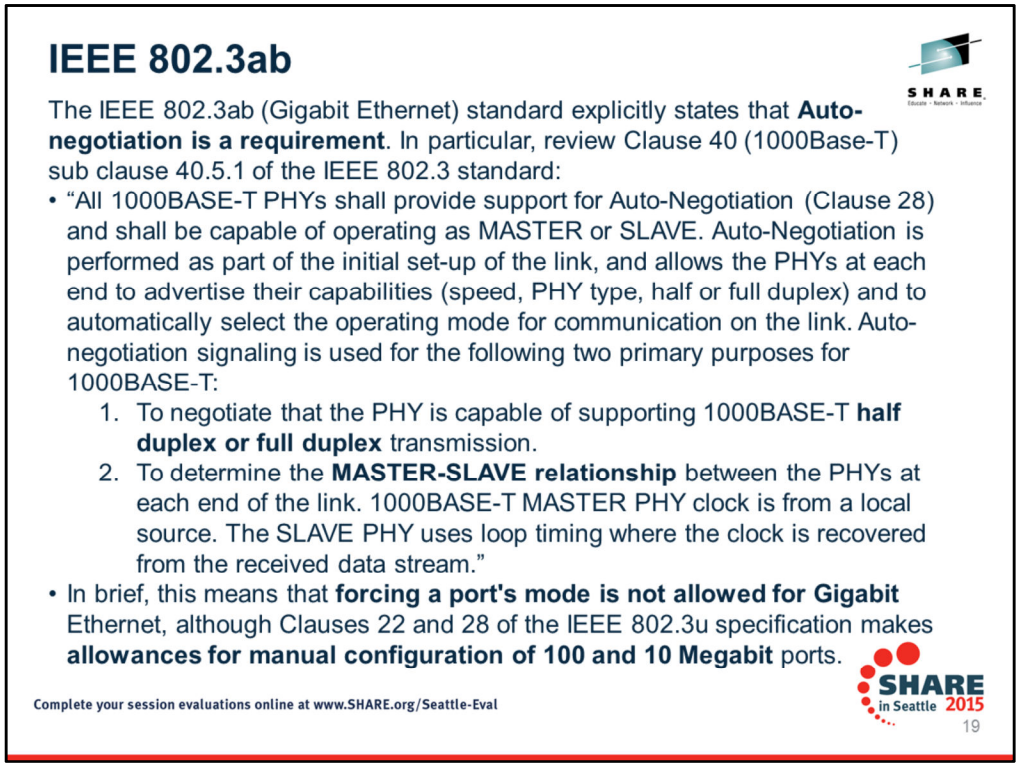
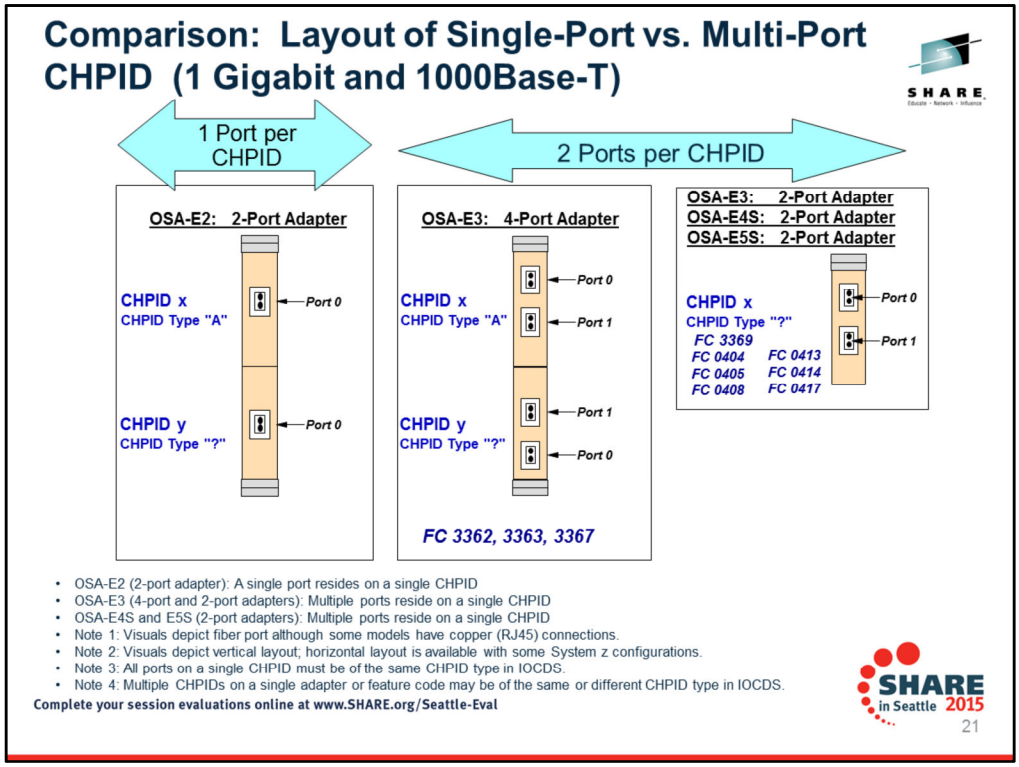
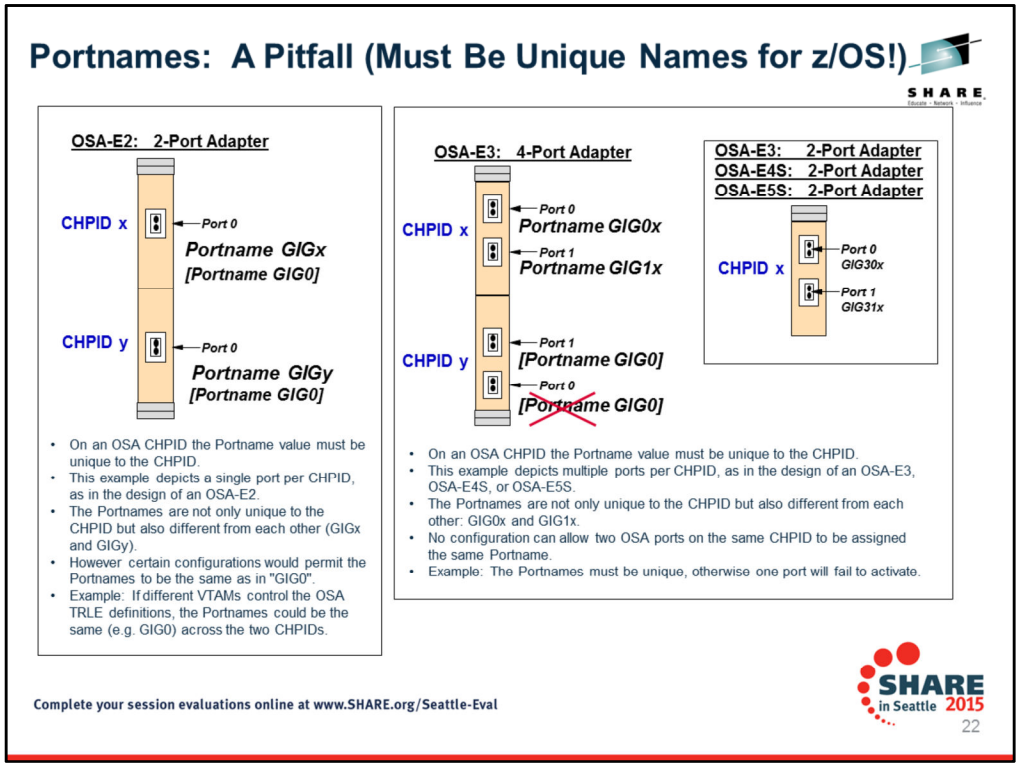


IBM's recommendations for connectivity over a LAN rely on this IEEE standard. However, vendors often interpret the standards in divergent ways, which means that even a "Best Practice" for connectivity between an OSA port and an adjacent switch may be different from this IEEE standard.

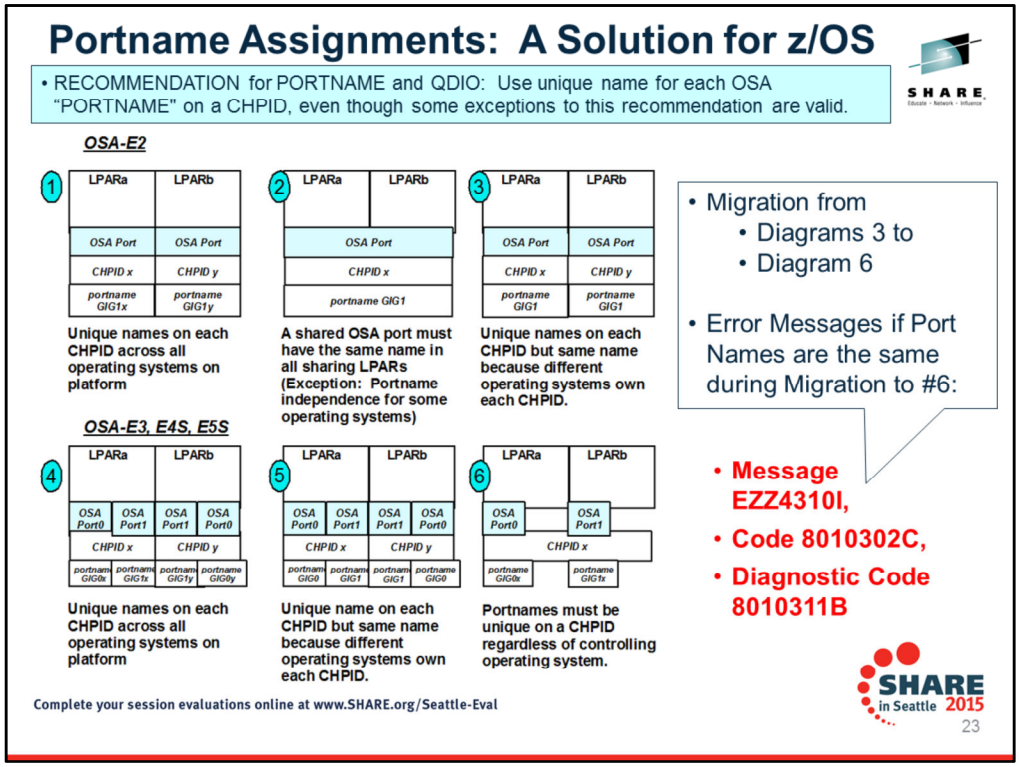
Comparison of OSA Adapter Types



The OSA-E5S is merely a technology upgrade over the OSA-E4S. Therefore the OSA-E4S and OSA-E5S are similar in their performance and their software support.
Notice that certain adapter types can house only one port per CHPID, while others can house multiple ports per CHPID. Speed and general performance do not suffer if there are multiple ports per CHPID instead of just one.



The OSA-E5S is merely a technology upgrade over the OSA-E4S. Therefore the OSA-E4S and OSA-E5S are similar in their performance and their software support.
z/OS is the only operating system that still enforces rules about port naming. The notes in the visuals explain these rules.



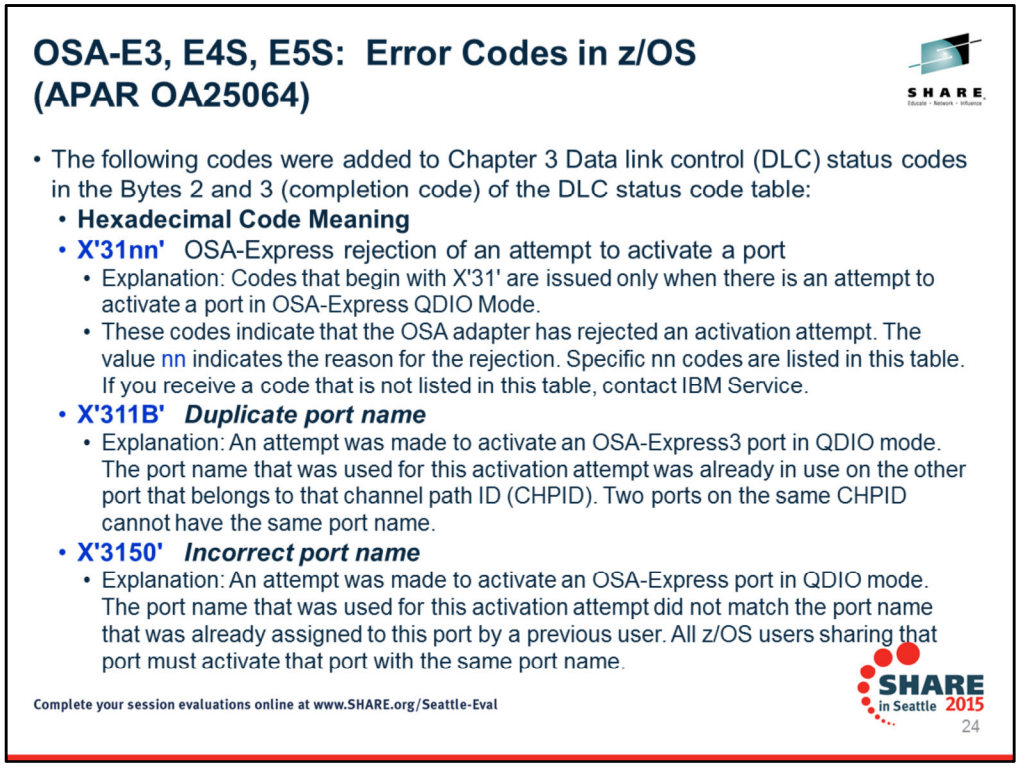
Note how each of the configurations (1 through 6) assigns a unique QDIO Portname to each OSA Port on a CHPID, However, with the multiport design of the OSA-E3, E4S, or E5S, you must now ensure that each of two ports on a CHPID is assigned a unique name on that CHPID.

In migrating from OSA-E2 QDIO Configuration #3 TO OSA-E3, E4S, or E5S QDIO Configuration 6, you can no longer use the same portname. Each portname on a CHPID must be unique!

Compare diagrams 3 and 6 --

Error Messages if using same portname for separate ports on same CHPID of an OSA-E3, E4S, E5S:

Message EZZ4310I, Code 8010302C, Diagnostic Code 8010311B



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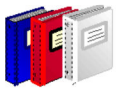
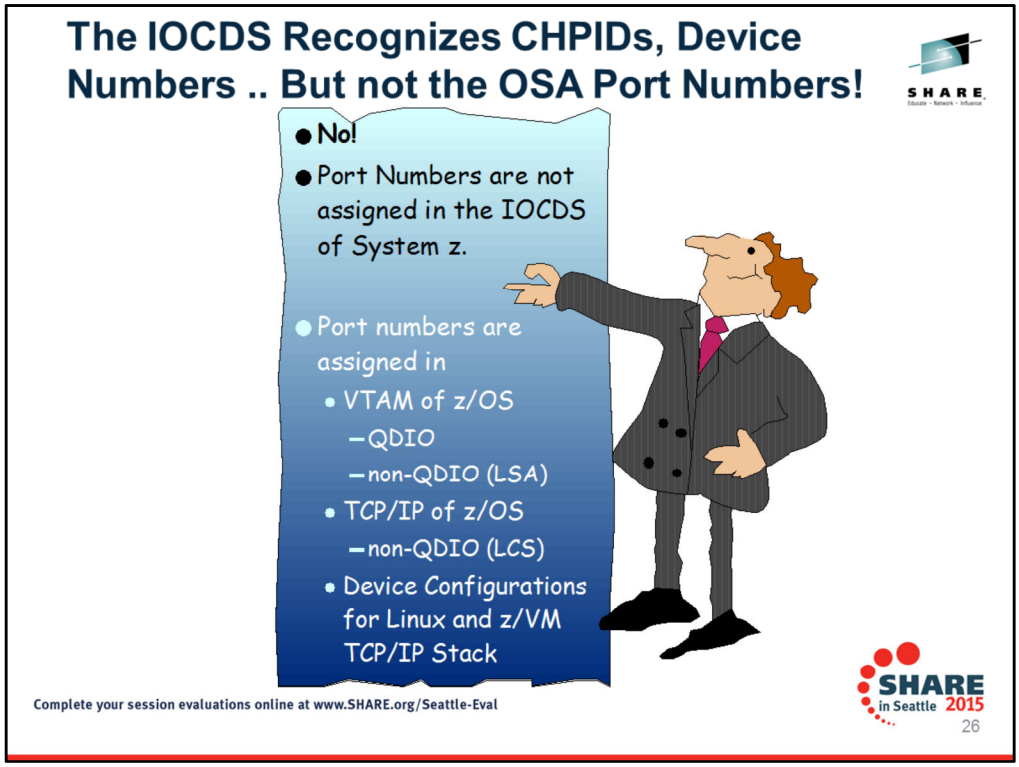
Notes on "Port Name Relief" for z/VM and Linux on z

- From SA22-7935 OSA Cust Guide and Reference

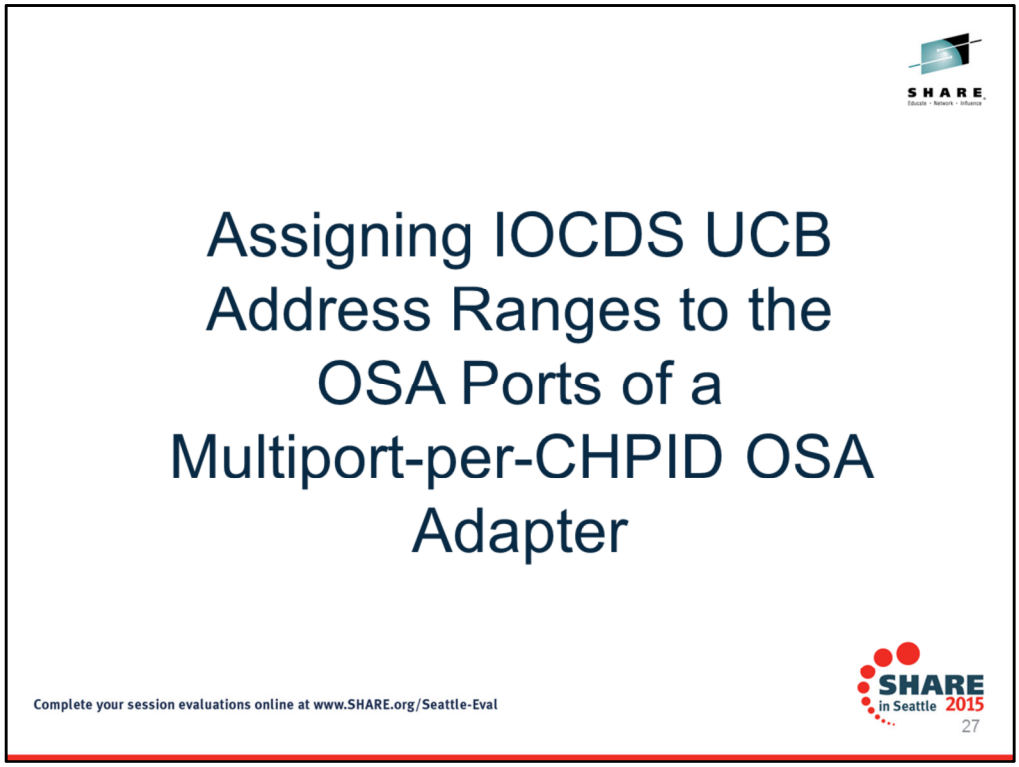


Port Name on z/VM and Linux on z no longer verified at OSA Port activation. (See specifics below.)

- **Port name relief**
  - For OSA-Express features running in QDIO mode, the port name identifies the OSA port for sharing by other operating system instances.
  - **OLD RULE:** When the port name is defined, all operating system instances that share the port must use the same port name.
  - **NEW RULE:** Beginning with a particular level of OSA-Express Licensed Internal Code (LIC) and some operating systems, this restriction has been lifted. A port name is not required at the following OSA-Express LIC levels **and** operating system levels:
    - z800 and z900 with OSA-Express (LIC) level September 2003 or higher
    - z890 and z990 with all levels of OSA-Express LIC levels
    - z9 EC
    - z10
    - z/VM 4.3 with APAR PQ73878 and z/VM 4.4
    - Linux – V2.4 kernel June 2003 stream and above – V2.6 kernel April 2004 stream and above
  - z/OS, VSE/ESA, and TPF require a port name, which must be the same when the OSA port is shared with the same operating system in different images or in a mixed OS environment. In addition, the port name must match the device name in the z/OS TCP/IP profile [or must match the PORTNAME parameter of the INTERFACE statement].

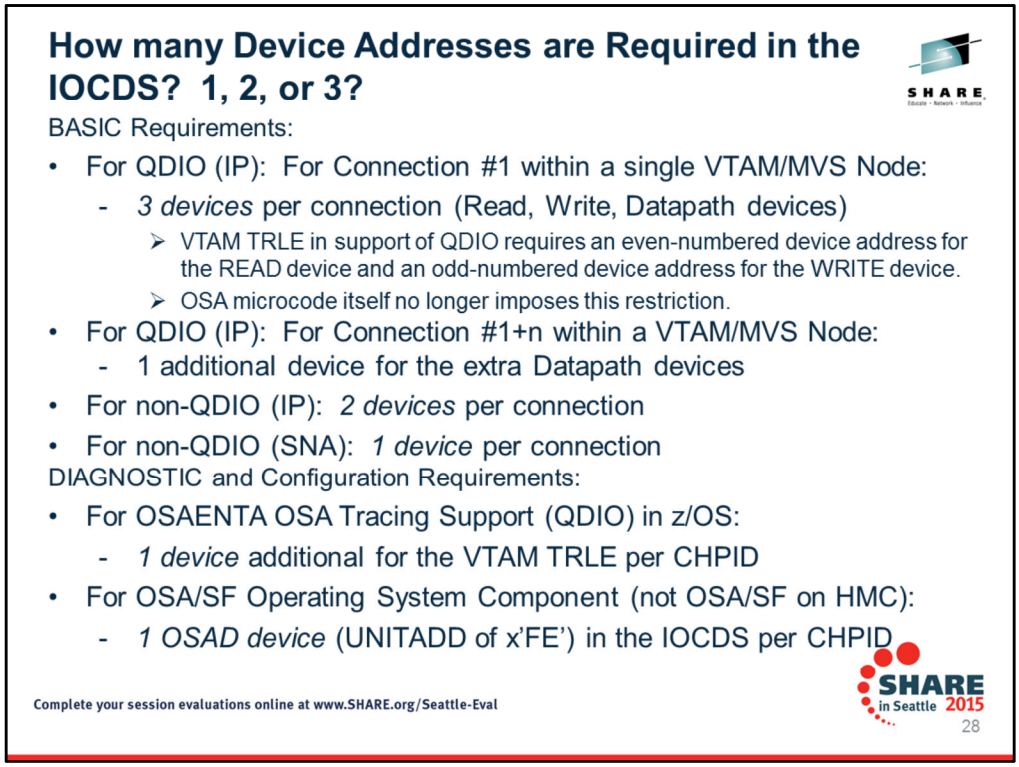


The IOCDS defines the CHPIDs, their mapping to the PCHIDs, the control units, and the range of device addresses and device types. But with multiple ports per CHPID, which type of code is responsible for assigning the device addresses to Port 0 vs. Port 1? That is the subject of this section of the presentation.



This section of the document illustrates IOCP statements that will produce the IOCDS for CHPID types of OSD and OSE.
The IOCDS defines the channels, control units, and devices to the designated logical partitions within the system.
This is defined using the input/output configuration program (IOCP). The IOCP statements typically are built using the HCD. The appropriate subchannel set number must be included in IOCP definitions or in the HCD definitions that produce the IOCDS.

An interactive dialog is used to generate the IODF, start the IOCP program, and subsequently build the production IOCDS. The IOCDS is loaded into the HSA and initialized during power-on reset. The HSA allocation is controlled via the Hardware Management Console (HMC). HSA Storage is allocated based on the size of the IOCDS, partitions, channels, control units, and devices. Additional storage is reserved for Dynamic I/O reconfiguration, if enabled. The HSA on zEC12 has a fixed size of 32 GB; on z196, z114, and z10 EC the fixed size is 16 GB.
With System z systems, channel path identifiers are mapped to Physical Channel Identifiers (PCHID) or Adapter IDs (AID) via the configuration build process through HCD or IOCP.
OSA microcode itself no longer imposes the restriction on the READ and WRITE addresses for CHPID type of OSD or OSE. So operating systems independent of a VTAM TRLE (z/VM, z/LINUX) need no longer abide by this restriction. z/OS and z/VSE still enforce the rule.

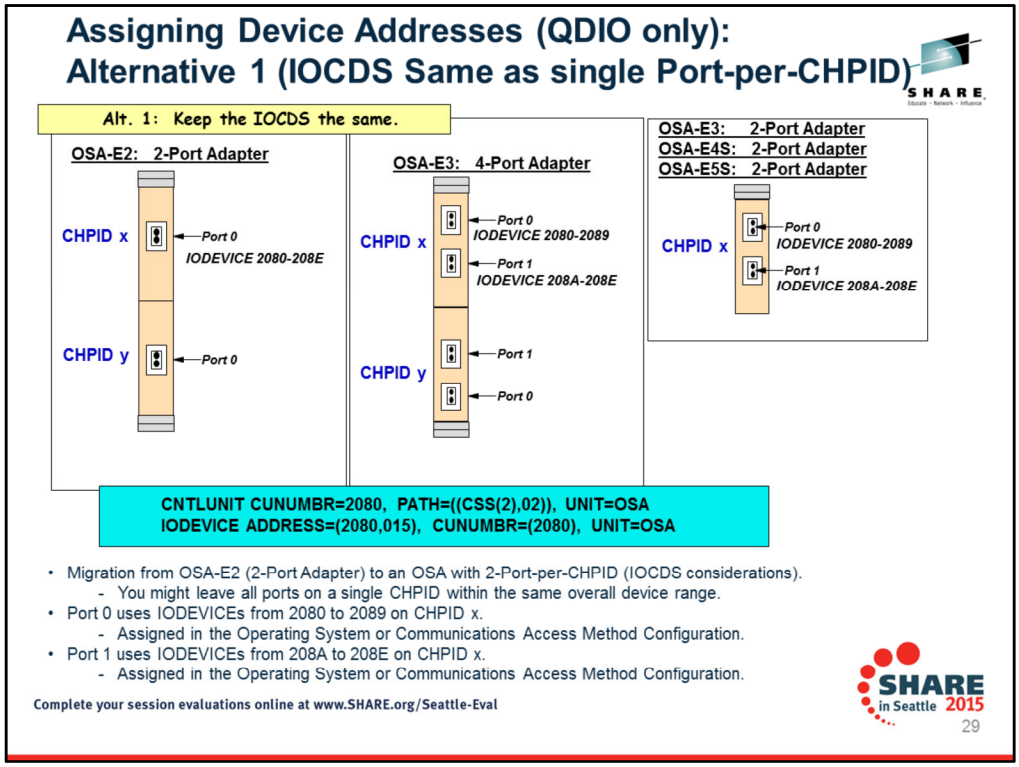


About Diagnostic and Configuration Requirements:

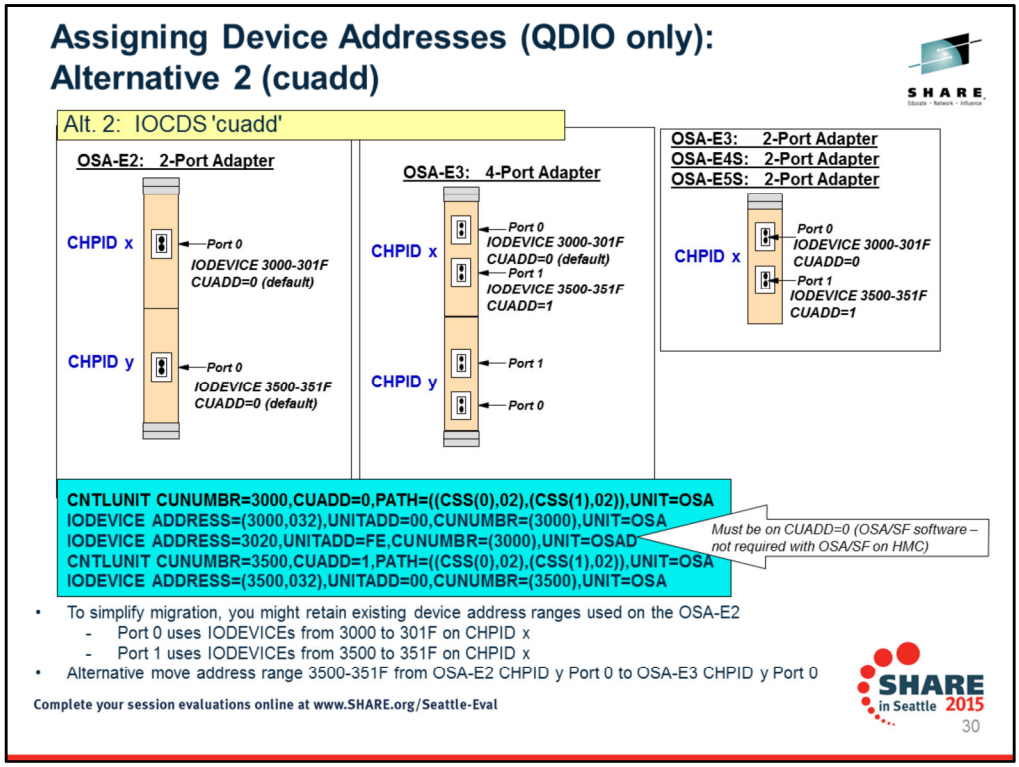
OSAD device definitions for OSA/SF do not count against the limit of device unit addresses per CHPID. If multiple control units are defined to the CHPID, the OSAD device must be defined on Logical Address 00 (same as CUADD=00). The OSAD device is required only for the OSA/SF Operating System Component. It is not used for the communication with OSA/SF on the HMC.

OSAENTA is a trace process similar to a SNIFFER trace. The OSAENTA trace is a diagnostic method for obtaining frames flowing to and from an OSA adapter. You can use the OSAENTA statement to copy frames as they enter or leave an OSA adapter for an attached host. The host can be an LPAR with z/OS®, VM, or Linux®.

Frames that are captured have extra information added to them before they are stored. This extra information, such as timestamps, is used during the packet formatting. The captured data reflects exactly what the network sees. For example, the trace contains the constituent packets of a fragmented packet exactly as they are received or sent.

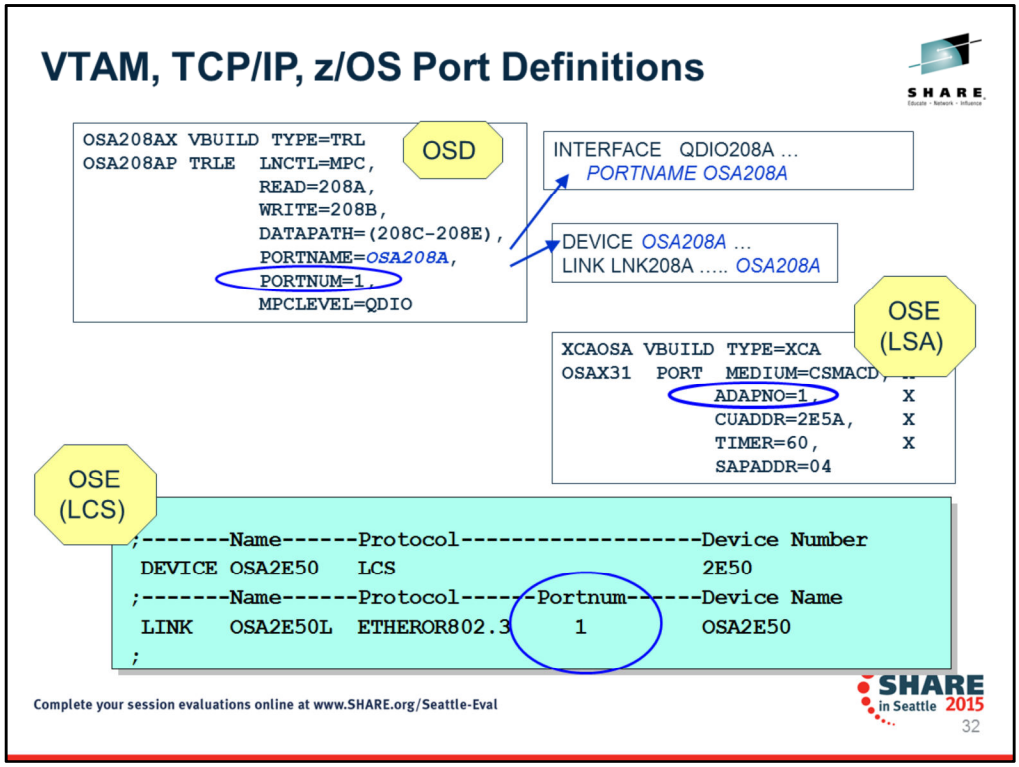


The topic is only briefly illustrated in this section to give you an appreciation of how a customer might choose to pick the simplest migration solution even though it would mean ordering more OSA Port capacity than is needed so as to avoid the administrative overhead of making IOCDS, HCD, Operating system changes, and so on.
Note that he OSA-E5S is merely a technology upgrade over the OSA-E4S. Therefore the OSA-E4S and OSA-E5S are similar in their IOCDS and operating system definitions.



The topic is only briefly illustrated in this section to give you an appreciation of how a customer might choose to pick the simplest migration solution even though it would mean ordering more OSA Port capacity than is needed so as to avoid the administrative overhead of making IOCDS, HCD, Operating system changes, and so on.
Note that he OSA-E5S is merely a technology upgrade over the OSA-E4S. Therefore the OSA-E4S and OSA-E5S are similar in their IOCDS and operating system definitions.

Assigning Port Numbers to Operating System, SNA, and TCP/IP Definitions (CHPID Types OSD, OSX, OSE)



These examples are for zOS only. Nevertheless, the other operating systems on z also have to deal with definitions that assign certain device numbers that were coded in the IOCDS to different OSA port numbers. Again, remember that the IOCDS knows nothing about the separate ports on a multi-port card. The other definitions must deal with these changes.

The visual shows you the TRLE definition that would be valid for a CHPID type of OSD. Notice how three device addresses are required for a QDIO INTERFACE or DEVICE/LINK definition. The INTERFACE and DEVICE/LINK Definitions for QDIO do not reference the Port Number.

Then the XCA definition shows you how to point to Port 1 of a multiport card when a native SNA connection is desired. Notice how only one device address is required for such connectivity.

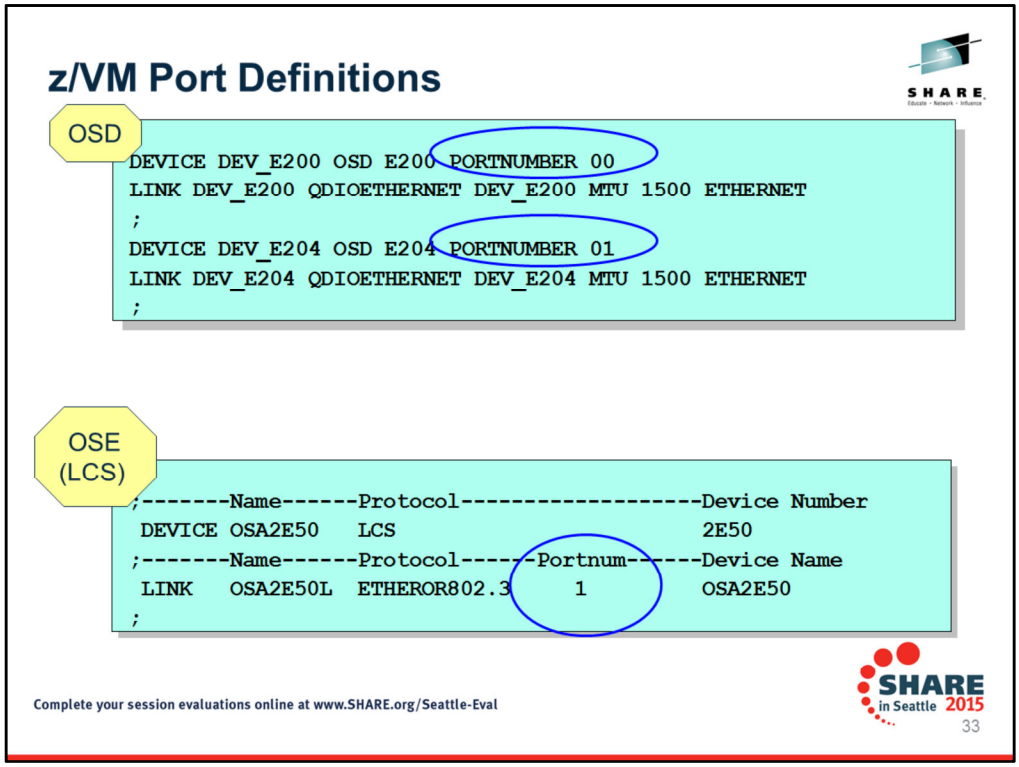
The third example shows you how the TCP/IP Profile in z/OS defines a LAN Channel Station (LCS) definition for IP connectivity into the internet. Again, you see how the Port Number is defined here.

SUMMARY: The IOCDS knows nothing of Port Number – OSA adapter Port Numbers are assigned in the higher level protocols.

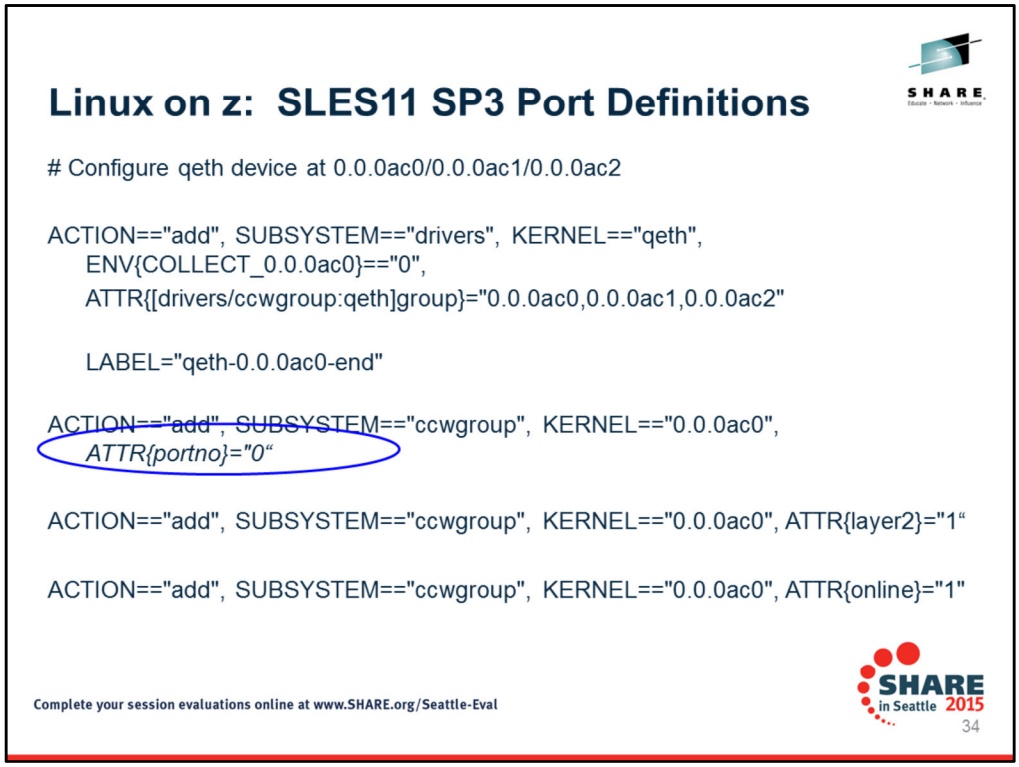
A full presentation on these issues is available as *"Migrating to a Multi-port CHPID OSA-E3, OSA-E4S, or OSA-E5S: Avoiding Common Problems (CHPID Types OSD and OSE)"* at http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS3950

The topic is only briefly illustrated in this section to give you an appreciation of how a customer might choose to pick the simplest migration solution even though it would mean ordering more OSA Port capacity than is needed so as to avoid the administrative overhead of making IOCDS, HCD, Operating system changes, and so on.

Note that the OSA-E5S is merely a technology upgrade over the OSA-E4S. Therefore the OSA-E4S and OSA-E5S are similar in their IOCDS and operating system definitions.



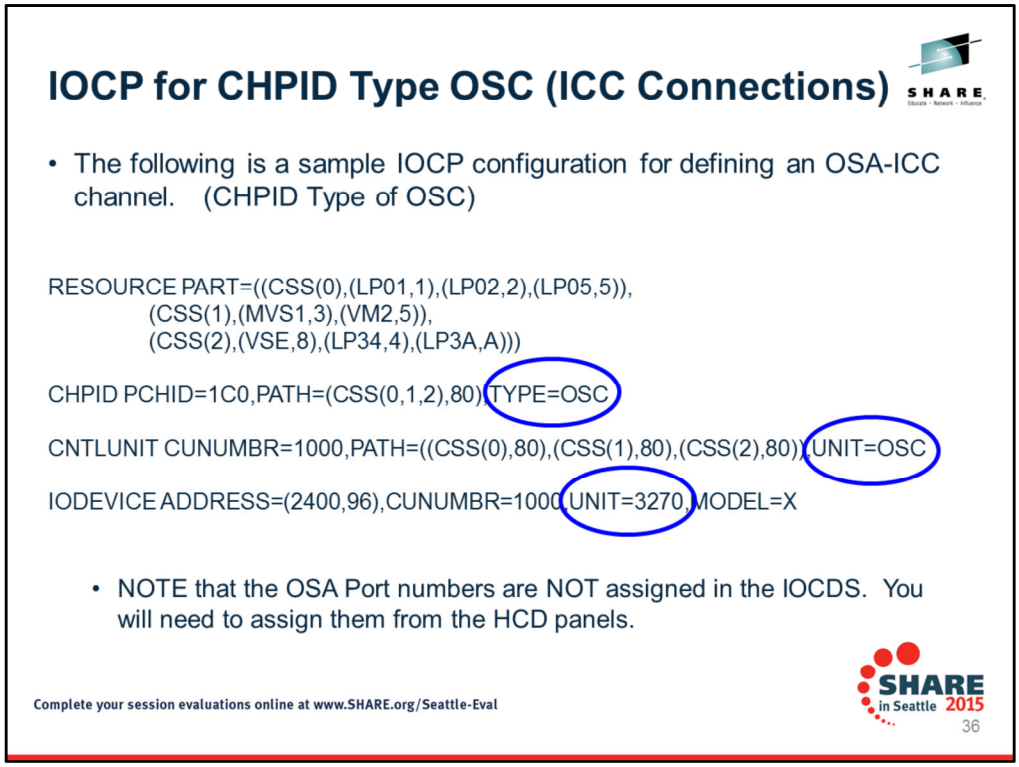
The Port number on the OSA Adapter is designated in z/VM on the DEVICE statement for an OSD CHPID and on the LINK statement for an OSE CHPID. The visual shows you how Port number 00 and Port number 01 are assigned on OSD DEVICE statements. The visual also shows you how Port number 1 is assigned on the OSE LINK statement.



The Port number on the OSA Adapter is designated in SLES11 SP3 of Linux on z with the Attribute for Port number. The visual shows you that Port number 0 is being used for this range of device addresses.
The sample file that this was taken from had the following prior to what is displayed on the visual:

```
# Configure qeth device at 0.0.0ac0/0.0.0ac1/0.0.0ac2
ACTION=="add", SUBSYSTEM=="drivers", KERNEL=="qeth",
IMPORT{program}="collect 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
ACTION=="add", SUBSYSTEM=="ccw", KERNEL=="0.0.0ac0",
IMPORT{program}="collect 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
ACTION=="add", SUBSYSTEM=="ccw", KERNEL=="0.0.0ac1",
IMPORT{program}="collect 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
ACTION=="add", SUBSYSTEM=="ccw", KERNEL=="0.0.0ac2",
IMPORT{program}="collect 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
ACTION=="remove", SUBSYSTEM=="drivers", KERNEL=="qeth",
IMPORT{program}="collect --remove 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth“
ACTION=="remove", SUBSYSTEM=="ccw", KERNEL=="0.0.0ac0",
IMPORT{program}="collect --remove 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
ACTION=="remove", SUBSYSTEM=="ccw", KERNEL=="0.0.0ac1",
IMPORT{program}="collect --remove 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
ACTION=="remove", SUBSYSTEM=="ccw", KERNEL=="0.0.0ac2",
IMPORT{program}="collect --remove 0.0.0ac0 %k 0.0.0ac0 0.0.0ac1 0.0.0ac2 qeth"
TEST=="[ccwgroup/0.0.0ac0]", GOTO="qeth-0.0.0ac0-end“
ACTION=="add", SUBSYSTEM=="ccw", ENV{COLLECT_0.0.0ac0}=="0",
ATTR{[drivers/ccwgroup:qeth]group}="0.0.0ac0,0.0.0ac1,0.0.0ac2“
```

Assigning Port Numbers to OSA ICC Console Ports (CHPID Type OSC)



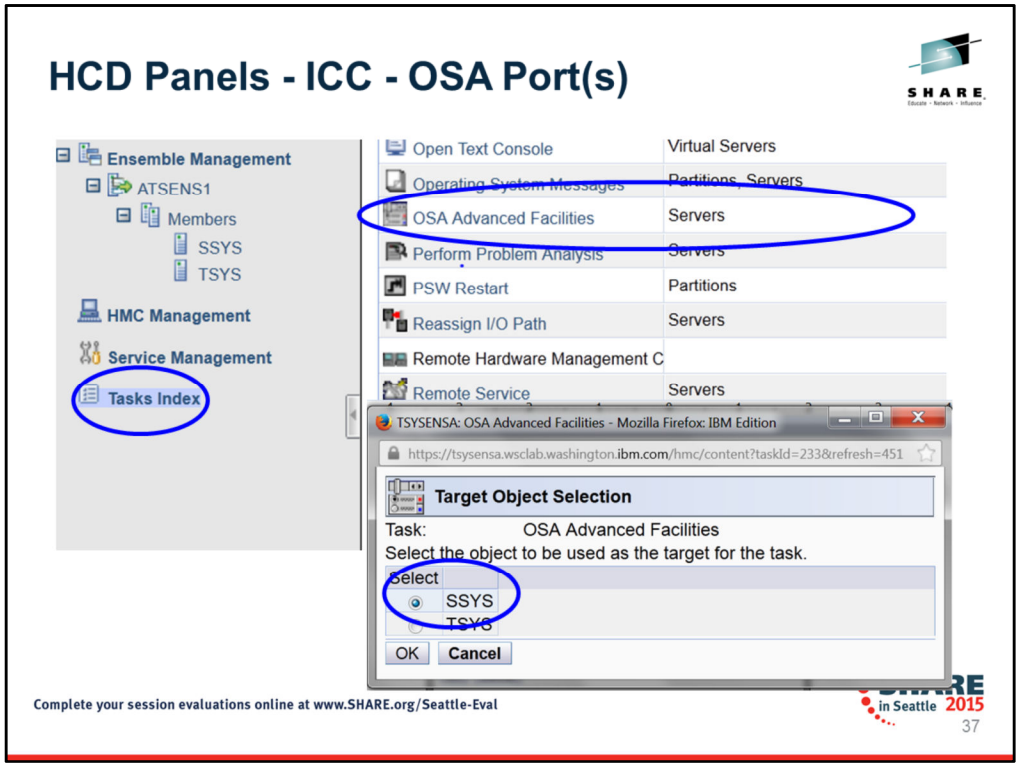
ICC = IBM Console Controller

The ICC Configuration Supports Ethernet-attached TN3270E emulated sessions

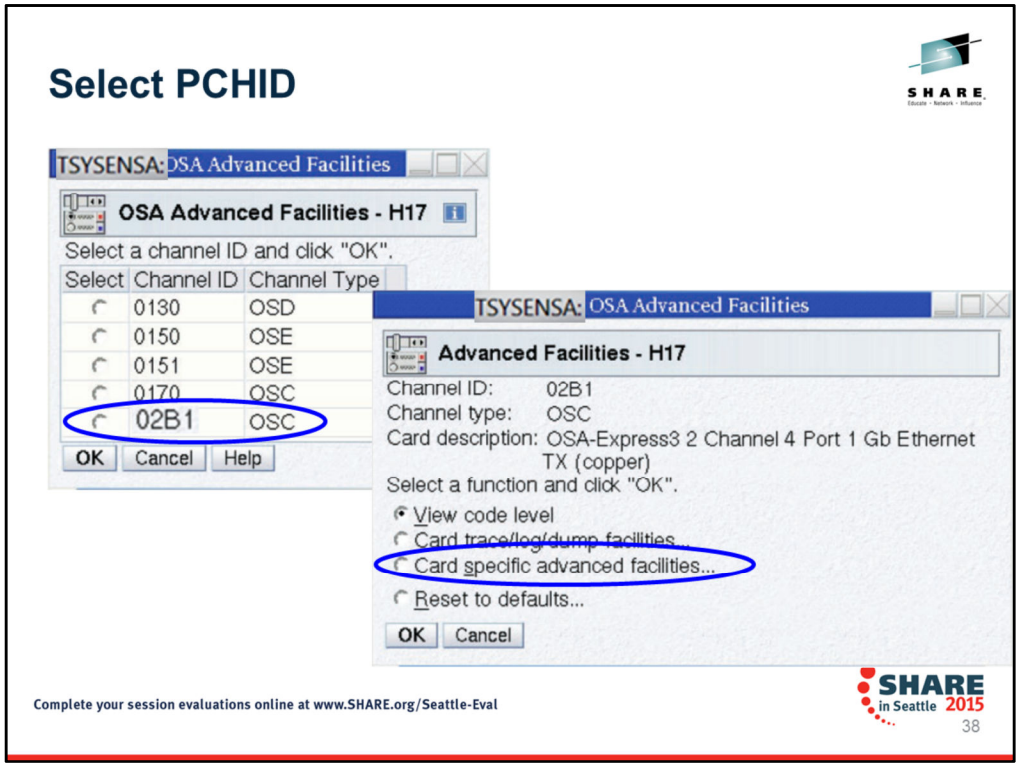
Non SNA DFT (Distributed Function Terminal)

Must be TCP/IP RFC (IEEE Standard) 2355 compliant

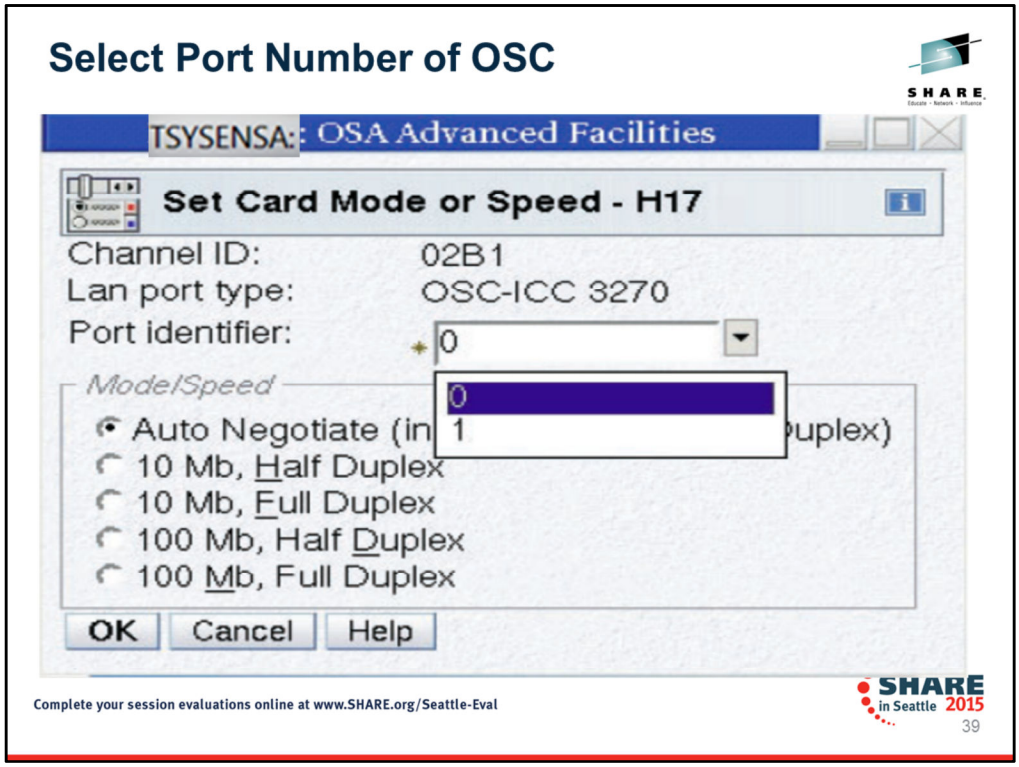
The information from the above visual is taken from the System z10 Open Systems Adapter-Express3 Integrated Console Controller Dual-Port User's Guide (SA23-2266-02).



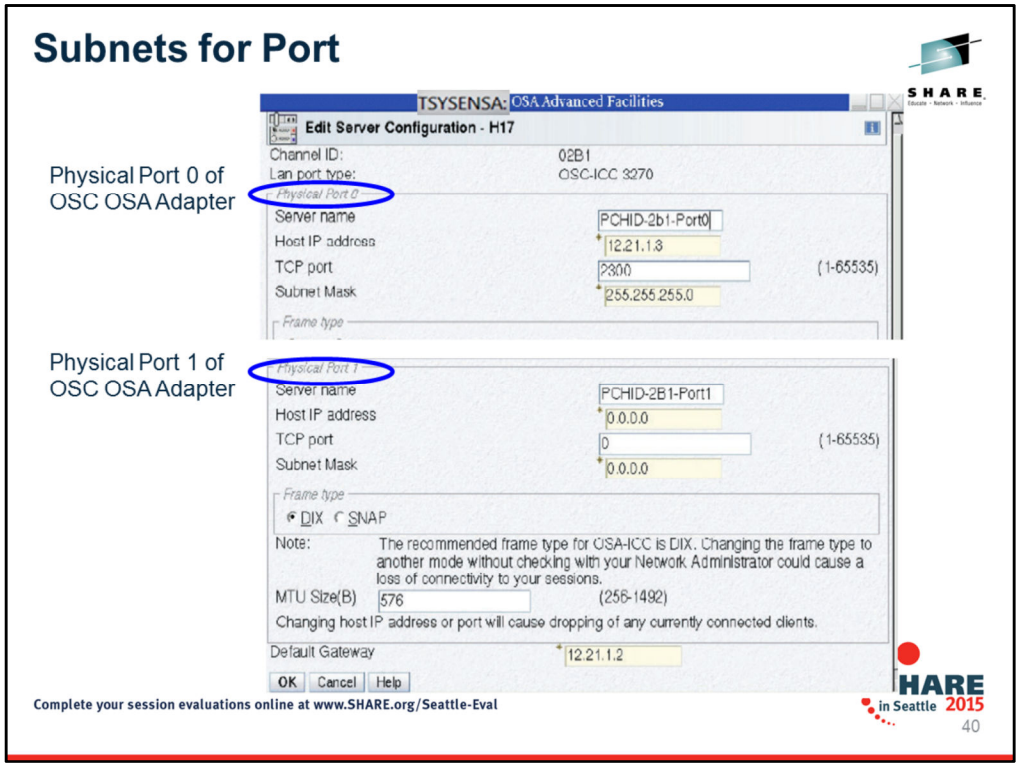
You can configure your OSA-ICC from the Advance Facilities panel which is accessible from either your Hardware Management Console or your Support Element (SE) console. These two consoles are the only way you can access the OSA-ICC configuration panels.
The selection of OSA Advanced Facilities then lets you select the system for which you want to configure the OSAs.



After selecting the system you want to work with, then choose the OSC PCHID (not CHPID) that needs configuring.
You can then choose Card specific advanced facilities.

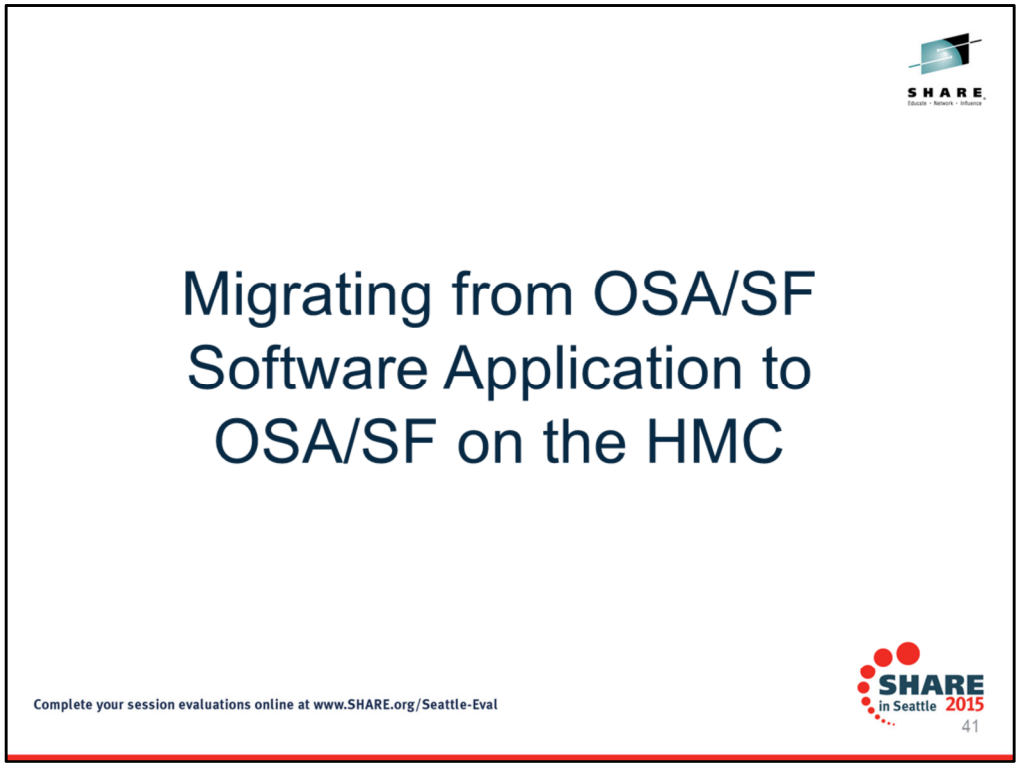


From the previous panel (Card specific advanced facilities) you are given several choices for configuration and diagnostics. You see here that when we set the "Card Mode or Speed" we then designate the port number of the multiport card that is being currently configured.
Physical port identifier: Since there are multiple ports, a selection is made to specify which port speed to set. By default this field is set to zero. Or you could choose to configure Port ONE.



This visual does not include the full screen for the OSC CHPID ports. But it illustrates to you where you enter the IP subnets for Port 0 or for Port 1 of a multiport-per-CHPID card.

NOTICE one very important aspect of using two ports: Only one DEFAULT GATEWAY statement is available for definition. (See bottom of visual.)
This has ramifications for network design, as ONLY ONE PORT can be used to reach remote users who are not adjacent to the OSA.
I did not have access to the newer HMC so this may have changed in the latest HMC version. The documentation can be found here:
http://www.ibm.com/support/knowledgecenter/



Following quotations are from the OSA Customer Guide and Reference (SA22-7395-15).

OSA/SF is required for 1000BASE-T Ethernet in non-QDIO mode (CHPID type OSE): If any of these non-QDIO mode features use ONLY the Default OAT and do NOT use (require) port sharing, then OSA/SF is not required.

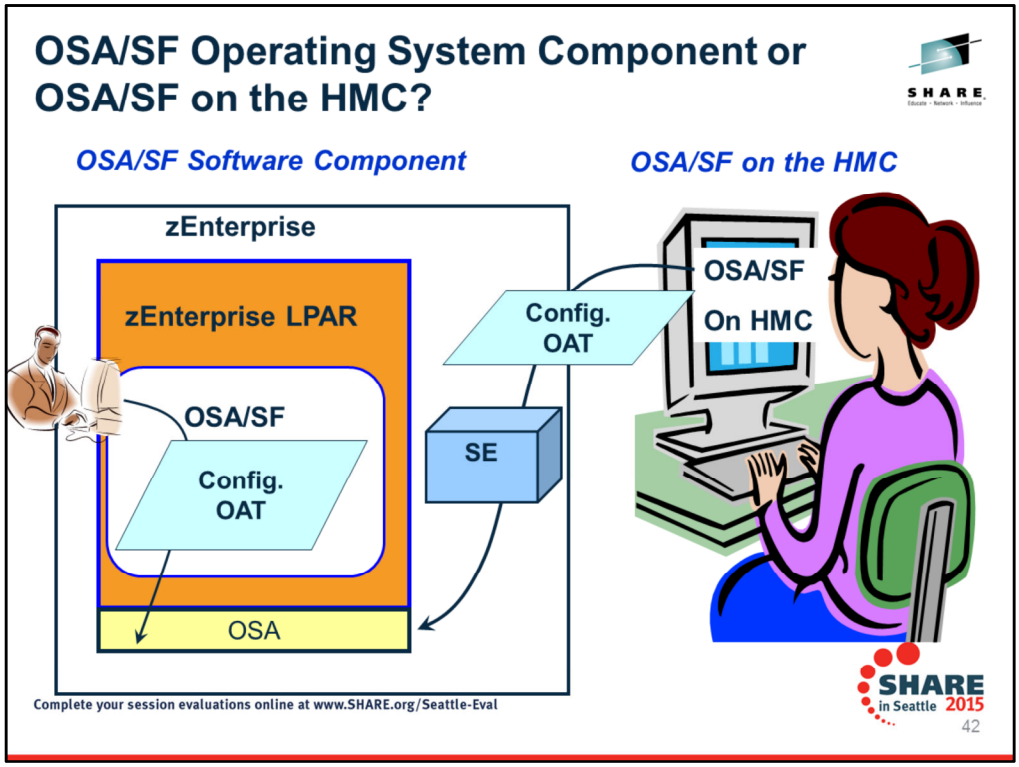
OSA/SF is required for SNMP support using the Communications Server SNMP TCP/IP SNMP subagent.

OSA/SF is not required for the OSA-Express Direct SNMP subagent. See “Support for Simple Network Management Protocol (SNMP)” on page 28 for more information.

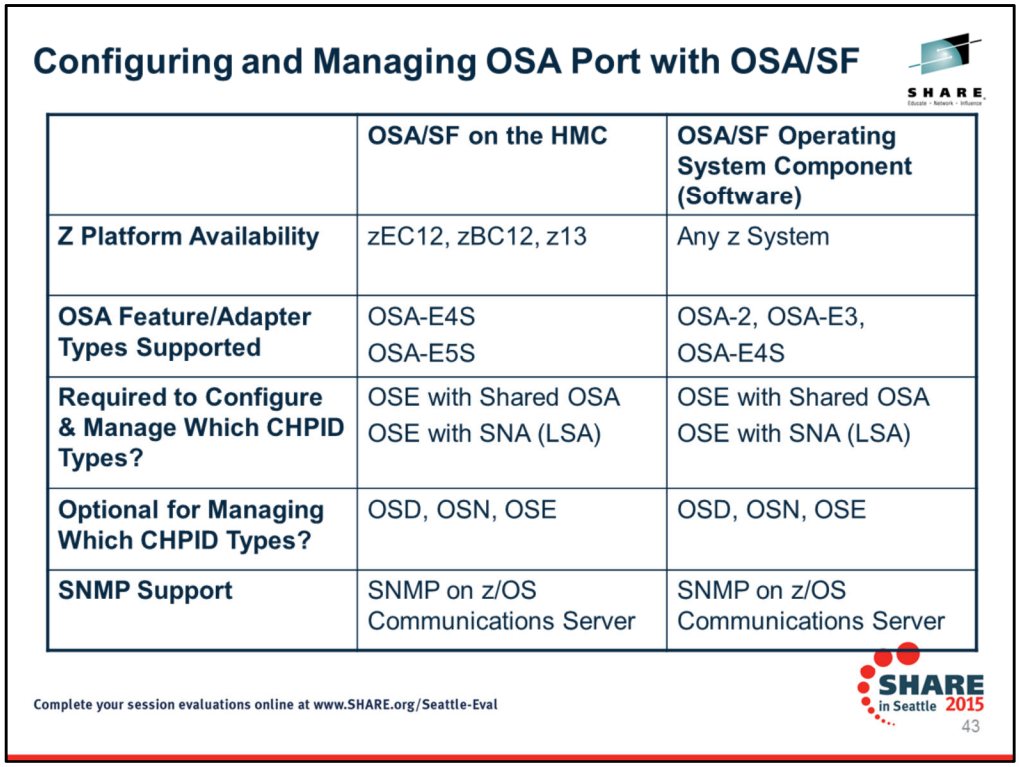
OSA/SF is not required to set up OSD and OSN CHPID types. OSA/SF is not supported on OSX or OSM.

For these features, all data required to configure a CHPID type OSD is automatically taken from the HCD hardware definition and software definitions input into the host TCP/IP profile. The only configuration information that you might need to define is the local or group MAC addresses and port speeds. If you choose to change the MAC address that is shipped with the OSA-Express, you can use the Hardware Management Console or OSA/SF to define the information. If your installation requires setting group addresses, you must use OSA/SF.

OSA/SF is recommended for monitoring network information and assisting with problem determination for all OSA-Express OSD, OSE, and OSN features. If you already have a previous OSA/SF installed, it is recommended that you migrate to the latest OSA/SF.



OSA/SF (Open System Adapter Support Facility) is used to configure OSE CHPID types and also to manager OSE, OSD,and OSN CHPID types. It exists in two forms: **1,** As an Operating System Component – represented on the left side of the visual – and **2,** as a set of panels accessed at the HMC – represented on the right side of the visual.
Effective with GA2 of the zEnterprise System (zEC12 and zBC12), OSA/SF is available on the HMC. The manual that should be consulted for exploiting OSA/SF on the HMC is "zEnterprise System Open Systems Adapter/Support Facility on the Hardware Management Console" (SC14-7580-00) There may be a newer version of this document in PDF format available on **Resource Link**. Go to **https://www.ibm.com/servers/resourcelink**

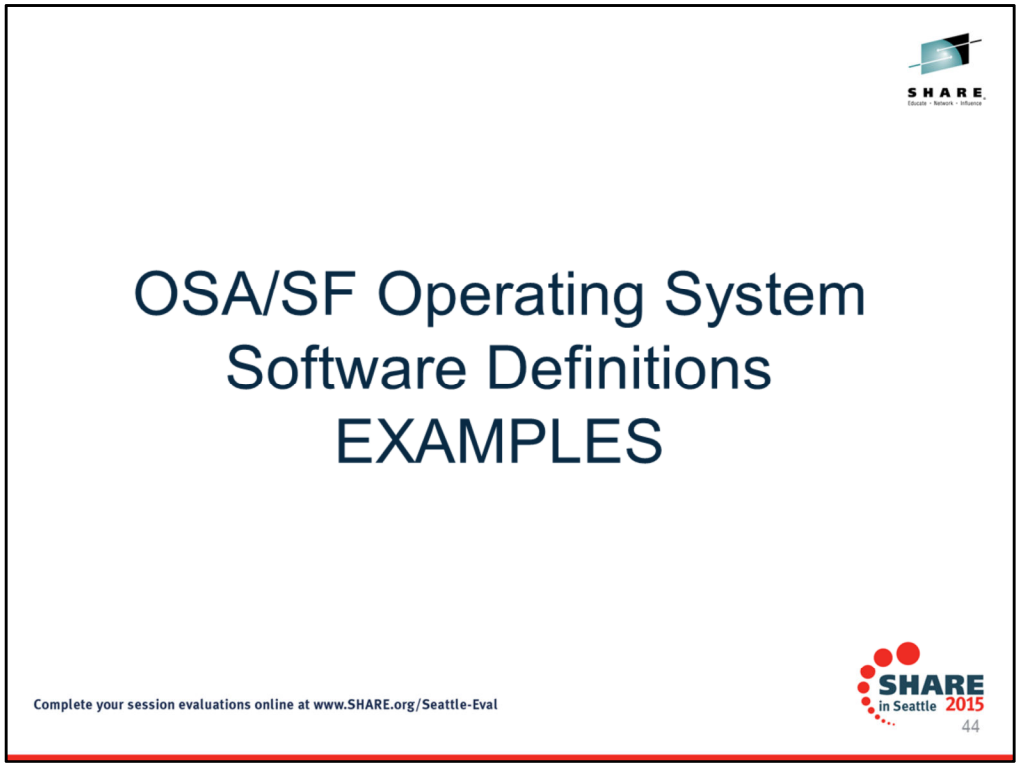


OSA Advanced Facilities on the Hardware Management Console (HMC) has been enhanced to provide configuration, validation, activation, and display support exclusively for the OSA-Express5S and OSA-Express4S features. For these features, the Advanced Facilities function on the HMC is used instead of the Open Systems Adapter Support Facility (OSA/SF) - a component of z/OS, z/VM, and zVSE.

OSA/SF on the HMC must be used for the OSA-Express5S features and is optional for the OSA-Express4S features. OSA/SF on the HMC is exclusive to the zEC12 and zBC12. The latest driver level is required. OSA/SF on the HMC is required for the OSA-Express5S features.

Either OSA/SF on the HMC or the OSA/SF operating system component can be used for the OSA-Express4S features. The OSA/SF operating system component must be used for the OSA-Express3 features. OSA/SF on the HMC can be used to configure channel path identifier (CHPID) type OSE. It can be used to manage (query/display) CHPID types OSD, OSE, and OSN. See *Open Systems Adapter/Support Facility on the Hardware Management Console*, SC14-7580, for more information.

NOTE: OSA/SF is required for SNMP support using the Communications Server SNMP but not for the OSA-Express Direct SNMP subagent



Following quotations are from the OSA Customer Guide and Reference (SA22-7395-15).

OSA/SF is required for 1000BASE-T Ethernet in non-QDIO mode (CHPID type OSE): If any of these non-QDIO mode features use ONLY the Default OAT and do NOT use (require) port sharing, then OSA/SF is not required.

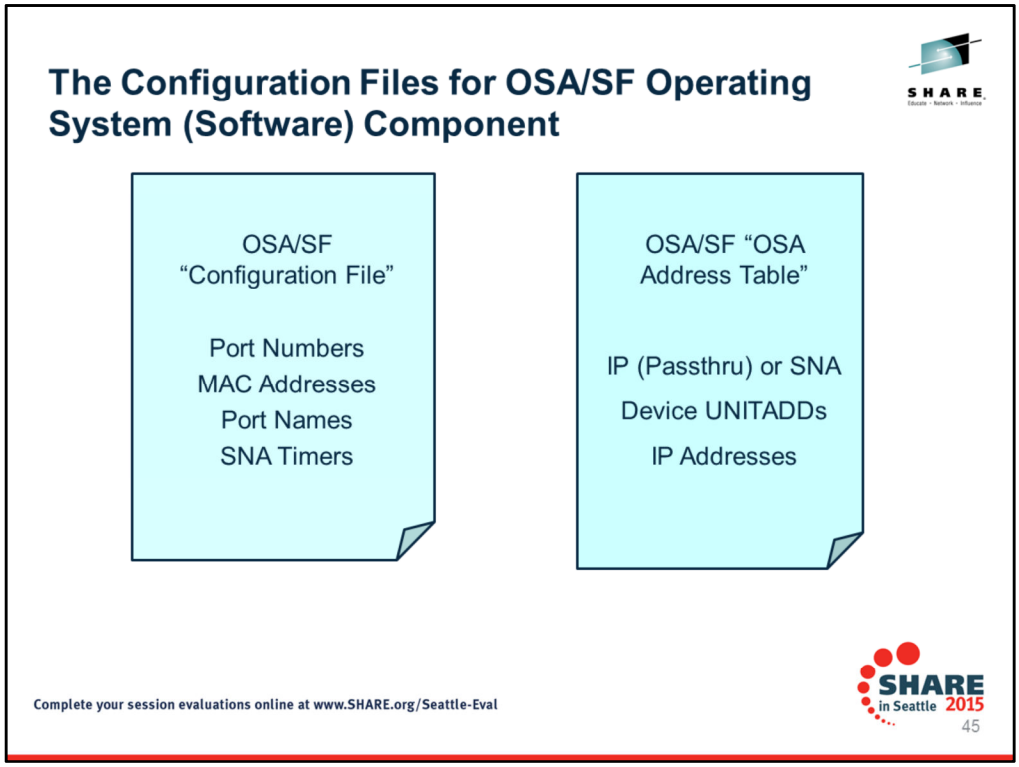
OSA/SF is required for SNMP support using the Communications Server SNMP TCP/IP SNMP subagent.

OSA/SF is not required for the OSA-Express Direct SNMP subagent. See “Support for Simple Network Management Protocol (SNMP)” on page 28 for more information.

OSA/SF is not required to set up OSD and OSN CHPID types. OSA/SF is not supported on OSX or OSM.

For these features, all data required to configure a CHPID type OSD is automatically taken from the HCD hardware definition and software definitions input into the host TCP/IP profile. The only configuration information that you might need to define is the local or group MAC addresses and port speeds. If you choose to change the MAC address that is shipped with the OSA-Express, you can use the Hardware Management Console or OSA/SF to define the information. If your installation requires setting group addresses, you must use OSA/SF.

OSA/SF is recommended for monitoring network information and assisting with problem determination for all OSA-Express OSD, OSE, and OSN features. If you already have a previous OSA/SF installed, it is recommended that you migrate to the latest OSA/SF.



When you use the OSA/SF Operating System Component (Software Component) to configure the necessary fields and values of the OSA ports, you deal with two files: The OSA/SF Configuration File and the OSA Address Table.
z/OS provides you samples of these files in the dataset named "hlq.SIOASAMP." For example if your system has the high-level qualifier of "SYS1.OSA." Therefore the SIOASAMP dataset has a full name of "SYS1.OSA.SIOASAMP."

Port Number, Port Name, MAC Address, Speed/Mode

OSE Configuration File

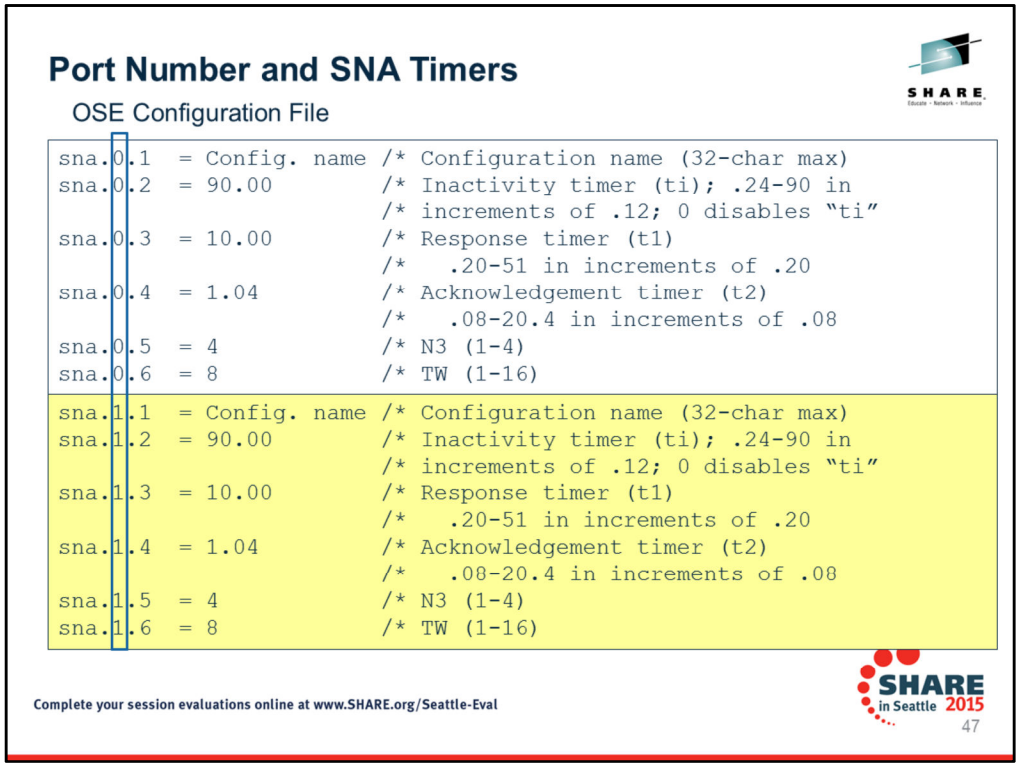
```
/*====================================================================
/* Fast Ethernet parameters
/*====================================================================
fenet.0.1 = MYCHP1P0                    /* Configuration name (32-char max)
fenet.0.2 = user data                   /* User data (32-char max)
fenet.0.3 = ETHD0                       /* Port name (8-char max)
                                        /*  Data ignored for OSD CHPIDs
fenet.0.4 = 0200345681234               /* Local MAC address (12 hex digits)
fenet.0.5 = auto                                /* Speed/mode

/*====================================================================
/* Fast Ethernet parameters
/*====================================================================
fenet.1.1 = MYCHP1P1                    /* Configuration name (32-char max)
fenet.1.2 = user data                   /* User data (32-char max)
fenet.1.3 = ETHD1                       /* Port name (8-char max)
                                        /*  Data ignored for OSD CHPIDs
fenet.1.4 = 0200345684321               /* Local MAC address (12 hex digits)
fenet.1.5 = auto                                /* Speed/mode
```

This is an OSA Configuration file used by OSA/SF Operating System Component to define a CHPID Type of OSE.

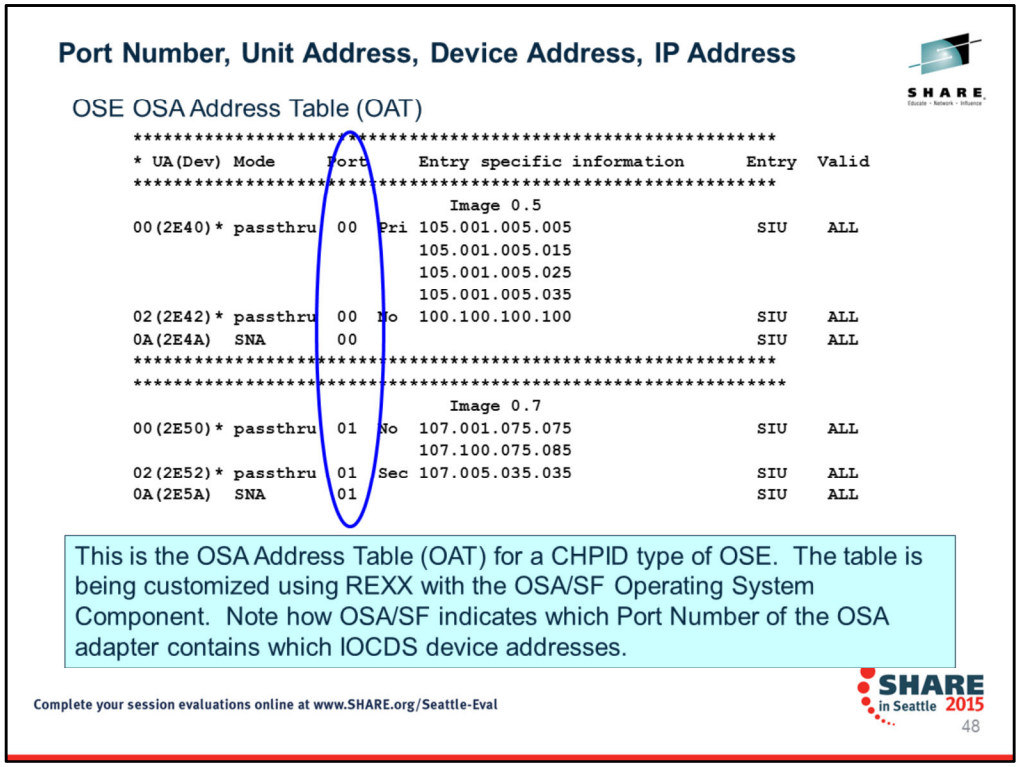
Note how the 1000Base-T Fast Ethernet column contains either a 0 or a 1 in the middle of the field name to indicate whether Port 0 or Port 1 is being referenced.

Even OSA Firmware for CHPID Type OSE must know about the Port Numbers on a Multi-Port Adapter. This visual shows you how you can build a text file for the basic OSA Configuration using the OSA/SF Operating System Component. The text file is then installed into the OSA Firmware using REXX or using the OSA/SF installation panels.

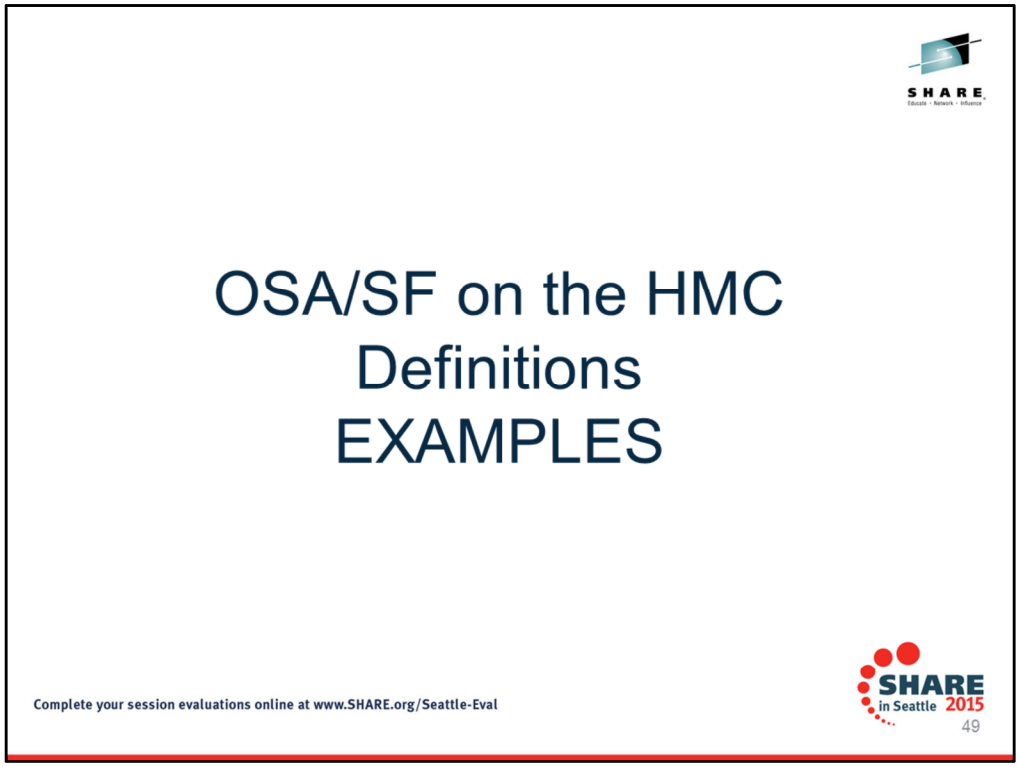


SNA parameters for port 0 or port 1 - Valid only for OSE (non-QDIO) CHPIDs

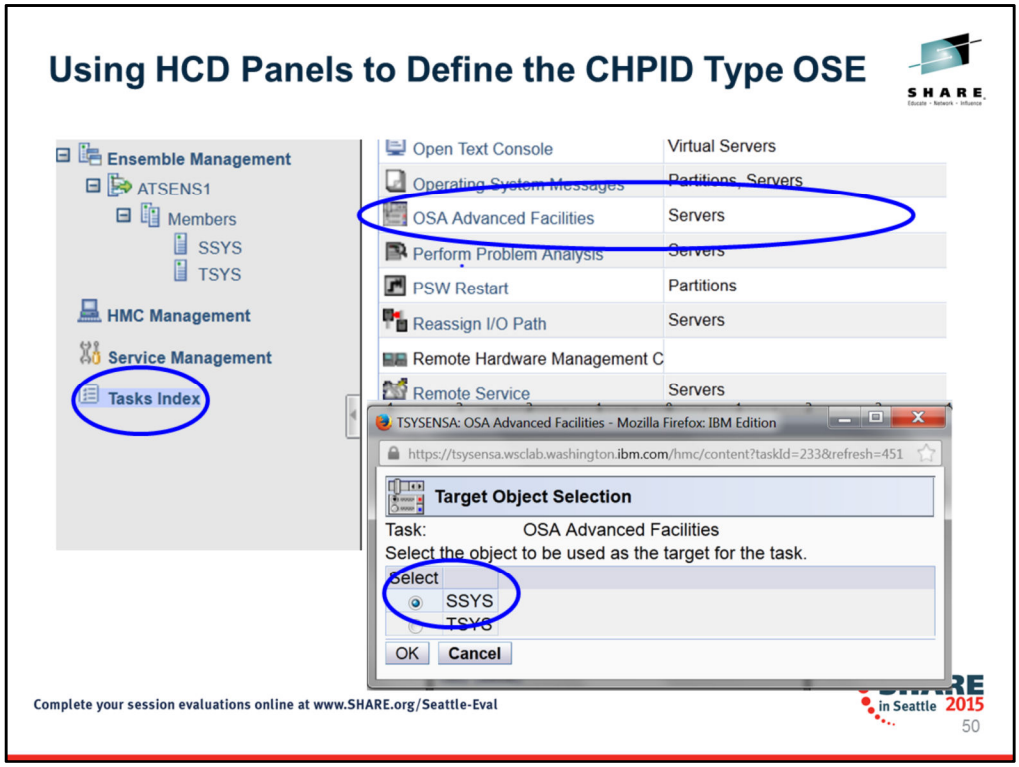
This is an OSA Configuration file used by OSA/SF Operating System Component to define a CHPID Type of OSE.
Note how the SNA column contains either a 0 or a 1 in the middle of the field name to indicate whether Port 0 or Port 1 is being referenced when setting the SNA timers.
The ti, t1 and t2 timers can be set as indicated below. The values shown are in seconds.
Any values entered that are not multiples of the indicated increment will be rounded to the next highest incremental value.
For the inactivity timer (ti), a value of 0 will disable the timer.
The recommended settings for large system environments are:
ti-90, t1-10, t2-1.04, and N3-4
The recommended settings for small system environments are:
ti-90, t1-2, t2-0.08, and N3-1



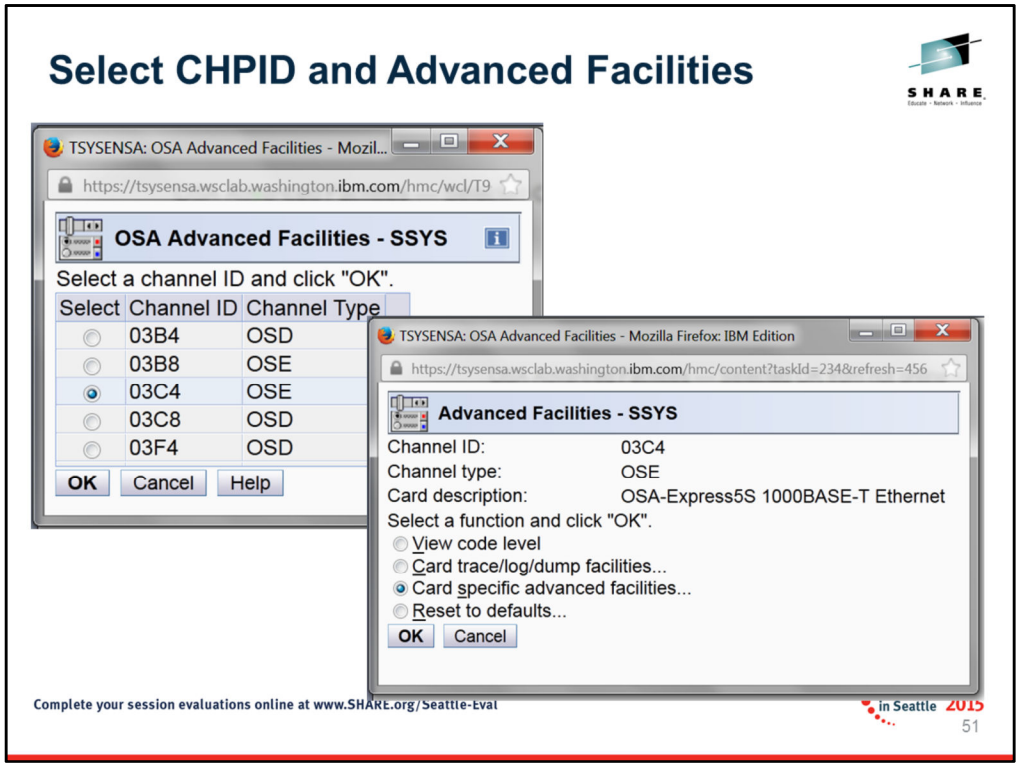
Even OSA Firmware for CHPID Type OSE must know about the Port Numbers on a Multi-Port Adapter. This visual shows you how you can build a text file for the OSA Address Table using the OSA/SF Operating System Component. The text file is then installed into the OSA Firmware using REXX or using the OSA/SF installation panels.
Again, the IOCDS does not know anything about OSA Port Numbers.
If your configuration can use the default OAT, then you need not implement OSA/SF except optionally for monitoring purposes. However, if you are sharing IP ports, or if your IP Ports require non-default UNITADDs, or is you are coding for SNA on an OSE CHPID, then OSA/SF is required. (Either Operating System version or OSA/SF on the HMC.) The default OAT that is installed by the factory contains only Port 0 and UNITADD 00-01 for passthru.



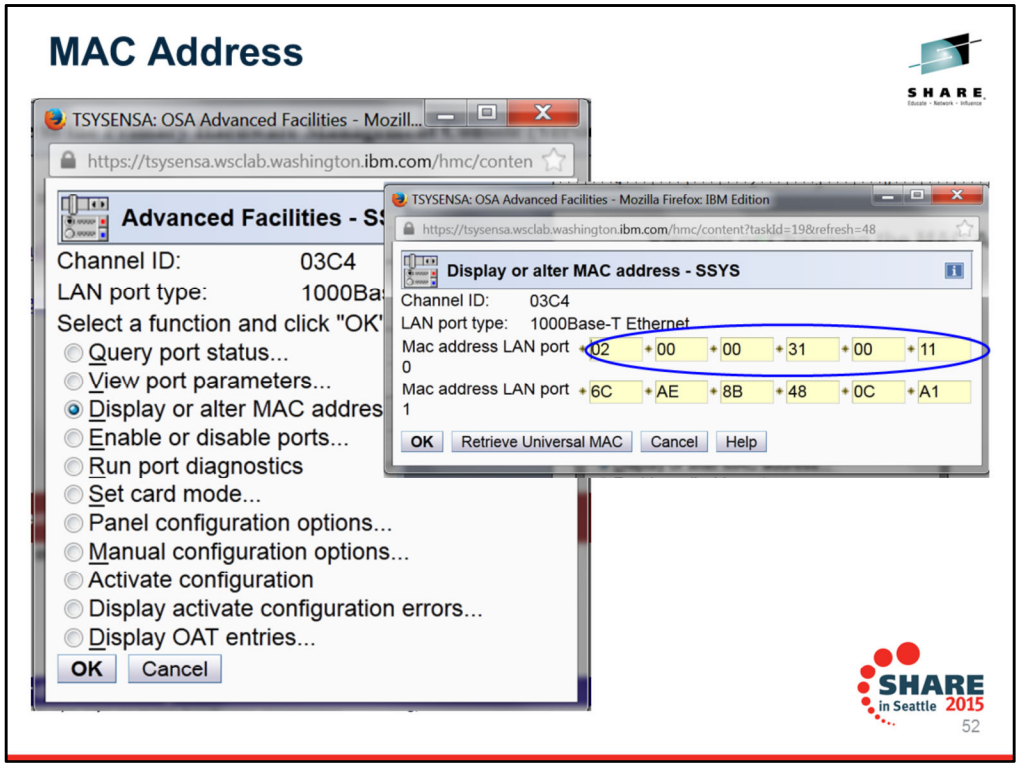
OSA/SF is required for 1000BASE-T Ethernet in non-QDIO mode (CHPID type OSE): If any of these non-QDIO mode features use ONLY the Default OAT and do NOT use (require) port sharing, then OSA/SF is not required.
OSA/SF is required for SNMP support using the Communications Server SNMP TCP/IP SNMP subagent.
OSA/SF is not required for the OSA-Express Direct SNMP subagent. See “Support for Simple Network Management Protocol (SNMP)” on page 28 for more information.
OSA/SF is not required to set up OSD and OSN CHPID types. OSA/SF is not supported on OSX or OSM.
For these features, all data required to configure a CHPID type OSD is automatically taken from the HCD hardware definition and software definitions input into the host TCP/IP profile. The only configuration information that you might need to define is the local or group MAC addresses and port speeds. If you choose to change the MAC address that is shipped with the OSA-Express, you can use the Hardware Management Console or OSA/SF to define the information. If your installation requires setting group addresses, you must use OSA/SF.
OSA/SF is recommended for monitoring network information and assisting with problem determination for all OSA-Express OSD, OSE, and OSN features. If you already have a previous OSA/SF installed, it is recommended that you migrate to the latest OSA/SF.
For information on comparing OSA/SF Operating System Component with OSA/SF on the HMC, consult the manual named: "zEnterprise System Open Systems Adapter/Support Facility on the Hardware Management Console" (SC14-7580-00)



You can reach OSA/SF on the HMC in several ways. The visuals show you how to reach OSA/SF on the HMC by selecting the Tasks Index; then the OSA Advanced Facilities; then the target Sysplex – all by accessing these panels from the HMC or the Support Element (SE console).

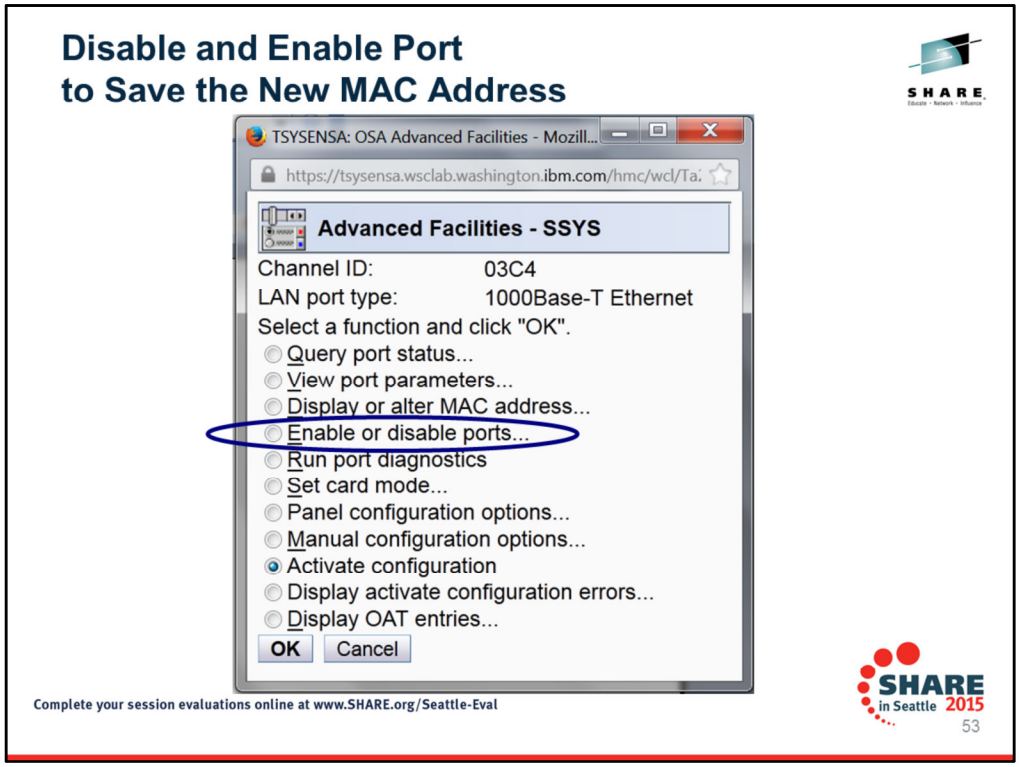


Next you select the PCHID for which you are defining a CHPID type of OSE (PCHID 03C4). On the subsequent panel you need to select the Card specific advanced facilities.

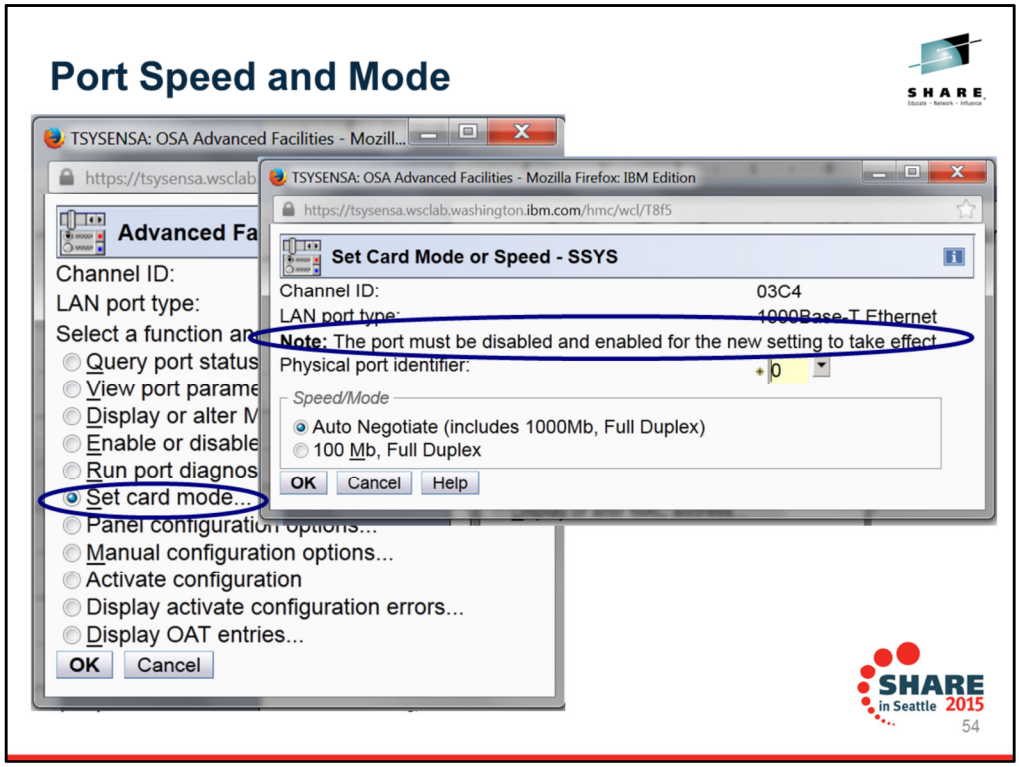


Card specific advanced facilities provide many functions: some for configuration of an OSA port and others for management of an OSA port. All these panels are described in the manual "zEnterprise System Open Systems Adapter/Support Facility on the Hardware Management Console" (SC14-7580-00)

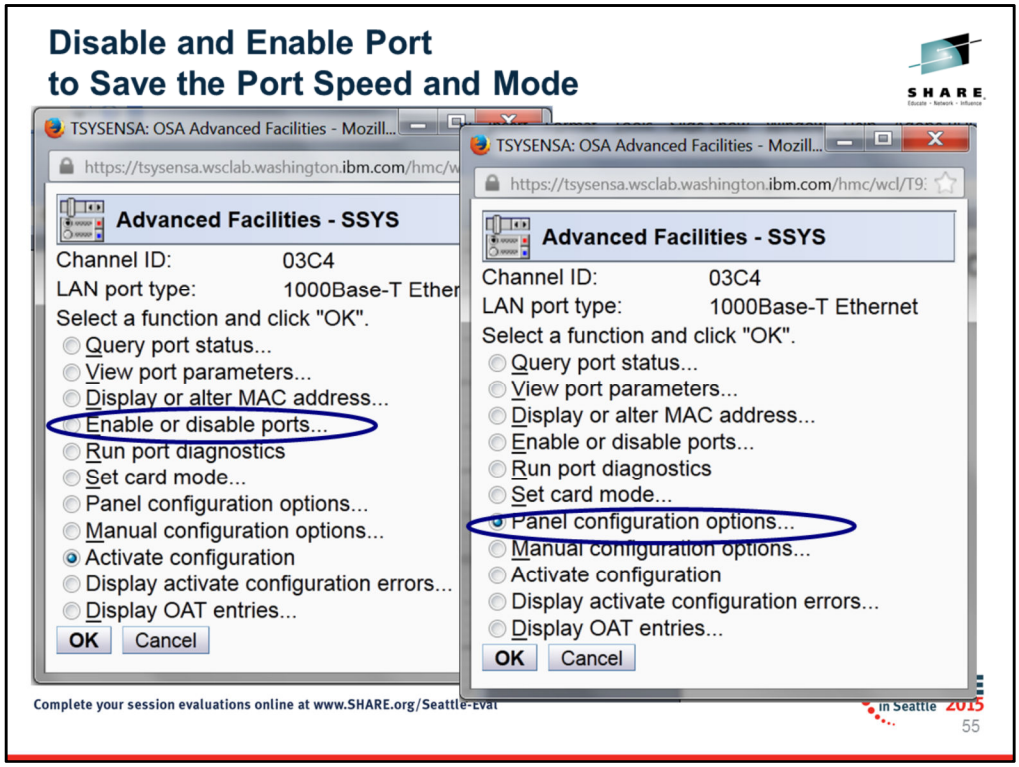
On this page you see how we have selected “Displayor alter MAC address.” The next panel on this page originally depicts the Universally Administered Address for the MAC (UAA). But you see that we have altered the MAC address at Port 0 to a Locally Administered Address (LAA). Some companies rely on LAAs so that a migration to a new platform does not require changes to SNMP or SNA procedures to redefine the MAC address that peripherals are connecting to. This is why your network design may be requiring an override of the Universal MAC and the assignment of an LAA.



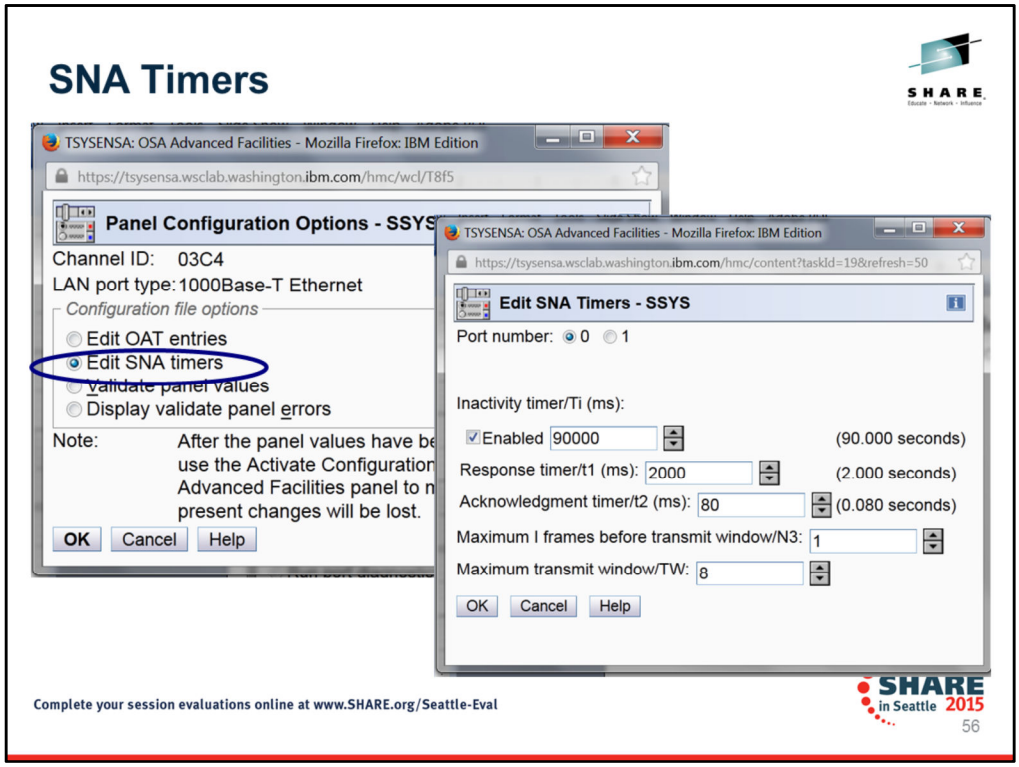
Once you have selected “OK” on the previous panel, you need to Disable and then Enable the ports so that the changes can be made permanent. This is a disruptive procedure. But, before you enable or disable ports, you can also complete the process of setting port speed and mode. The latter also requires Disable and Enable to make the change permanent. See the next process on the following page.



From the Advanced Facilities Panel you can set the Card mode: i.e., speed and mode (full duplex). Note that this action also requires the Disable and Enable function we showed you on the previous page. Note how we are using the IEEE recommended AutoNegotiate for this copper port. However, when this mode fails to provide successful connectivity to the adjacent switch, you also have the option of specifying a fixed setting on each end of the connection.

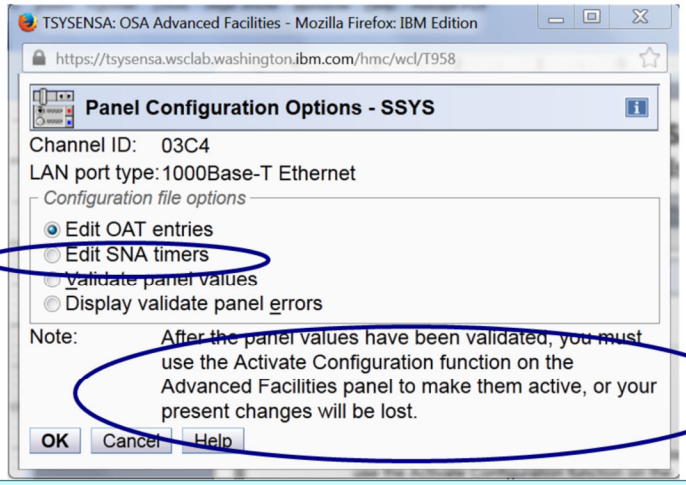


To establish and save the speed and mode of the OSA Port you must now Disable and Enable the port again. This is a disruptive action.
Next we proceed to configure other details of the OSA ports using the Panels (Panel configuration options).



Just as with the OSA/SF Software Configuration File where we edited the SNA timers, we can do the same thing with the GUI panels of OSA/SF on the HMC.

Port and the OSA Address Table (OAT)

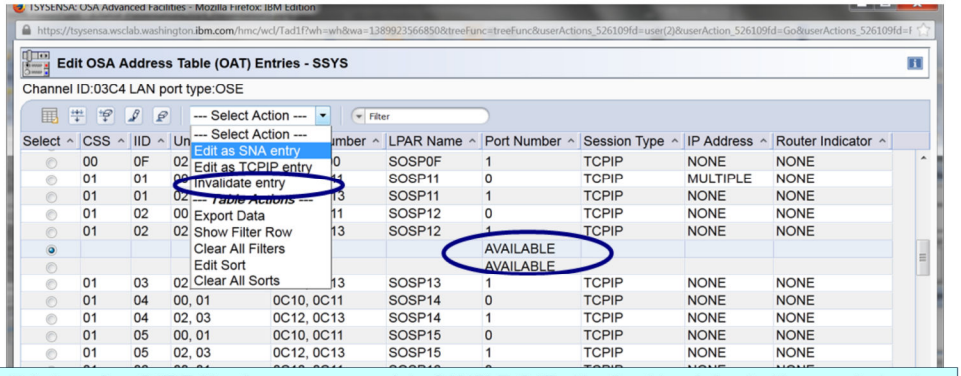


The Note tells you what is required to make these changes permanent:

1. Validate panel entries
2. Activate Configuration

We next edit the OAT entries using OSA/SF on the HMC.

View OAT and Remove Unwanted Items



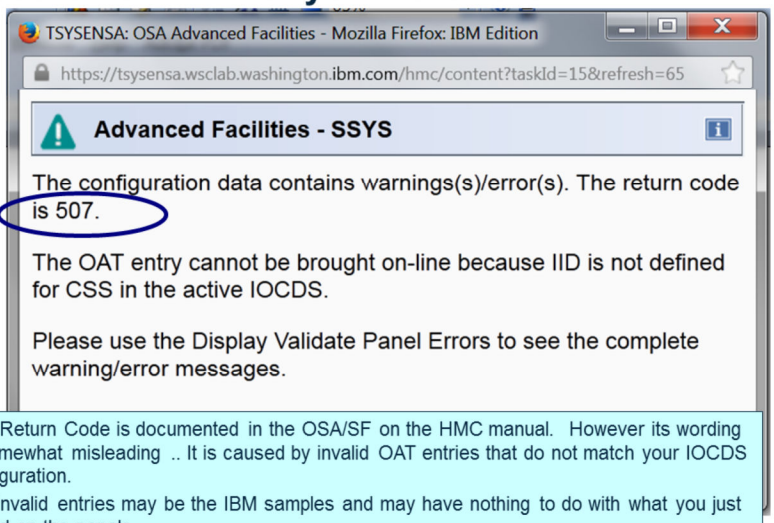
Initial view of an OAT Table shows you a complete SAMPLE OAT with all entries defined with example input.

Best Practice: Empty the entire table by "invalidating" (i.e., deleting) all entries that you do not need (Use the "Select Action" pulldown to find "invalidate".)

- *Current microcode* (as of March 2014) permits "invalidation" one-by-one
- *Planned microcode* for later in 2014 will permit "invalidation" of all entries

Invalidated entries provide "AVAILABLE" lines for editing with your entries.

Error if you leave any sample entries in the OAT that are not valid for your hardware

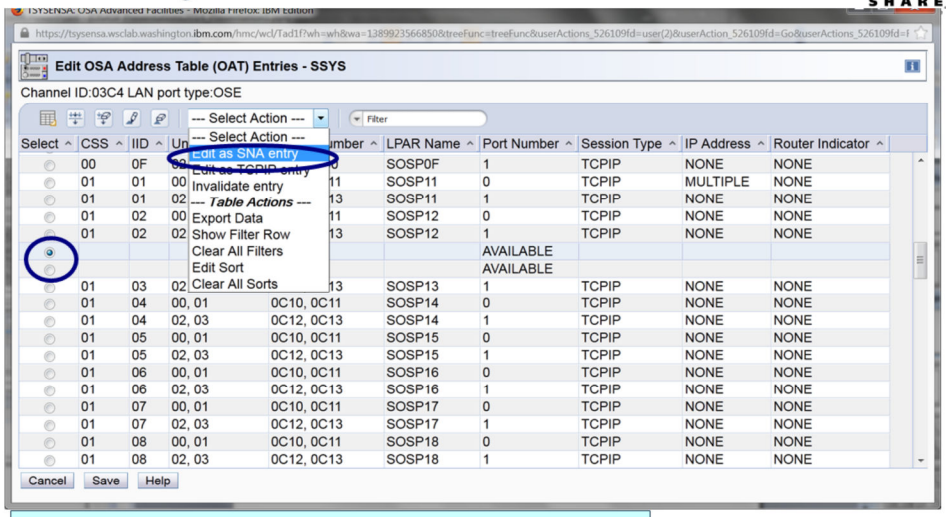


This Return Code is documented in the OSA/SF on the HMC manual. However its wording is somewhat misleading .. It is caused by invalid OAT entries that do not match your IOCDS configuration.

The invalid entries may be the IBM samples and may have nothing to do with what you just coded on the panels.

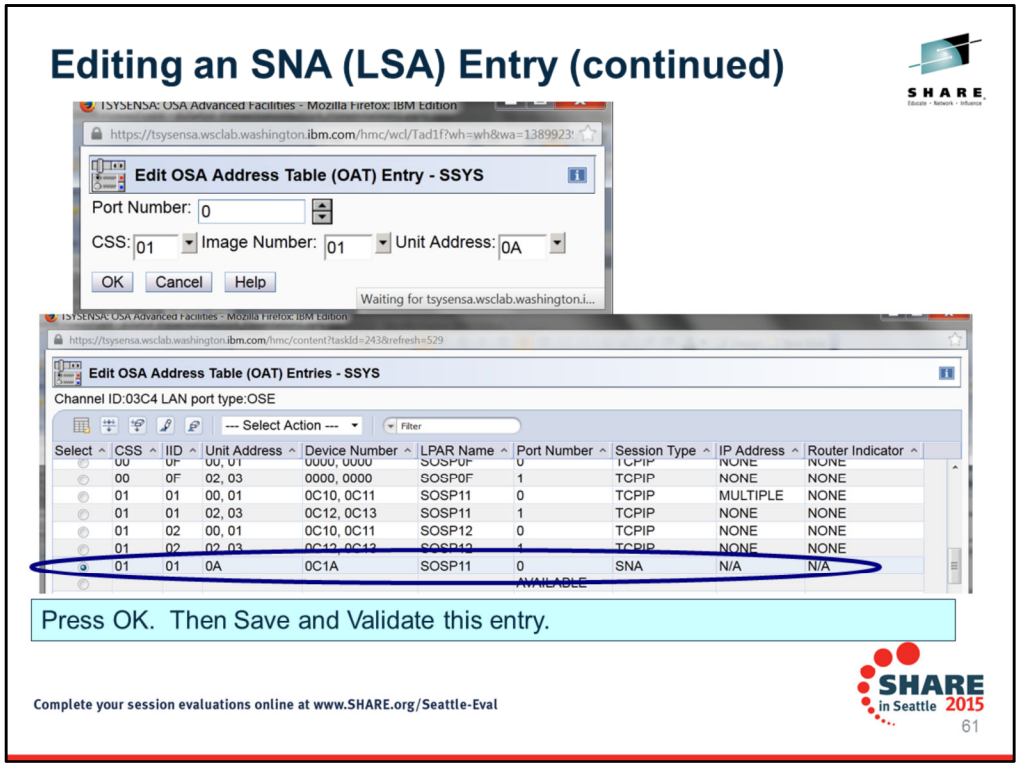
Therefore, "invalidate" all entries that do not reflect your hardware configuration.

SNA Entry

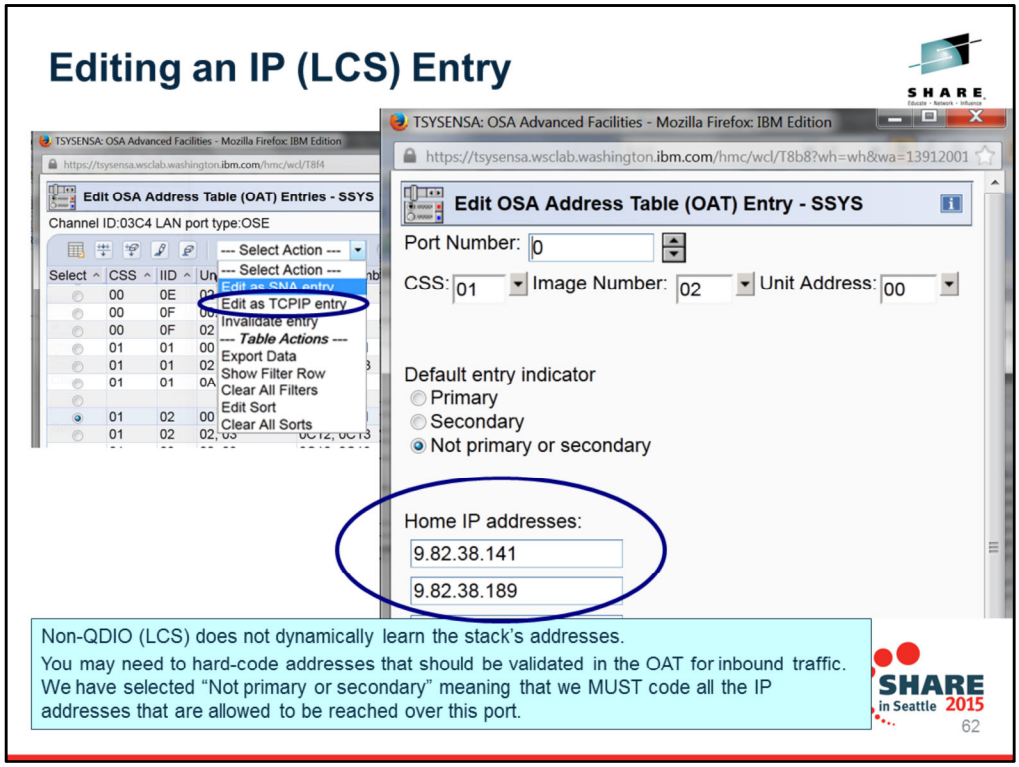


Select an “AVAILABLE” entry
Use Pulldown to select action “Edit as SNA entry”

To add an SNA entry, we select one of the available rows and then use the Action Pulldown to select the EDIT SNA choice. This takes us to the panel on the next page.

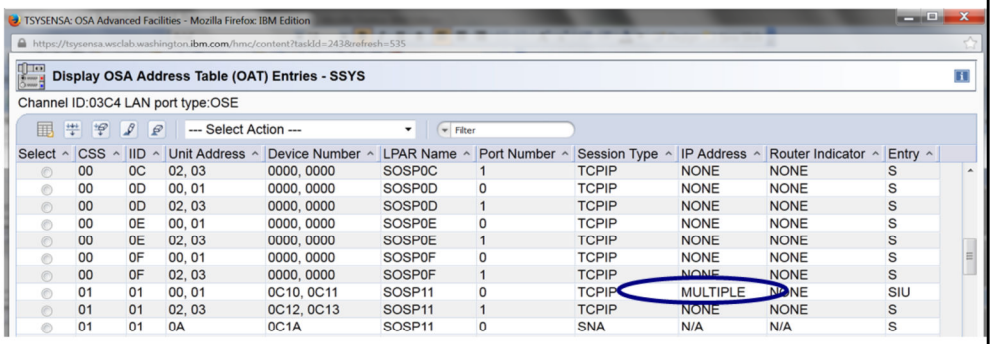


First you must select the Port Number you wish to work on. You assign the Channel Subsystem number (01), the LPAR (Image) number (01), and then the Unit Address (0A). When you press OK you are presented with the tabular results of what you have coded. You see in the “Session Type” column that this is your SNA OAT entry.



We have entered the IP address of the non-QDIO OSA port, but we have also included the VIPA address that we would like the OAT to recognize as a valid address for inbound connections.

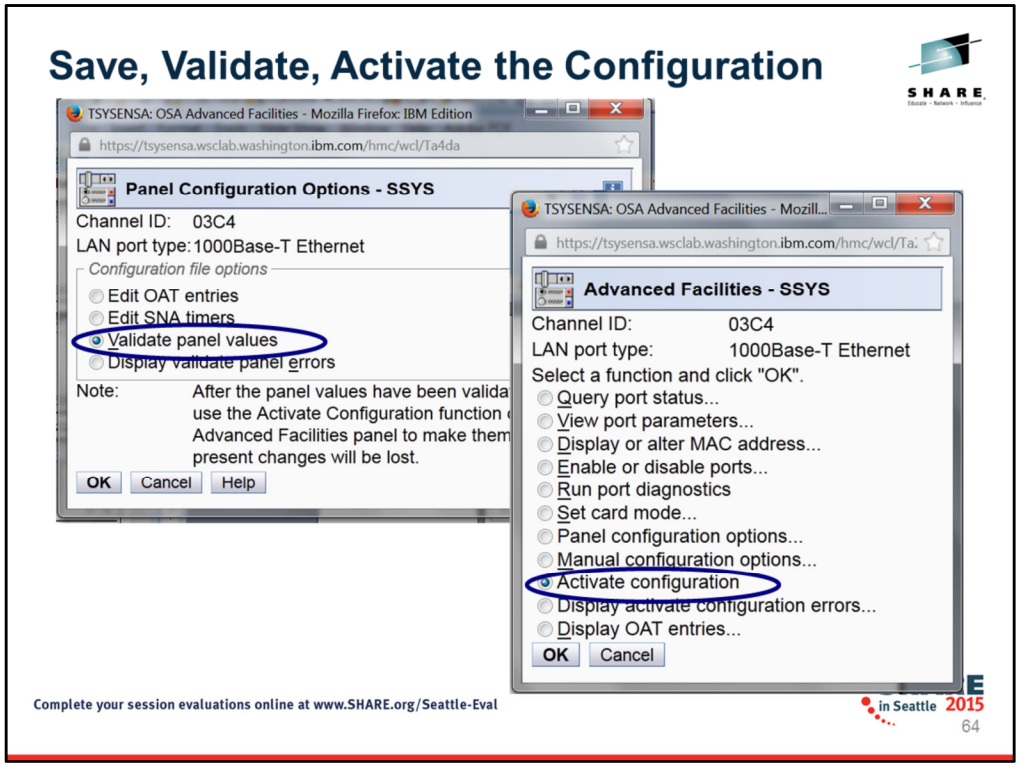
Multiple IP Addresses for an LCS Port



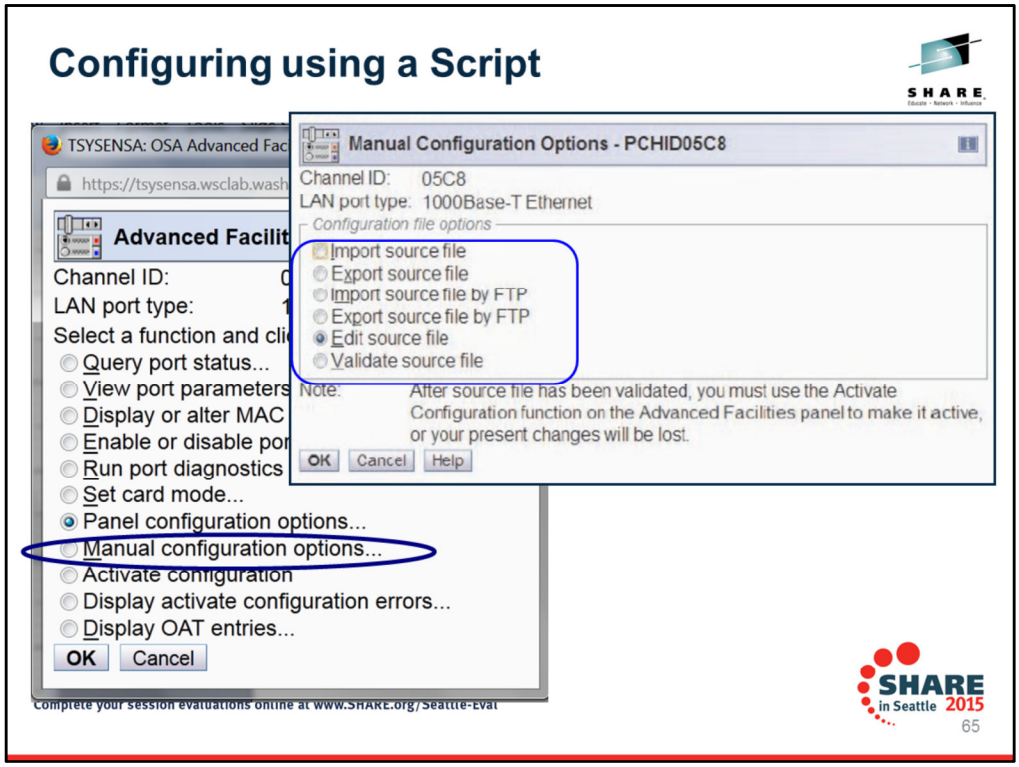
Select	CSS	IID	Unit Address	Device Number	LPAR Name	Port Number	Session Type	IP Address	Router Indicator	Entry
	00	0C	02, 03	0000, 0000	SOSP0C	1	TCPIP	NONE	NONE	S
	00	0D	00, 01	0000, 0000	SOSP0D	0	TCPIP	NONE	NONE	S
	00	0D	02, 03	0000, 0000	SOSP0D	1	TCPIP	NONE	NONE	S
	00	0E	00, 01	0000, 0000	SOSP0E	0	TCPIP	NONE	NONE	S
	00	0E	02, 03	0000, 0000	SOSP0E	1	TCPIP	NONE	NONE	S
	00	0F	00, 01	0000, 0000	SOSP0F	0	TCPIP	NONE	NONE	S
	00	0F	02, 03	0000, 0000	SOSP0F	1	TCPIP	NONE	NONE	S
	01	01	00, 01	0C10, 0C11	SOSP11	0	TCPIP	MULTIPLE	NONE	SIU
	01	01	02, 03	0C12, 0C13	SOSP11	1	TCPIP	NONE	NONE	S
	01	01	0A	0C1A	SOSP11	0	SNA	N/A	N/A	S

Non-QDIO (LCS) does not dynamically learn the stack's addresses.
You may need to hard-code addresses that should be validated in the OAT for inbound traffic.
We have selected "Not primary or secondary" meaning that we MUST code all the IP addresses that are allowed to be reached over this port.

Pressing OK on the panel of the previous page presents us again with the tabular view of what we have configured. You see that his Session Type of TCPIP now has multiple IP addresses assigned to it.



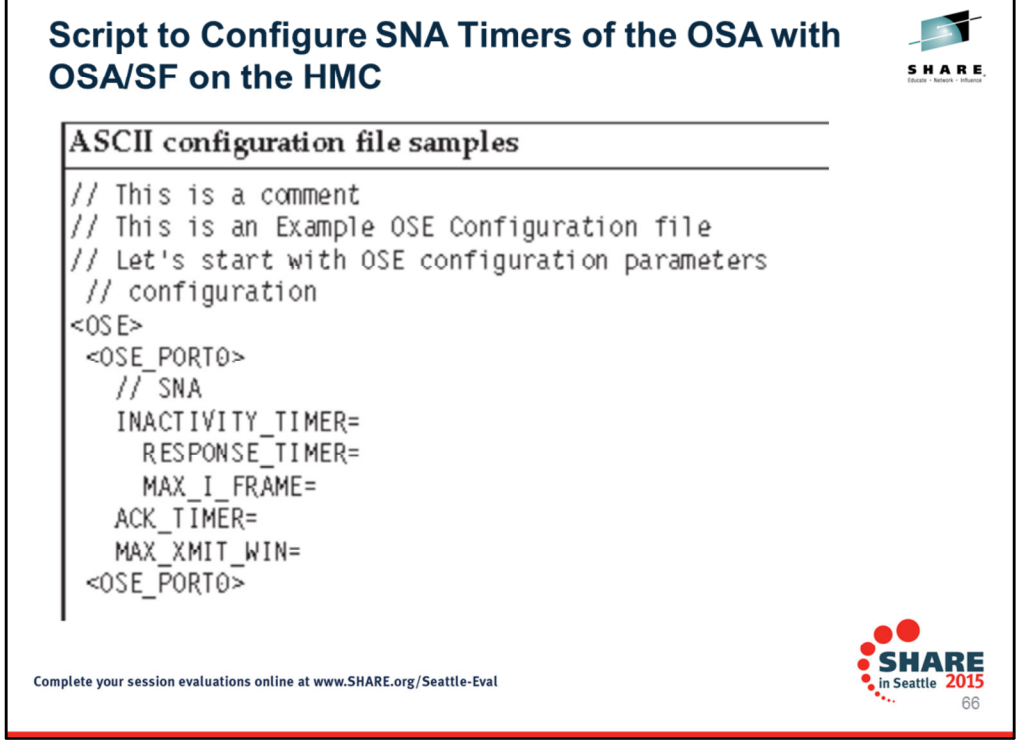
Remember that we now have to make our changes permanent as indicated on an earlier panel note. Therefore we next VALIDATE and then ACTIVATE the new OAT configuration.



This page shows you that instead of using the Panel (GUI) configuration options for configuring the OAT, we can also create an ASCII script file to accomplish the same job. We can edit the file in ASCII on a completely different platform and then use a copy on a USB stick to Import the Source file into the SE. We can also export a source file of what is already configured. We can either imort aor export using an FTP session to the SE. Or, we can directly edit the source file on the SE. You can validate the syntax in the source file as well using an option om the second panel.

If you do not want to create a source file from scratch, you can always export the existing sample source file and then re-edit it.

Script to Configure SNA Timers of the OSA with OSA/SF on the HMC

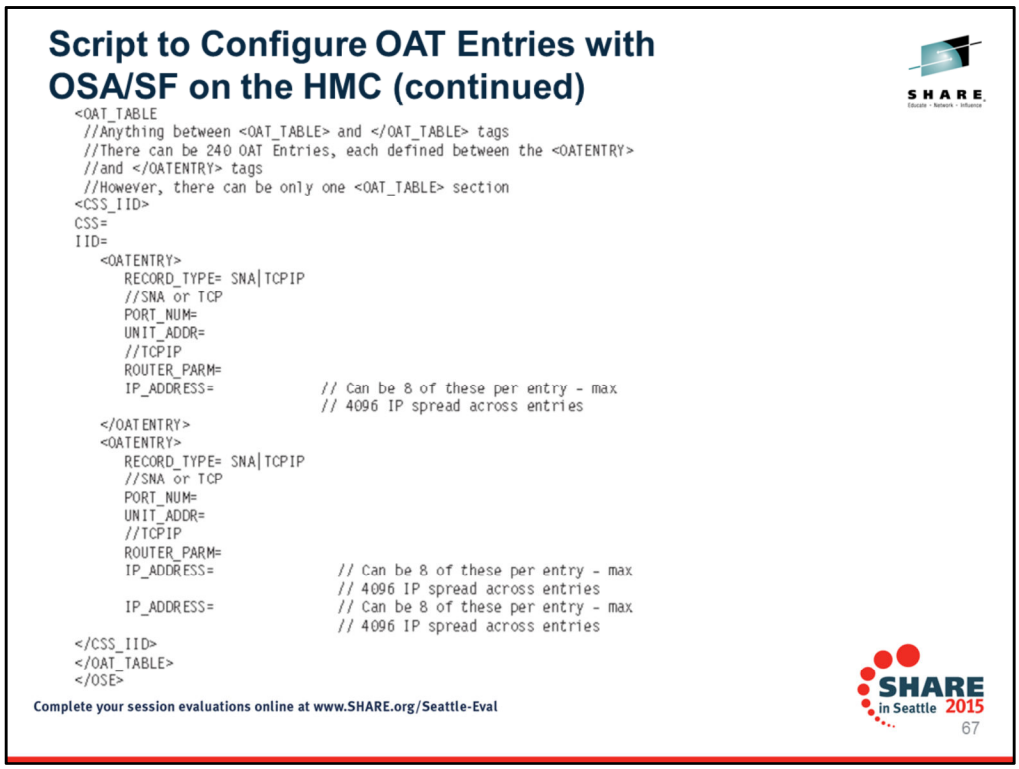


ASCII configuration file samples

```
// This is a comment
// This is an Example OSE Configuration file
// Let's start with OSE configuration parameters
 // configuration
<OSE>
 <OSE_PORT0>
   // SNA
   INACTIVITY_TIMER=
     RESPONSE_TIMER=
     MAX_I_FRAME=
   ACK_TIMER=
   MAX_XMIT_WIN=
 <OSE_PORT0>
```


Examples of the sample file are available in the OSA/SF on the HMC manual: "zEnterprise System Open Systems Adapter/Support Facility on the Hardware Management Console" (SC14-7580-00) . This page illustrates the syntax you would use for the SNA Timers.

Script to Configure OAT Entries with OSA/SF on the HMC (continued)



```
<OAT_TABLE
 //Anything between <OAT_TABLE> and </OAT_TABLE> tags
 //There can be 240 OAT Entries, each defined between the <OATENTRY>
 //and </OATENTRY> tags
 //However, there can be only one <OAT_TABLE> section
<CSS_IID>
CSS=
IID=
   <OATENTRY>
      RECORD_TYPE= SNA|TCPIP
      //SNA or TCP
      PORT_NUM=
      UNIT_ADDR=
      //TCPIP
      ROUTER_PARM=
      IP_ADDRESS=            // Can be 8 of these per entry - max
                             // 4096 IP spread across entries
   </OATENTRY>
   <OATENTRY>
      RECORD_TYPE= SNA|TCPIP
      //SNA or TCP
      PORT_NUM=
      UNIT_ADDR=
      //TCPIP
      ROUTER_PARM=
      IP_ADDRESS=              // Can be 8 of these per entry - max
                               // 4096 IP spread across entries
      IP_ADDRESS=              // Can be 8 of these per entry - max
                               // 4096 IP spread across entries
</CSS_IID>
</OAT_TABLE>
</OSE>
```

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67

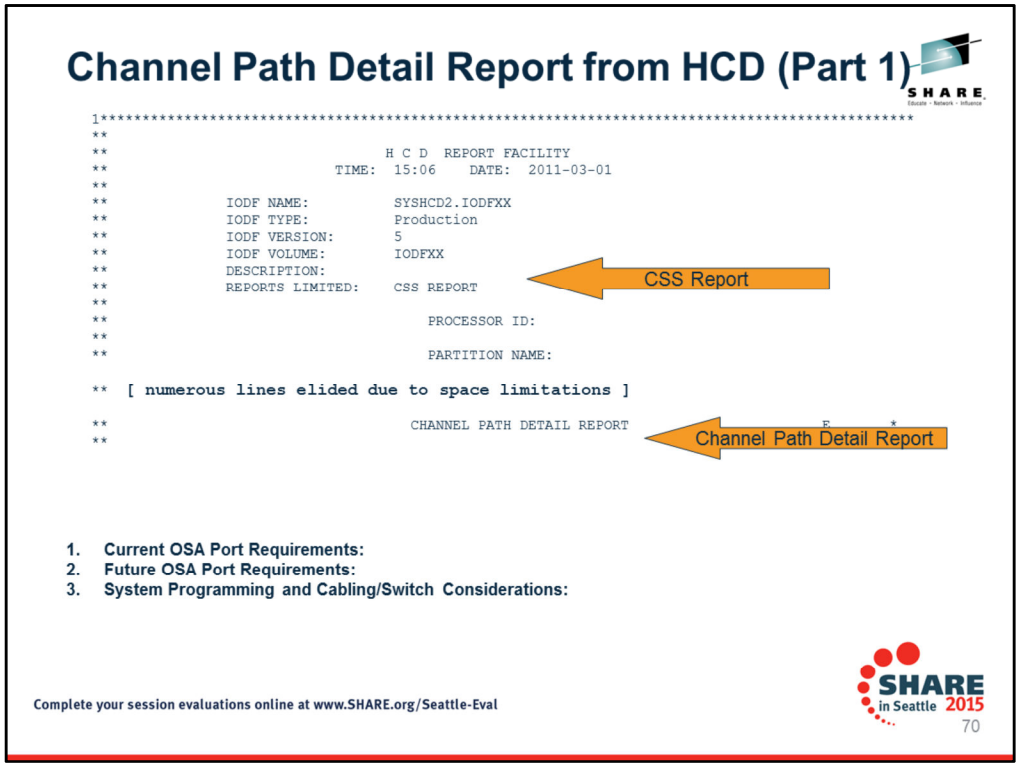
Examples of the sample file are available in the OSA/SF on the HMC manual: "zEnterprise System Open Systems Adapter/Support Facility on the Hardware Management Console" (SC14-7580-00) . This page illustrates the syntax you would use for the OAT entries.

Appendix: Worksheets for Planning a Migration to Multi-Port OSA Adapters

Multi-Port OSA Adapter Card Considerations

1. **Current 1 Gigabit OSA Port Requirements:**
   A. Number of OSA Ports on each CHPID Type (OSD, OSE, OSN, OSC, OSM) and current Feature Code (Fiber LX or SX or Copper)
      - Verify with HCD Channel Path Detail Report (see this page and next)
2. **Future OSA 1 Gigabit Port Requirements:**
   A. Number of future OSA Ports on each CHPID Type (OSD, OSE, OSN, OSC, OSM) and future Feature Codes (Fiber or Copper)
3. **System Programming and Cabling/Switch Considerations:**
   A. Significance of the "multi-port per CHPID" adapter types:
      - IOCDS, OAT, and VTAM, TCP/IP configurations when converting from one port per CHPID to two ports per CHPID.
   B. Significance of OAT firmware that must match the IOCDS definitions
   C. Considerations for conversions from copper to fiber or vice versa – OSA Feature Codes and Switch Connections

•Migrating one type of 10 Gigabit Adapter to another does not require as much thought, because there is always only one port per CHPID.



Determine together with the customer the current OSA port usage and the future OSA port usage requirements. For example, ….

Current Requirements:

Ask customer for a listing of each OSA CHPID Type, number of ports in use on each CHPID, and Feature Code Type. Much of this information can also be verified against the HCD Channel Path Detail Report that you see on these two pages.

Future Requirements:

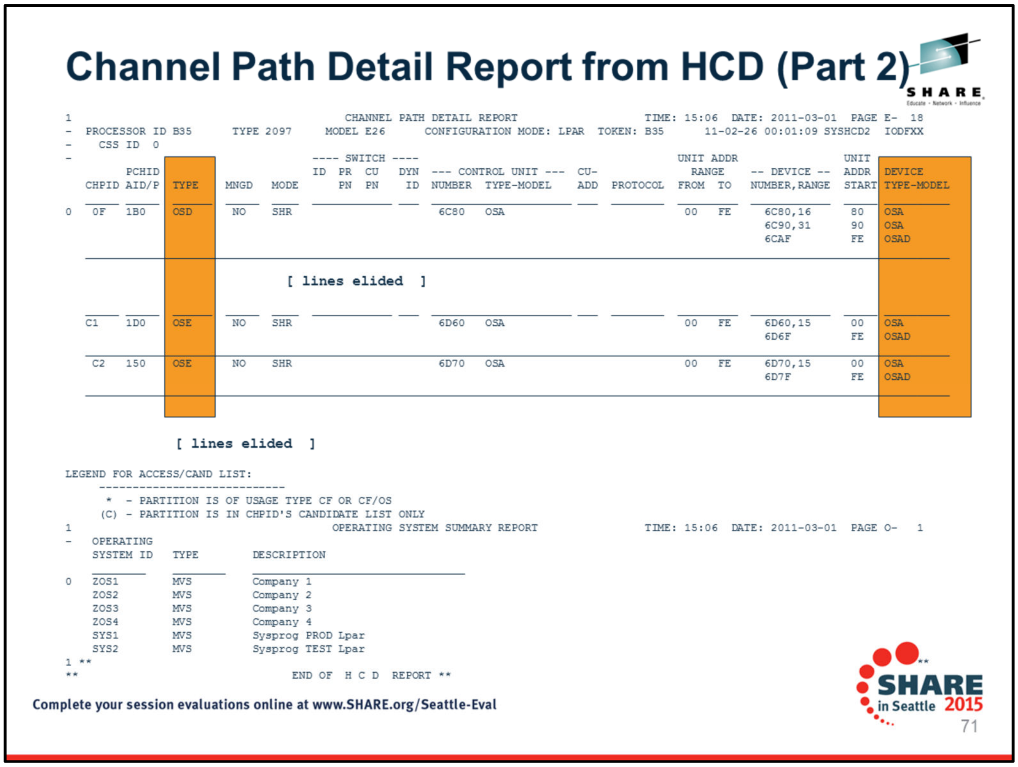
Confirm with customer the number of future ports and CHPIDs of each type are required on new System z platform.

System Programming and Caling/Switch Considerations:

Review with customer the significance of the “multi-port per CHPID” adapter types:

Possible changes to IOCDS when converting from one port per CHPID to two ports per CHPID.

Possible conversions from fiber to copper or changes to the external switch types.


Channel Path Detail Report from HCD (Part 2)
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Educate · Network · Influence
1 CHANNEL PATH DETAIL REPORT TIME: 15:06 DATE: 2011-03-01 PAGE E- 18
- PROCESSOR ID B35 TYPE 2097 MODEL E26 CONFIGURATION MODE: LPAR TOKEN: B35 11-02-26 00:01:09 SYSHCD2 IODFXX
- CSS ID 0
- ---- SWITCH ---- UNIT ADDR UNIT
PCHID ID PR CU DYN --- CONTROL UNIT --- CU- RANGE -- DEVICE -- ADDR DEVICE
CHPID AID/P TYPE MNGD MODE PN PN ID NUMBER TYPE-MODEL ADD PROTOCOL FROM TO NUMBER,RANGE START TYPE-MODEL
0 0F 1B0 OSD NO SHR 6C80 OSA 00 FE 6C80,16 80 OSA
6C90,31 90 OSA
6CAF FE OSAD
[lines elided]
C1 1D0 OSE NO SHR 6D60 OSA 00 FE 6D60,15 00 OSA
6D6F FE OSAD
C2 150 OSE NO SHR 6D70 OSA 00 FE 6D70,15 00 OSA
6D7F FE OSAD
[lines elided]
LEGEND FOR ACCESS/CAND LIST:
----
* - PARTITION IS OF USAGE TYPE CF OR CF/OS
(C) - PARTITION IS IN CHPID'S CANDIDATE LIST ONLY
1 OPERATING SYSTEM SUMMARY REPORT TIME: 15:06 DATE: 2011-03-01 PAGE O- 1
- OPERATING
SYSTEM ID TYPE DESCRIPTION
0 ZOS1 MVS Company 1
ZOS2 MVS Company 2
ZOS3 MVS Company 3
ZOS4 MVS Company 4
SYS1 MVS Sysprog PROD Lpar
SYS2 MVS Sysprog TEST Lpar
1 **
** END OF H C D REPORT **
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71

The CHPID Type and the DEVICE TYPE-MODEL are highlighted in this report and will help your customer verify the number and type of CHPID ports in use.

Worksheet for OSA Adapter Orders: 1 Gigabit or 1000Base-T Adapters

The 1 Gigabit Adapters can house multiple ports per CHPID.

Type of CHPID & Connector	*Previous # of such CHPIDs*	*Previous # of Ports*	*Future # Ports*	*Minimum # of Future CHPIDs*	*Minimum # of Adapters or Feature Codes to Order*	*Comments: Effect of Minimum Order*
OSD RJ45 (Copper)						
OSD LX (Fibre)	10	10	10	5	3 x FC3362 "or" 5 x FC0404	Must Consolidate CHPIDs
OSD SX (Fibre)						
OSC RJ45 (Copper)	2	2	2	1	1 x FC3367	Put both OSCs on same adapter or configure one CHPID OSC and one OSE on card
OSE RJ45 (Copper)	8	8	8	4	2 x FC3367	
OSN (NCP) LX (Fibre)						
OSN (NCP) RJ45 (Copper)						
OSM (Ensemble) RJ45 (Copper)						

Worksheet for OSA Adapter Orders: 10 Gigabit Adapters

The 10 Gigabit Adapters house a single port per CHPID.

Type of CHPID & Connector	*Previous # of such CHPIDs*	*Previous # of Ports*	*Future # Ports*	*Minimum # of Future CHPIDs*	*Minimum # of Adapters or FCs to Order*	*Comments*
OSD (10 Gig) LR (Fibre)						
OSD (10 Gig) SR (Fibre)						
OSX (10 Gig) (Ensemble) LR (Fibre)						
OSX (10 Gig) (Ensemble) SR (Fibre)						

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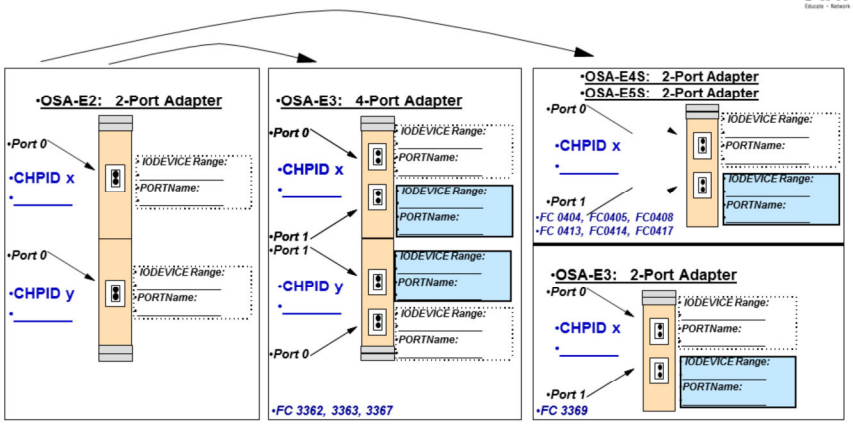
Quiz #1 on Ordering Sufficient OSA Feature Codes

- **Customer's current implementation:**
  - 4 1 Gigabit OSD CHPIDs (fiber connections)
    - 4 OSD Ports (all Port 0)
  - 2 1 Gigabit OSC (ICC) CHPIDs (copper connections)
    - 2 OSC Ports (all Port 0)
- **Future Requirement: Same number of ports with minimal administrative (IOCDS/HCD, OAT, Operating System) or cabling changes**
  - New Configuration must include:
    - _____ OSD CHPIDs
      - _____ OSA Ports (but using only Port 0)
      - _____ Adapter(s) of Feature Code _____ or
      - _____ Adapter(s) of Feature Code _____
    - _____ OSC CHPIDs
      - _____ OSA Ports (but using only Port 0)
      - _____ Adapter(s) of Feature Code _____ or
      - _____ Adapter(s) of Feature Code _____

Planning for Move to Multiport-per-CHPID Adapters



•1. •Moving from OSA-E2 to OSA-E3 or OSA-E4S or OSA-E5S (1 Gigabit or 1000Base-T)

- •1.•Make a copy of this worksheet page for each adapter you are moving from.
- •2.•Fill in the CHPID numbers of the Ports you want to move from and move to.
- •3.•Provide the CHPID Type of each CHPID and identify fiber vs. copper.
- •4.•Also fill in the Device Ranges on each port.
- •5.•Fill in the Portnames that z/OS Requires.

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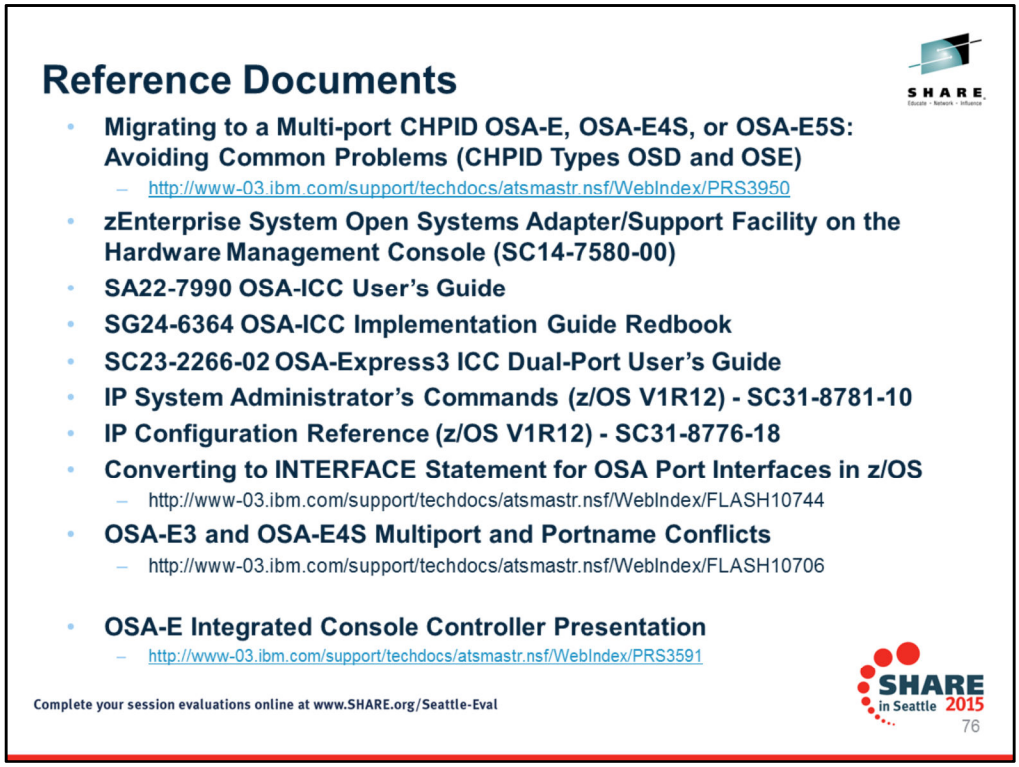
75



These references will help you with understanding how to deal with other CHPID types that we have not covered in this brief presentation – like OSC or OSX or OSM, etc.

Migrating to New OSA Feature? Multiport and OSA/SF Considerations

Session 16753
10am Friday March 6th 2015
Room Aspen

Linda Harrison
lharriso@us.ibm.com
Created by Gwen Dente

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