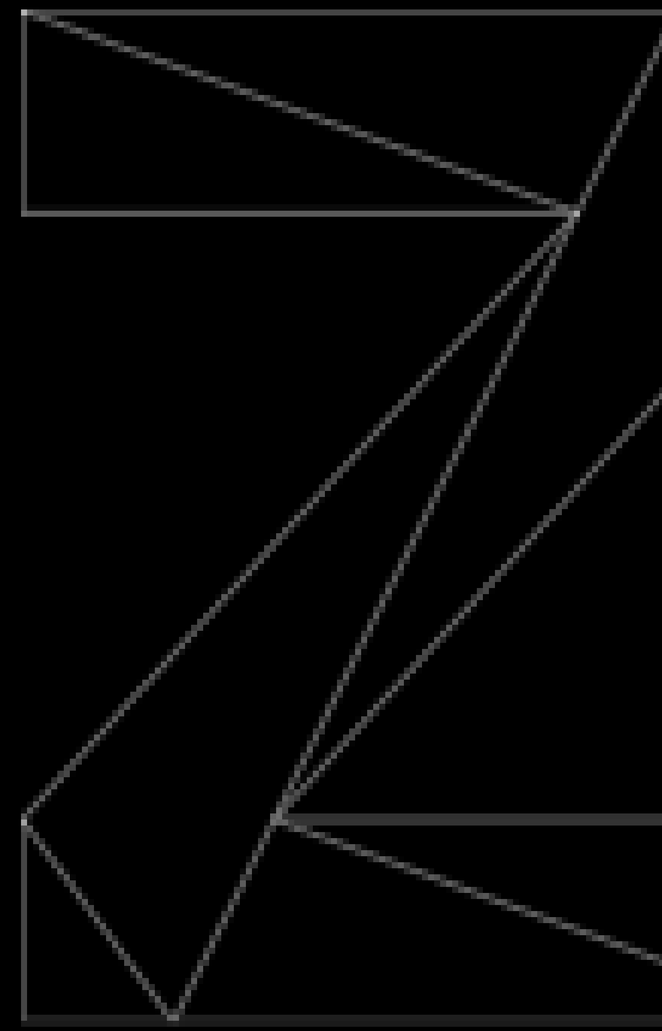
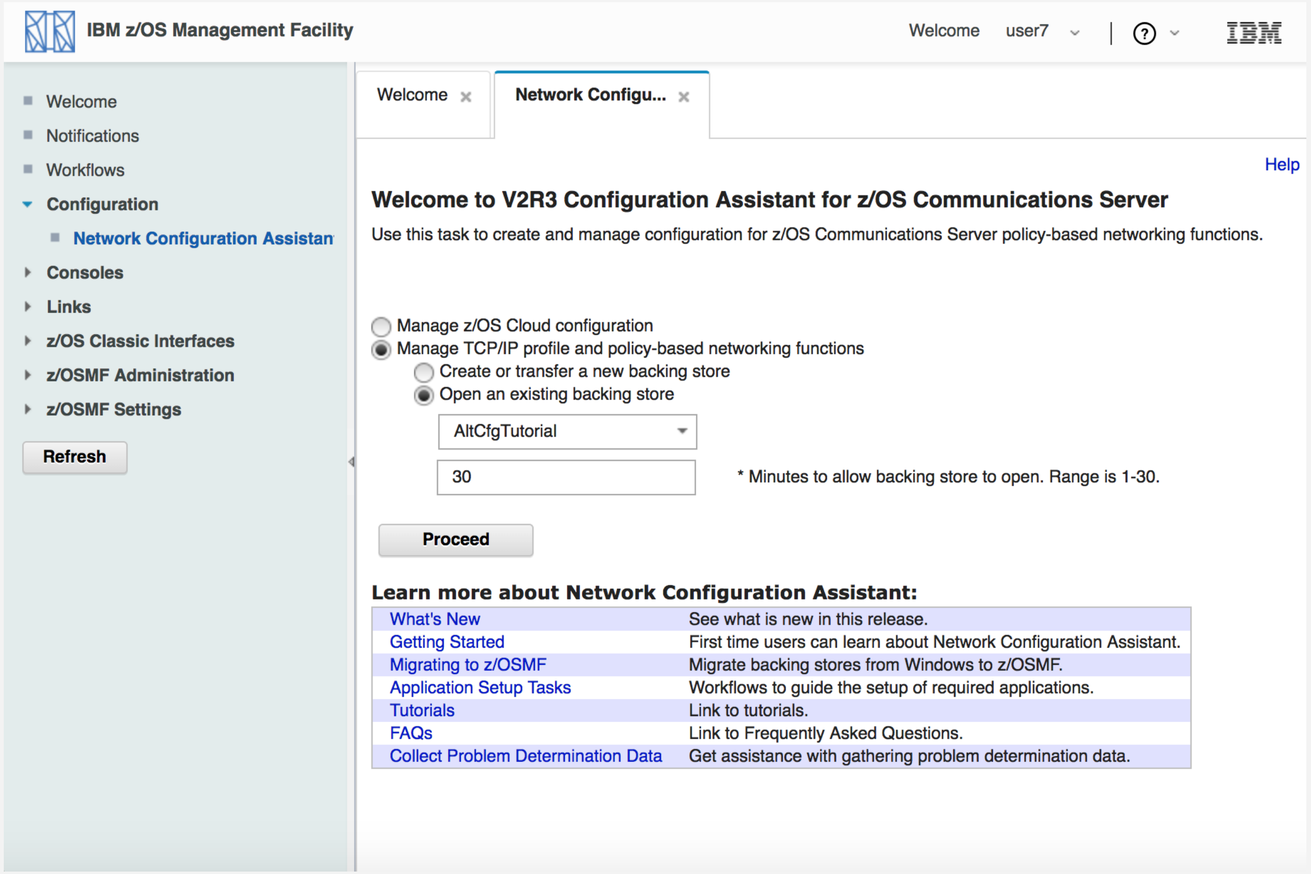
# TCP/IP Configuration Basics



IBM z

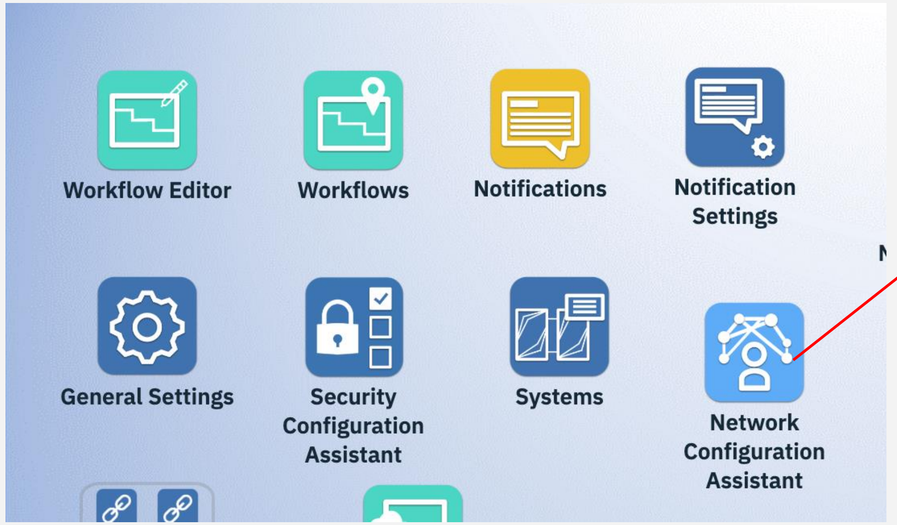
# BACKGROUND ON NETWORK CONFIGURATION ASSISTANT

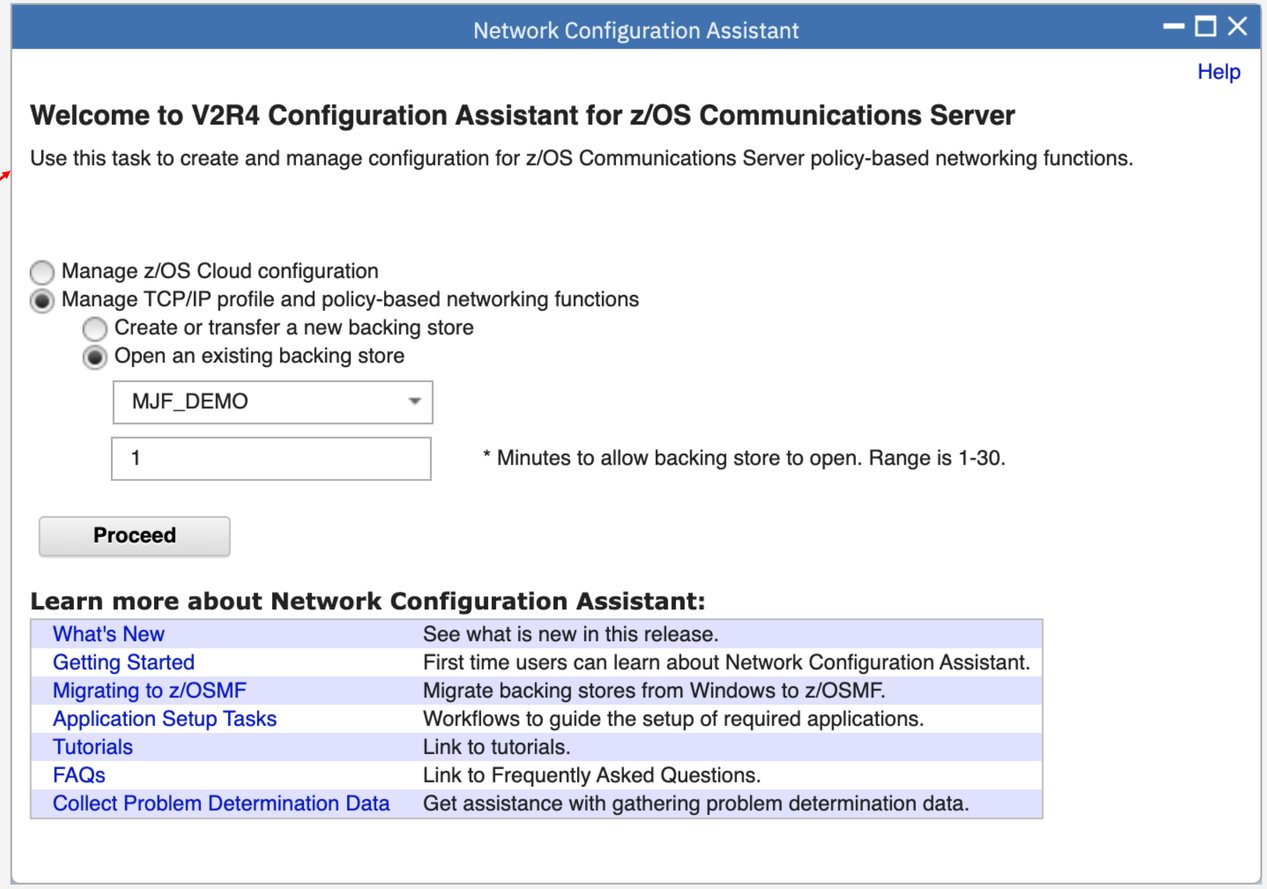
# Network Configuration Assistant is a z/OSMF plug-in (navigation tree view)




- You access the Network Configuration Assistant under the “Configuration” header in the z/OSMF navigation pane.
- This gets you to the Network Configuration Assistant opening screen shown here, where you open or create your backing store.
  - Backing store is the configuration data file used by Network Configuration Assistant, in which it persists the configuration you’ve created in its own binary format.

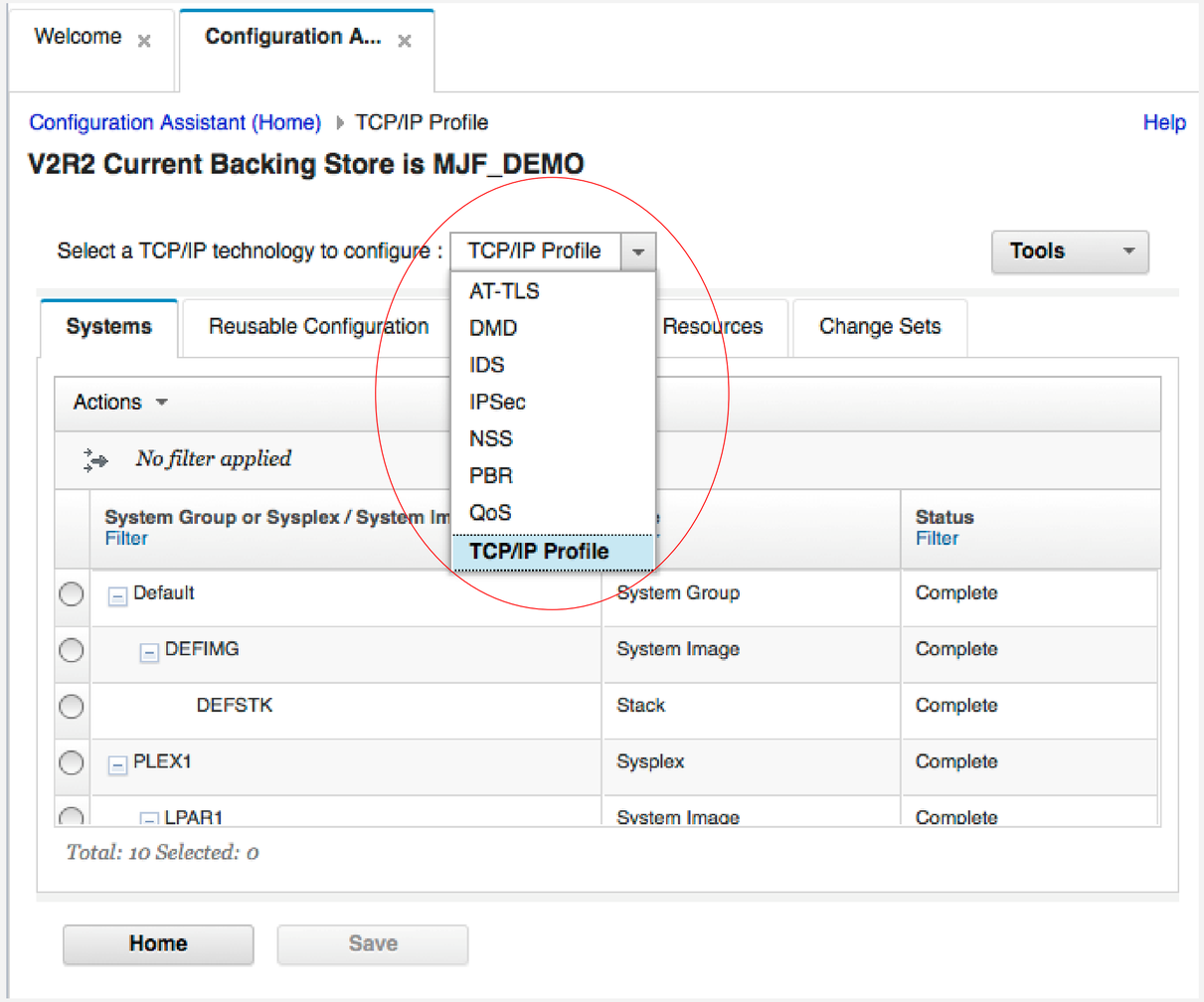
# Network Configuration Assistant: z/OSMF desktop view




In the z/OSMF desktop view, access Network Configuration Assistant by double clicking its icon.

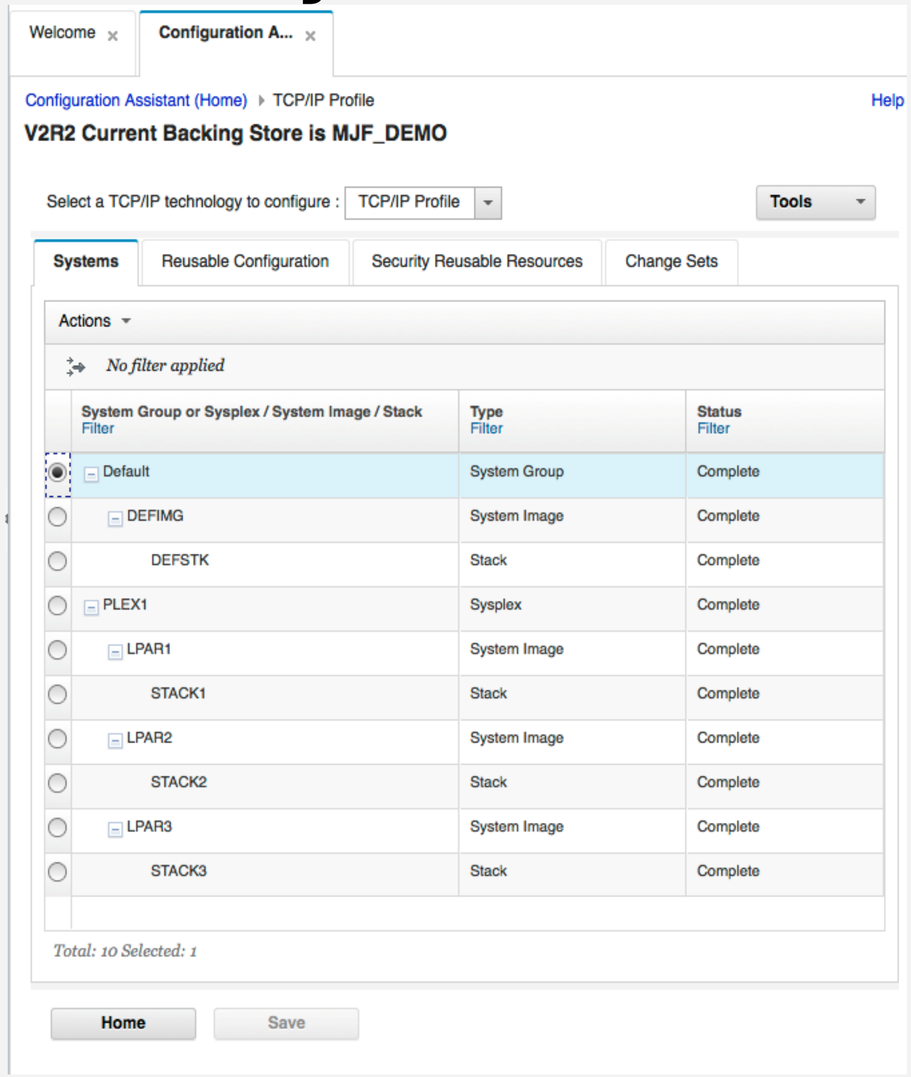
# Technologies configured by the Network Configuration Assistant




This screen capture shows the TCP/IP technologies that Network Configuration Assistant configures

- The first seven in the list are policy-based security and routing technologies that have been supported in the Network Configuration Assistant since its beginning. They are not the focus of this lesson.
- The last one, TCP/IP profile, is the focus of this lesson.

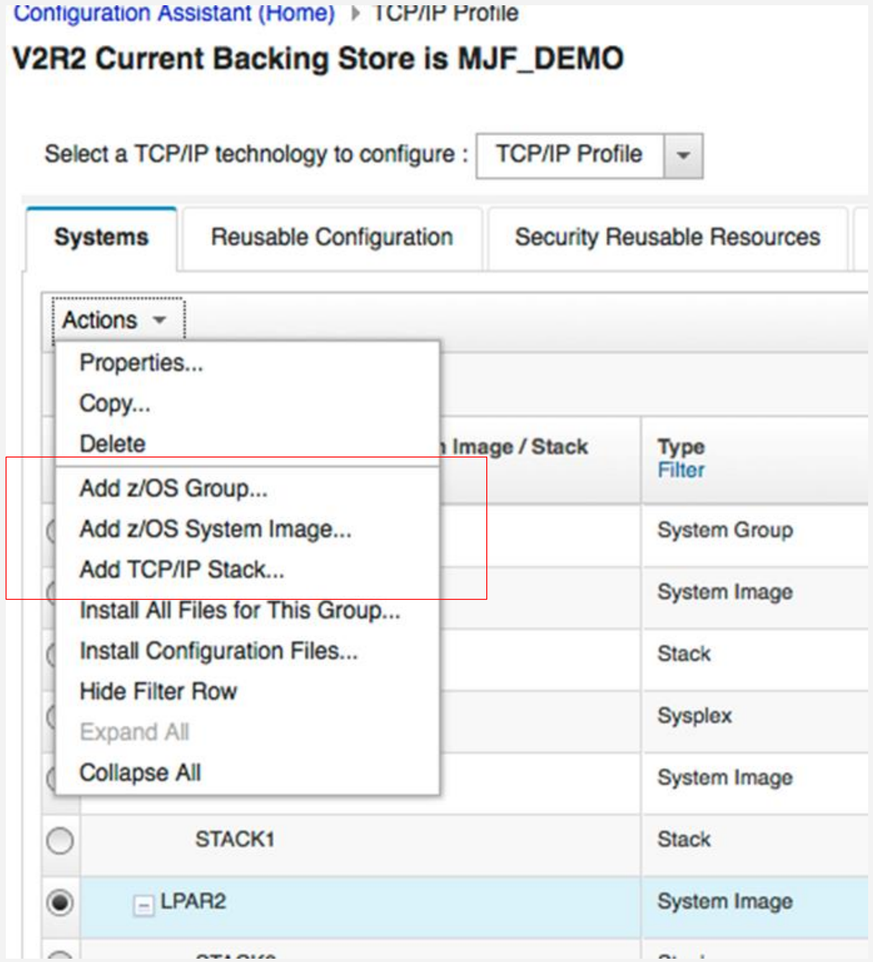
# The systems tree




The systems tree defines the layout of your system… sysplexes, z/OS images, and TCP/IP stacks

- You create this by adding elements using the **Actions** pull-down menu.
- This tree is shared by all of the technologies that are configured in the backing store.
- To configure a stack, sysplex, or image, you select it and select **Actions->Configure**.
  - Which configuration options are then available depends on what technology you are configuring (i.e., TCP/IP Stack, AT-TLS, QoS, etc)

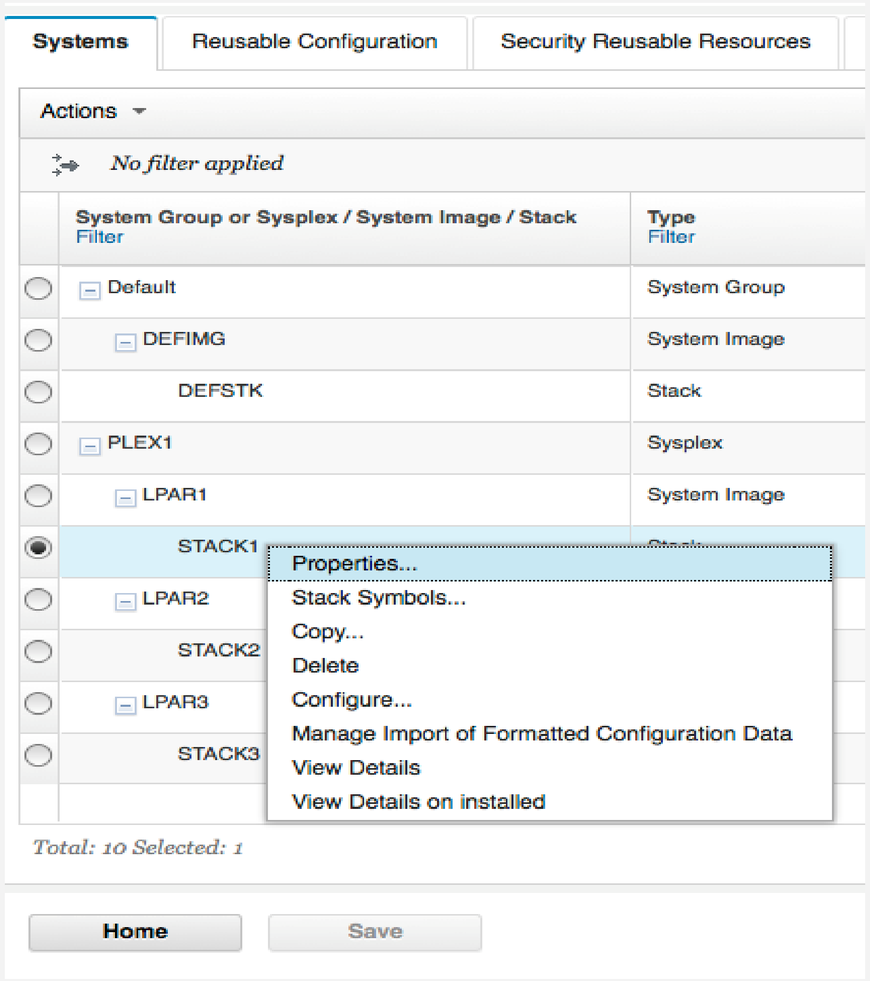
# Systems tree, continued




In the example to the left, z/OS image LPAR2 is selected, and then the **Actions** menu is pulled down. From here the user can:

- Create a new sysplex (“z/OS Group”)
- Create a new z/OS image in the sysplex that LPAR2 belongs to
- Create a new stack on LPAR2

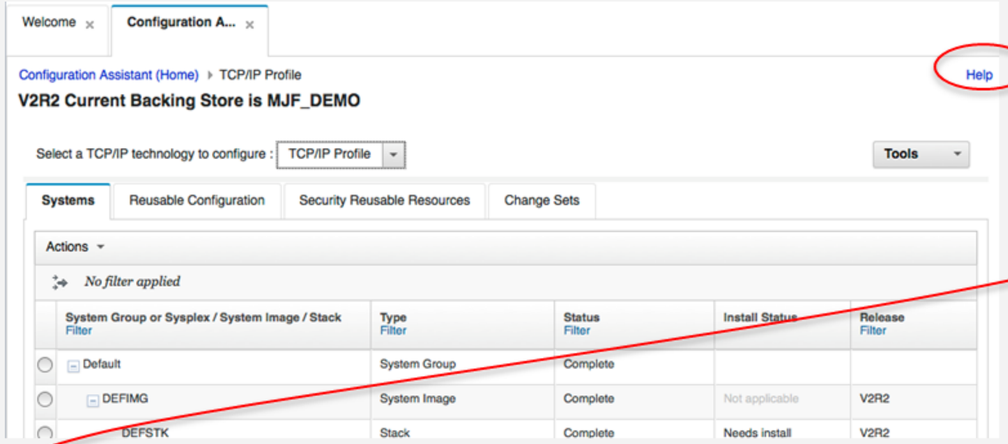
# Systems tree, continued

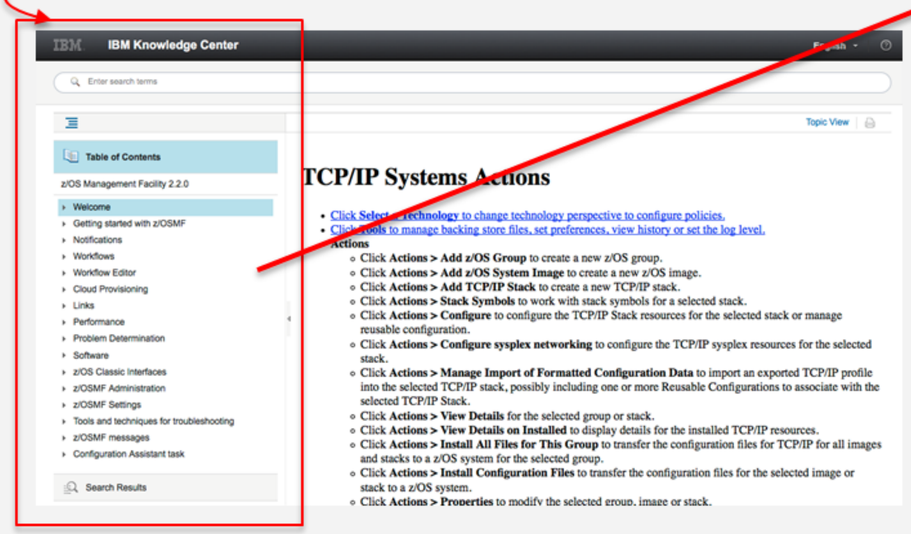


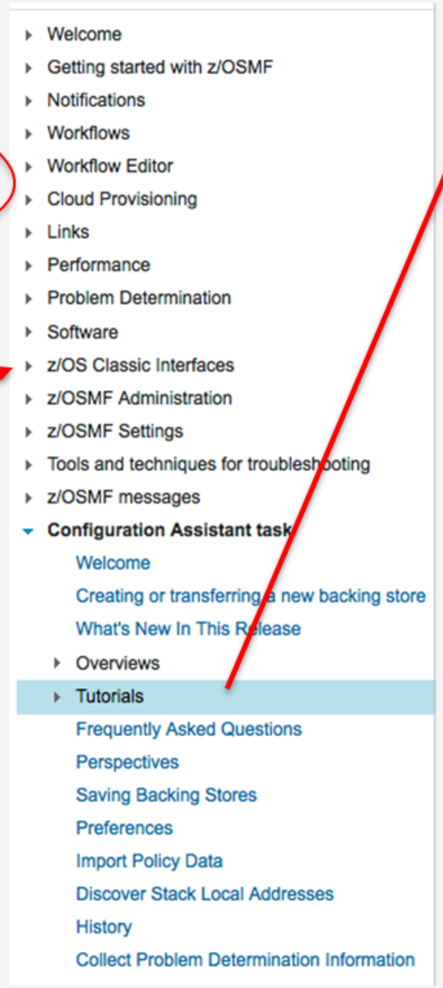

In this example, the user has selected STACK1 on LPAR1. He or she can then either pull down the **Actions** menu or, as in this example, right-click on the stack, to take specific actions.

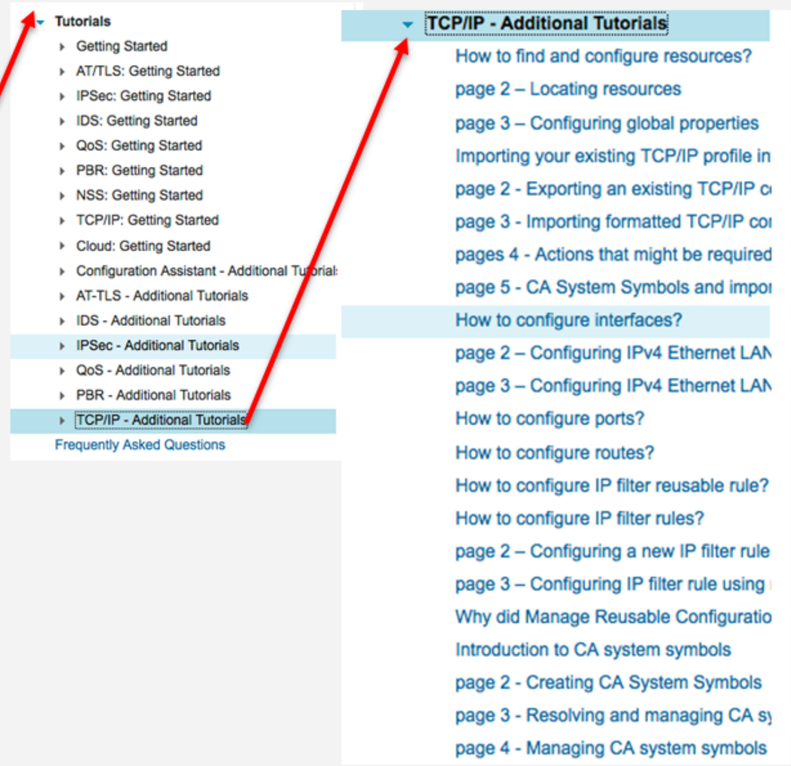
- Other actions will be discussed later, but clicking "Configure" here will allow the user to edit the stack's configuration
  - This logic works in all technologies. In TCP/IP technology, the stack's profile would be configured. In IPSEC technology, the stack's filter rules would be configured, etc.

# Getting help



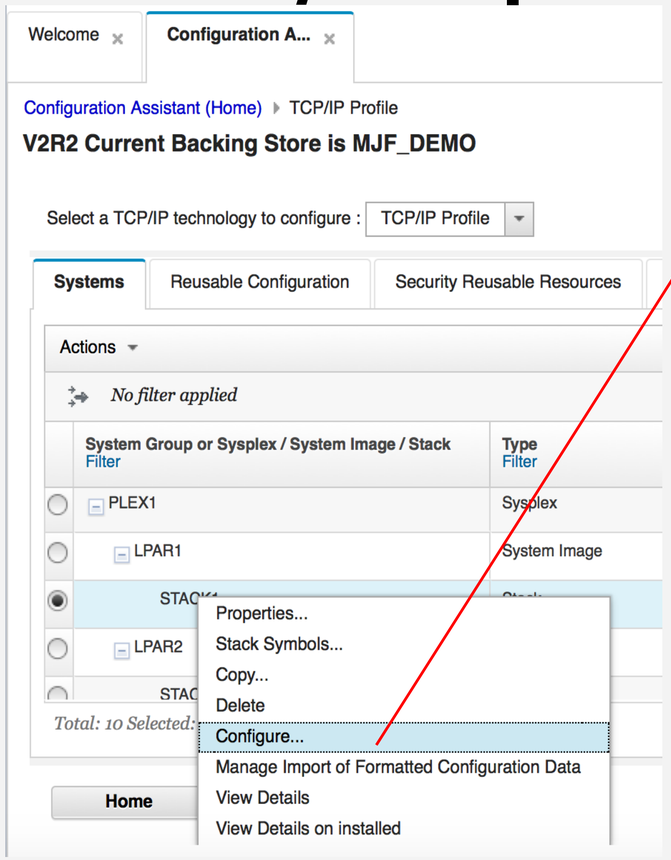



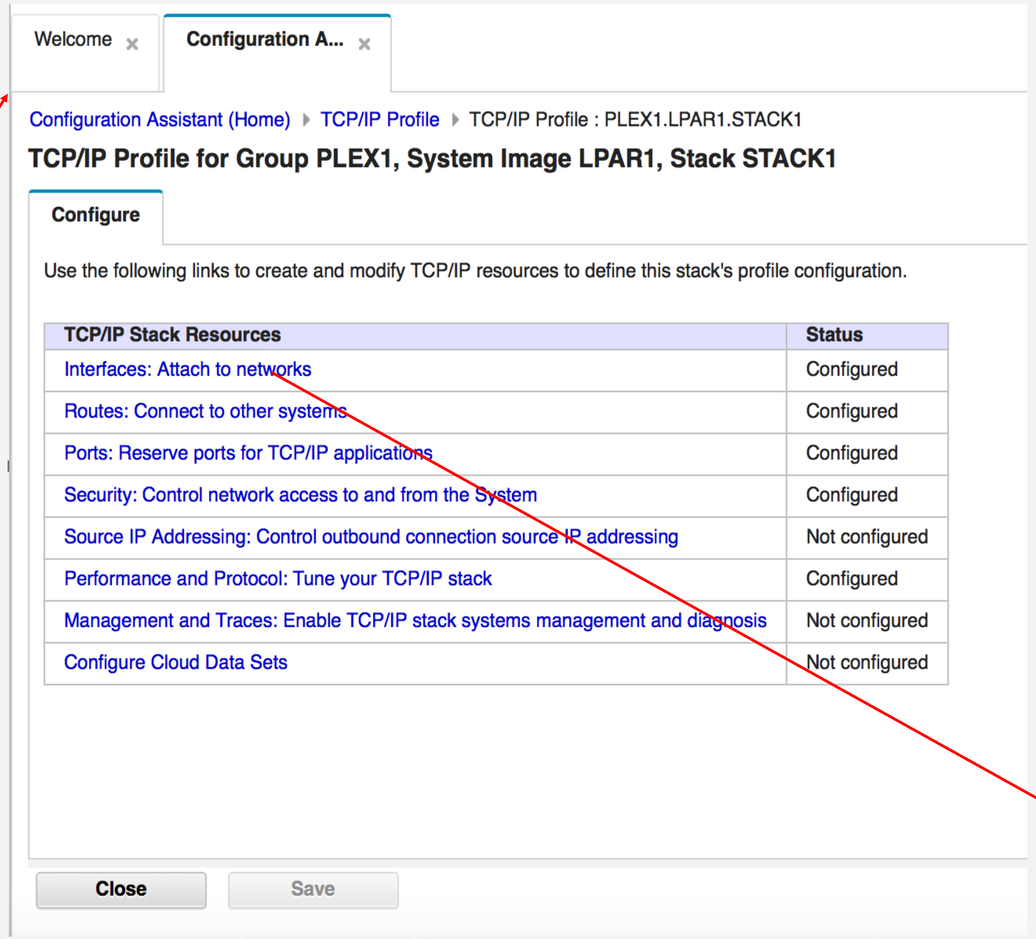




Extensive tutorials are provided in the helps for Network Configuration Assistant.

# TCP/IP PROFILE TECHNOLOGY

# TCP/IP profile basics



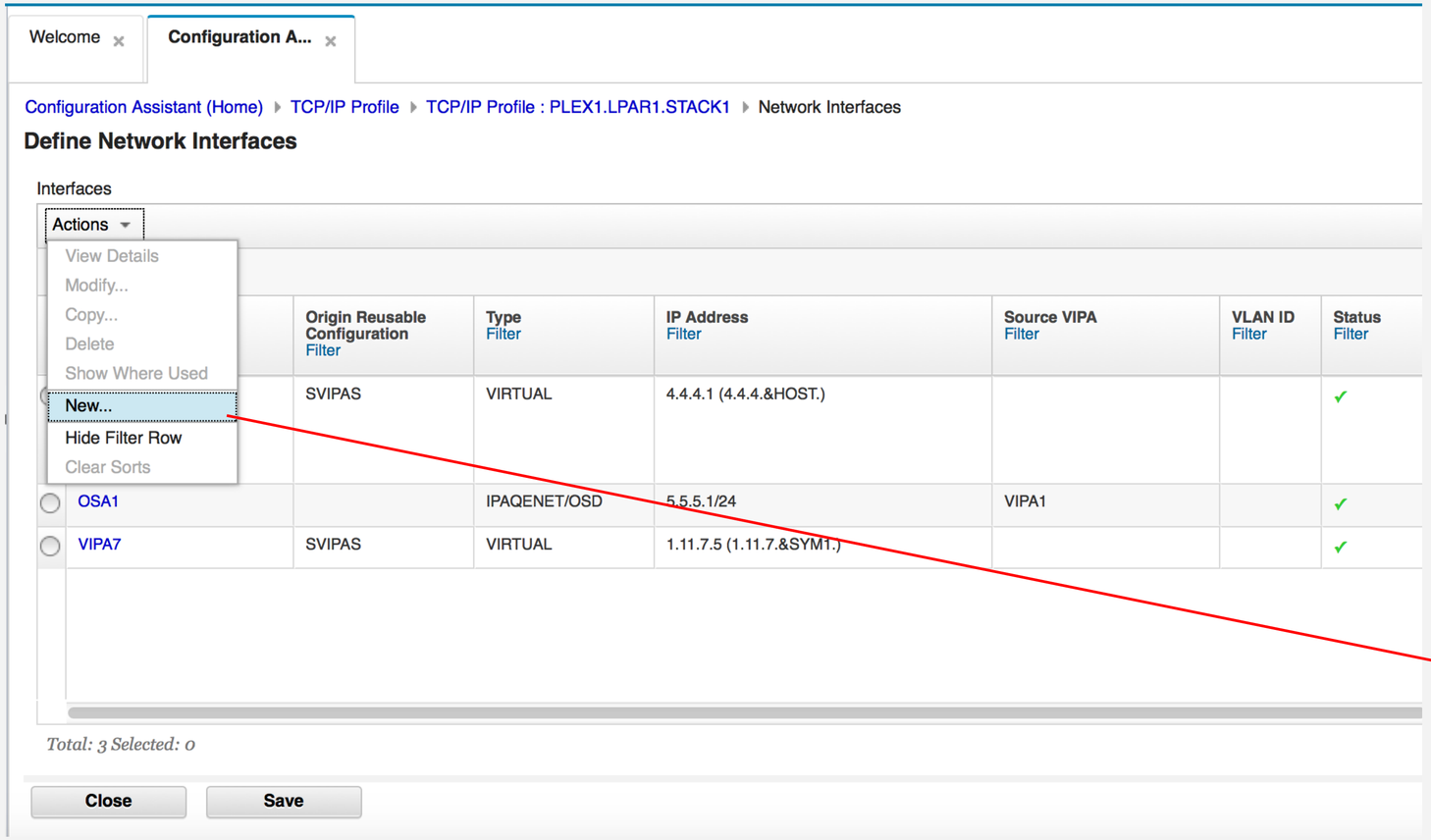




- The TCP/IP profile technology allows you to configure a complete TCP/IP profile.
- The configuration tasks are grouped into logical task areas.
- In this example you will see how to define an OSA ethernet interface to a stack.

This path allows you to configure stack-specific resources. Sysplex and reusable resources will be discussed later.

Next page

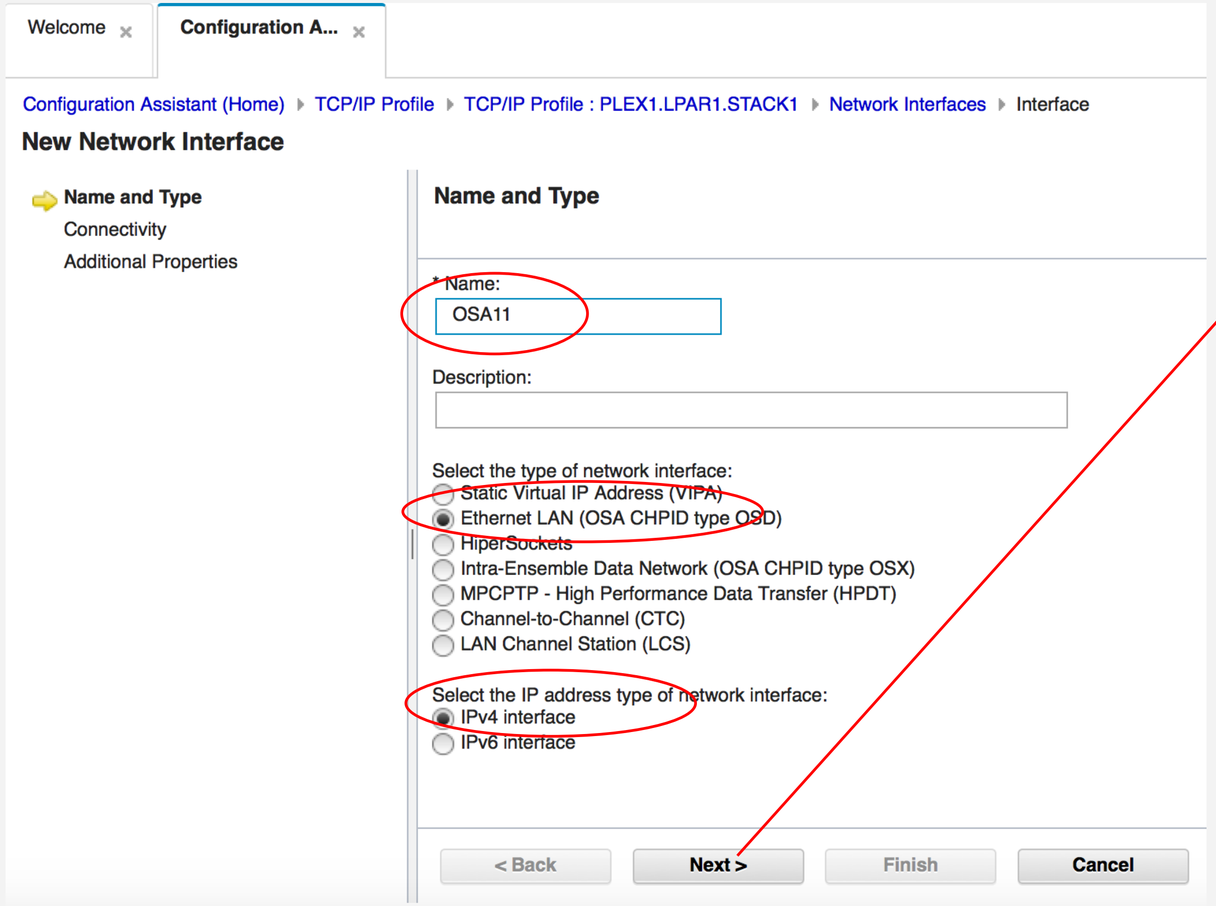
# TCP/IP profile example: defining a TCP/IP interface

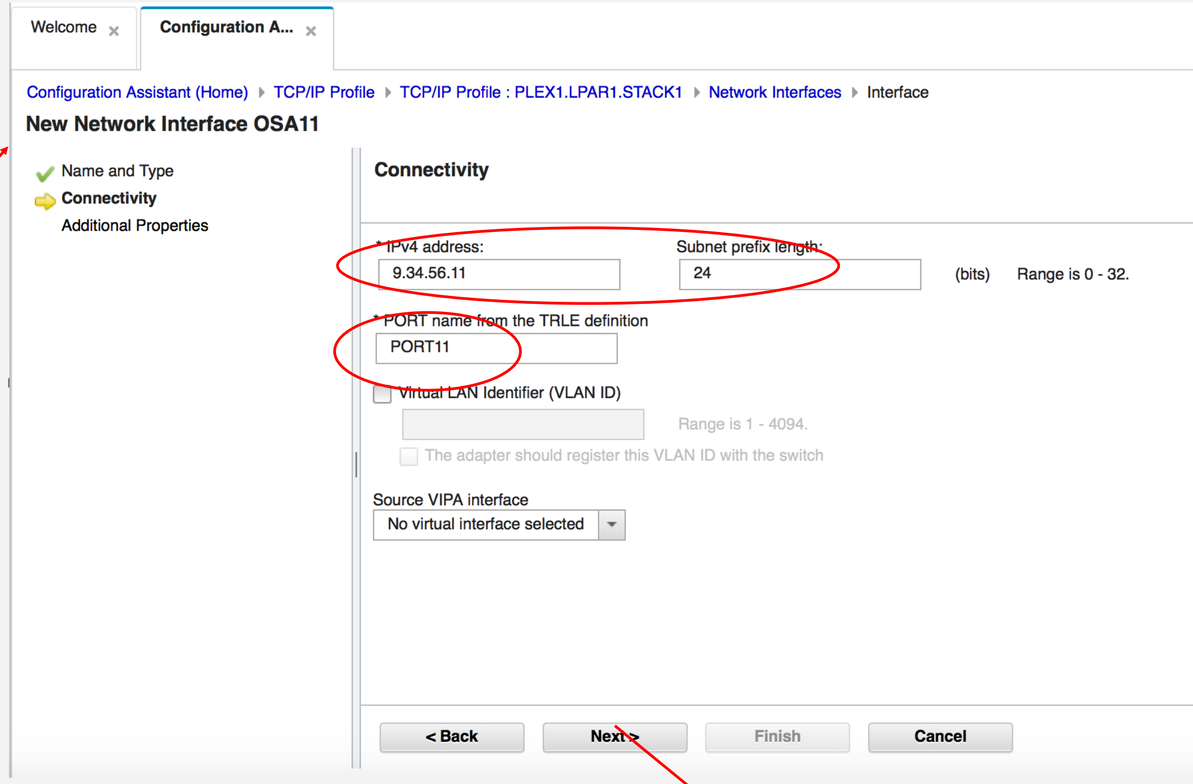



Select **Actions** and select **New** to create a new TCP/IP interface definition.

Next page

# TCP/IP profile example: defining a TCP/IP interface

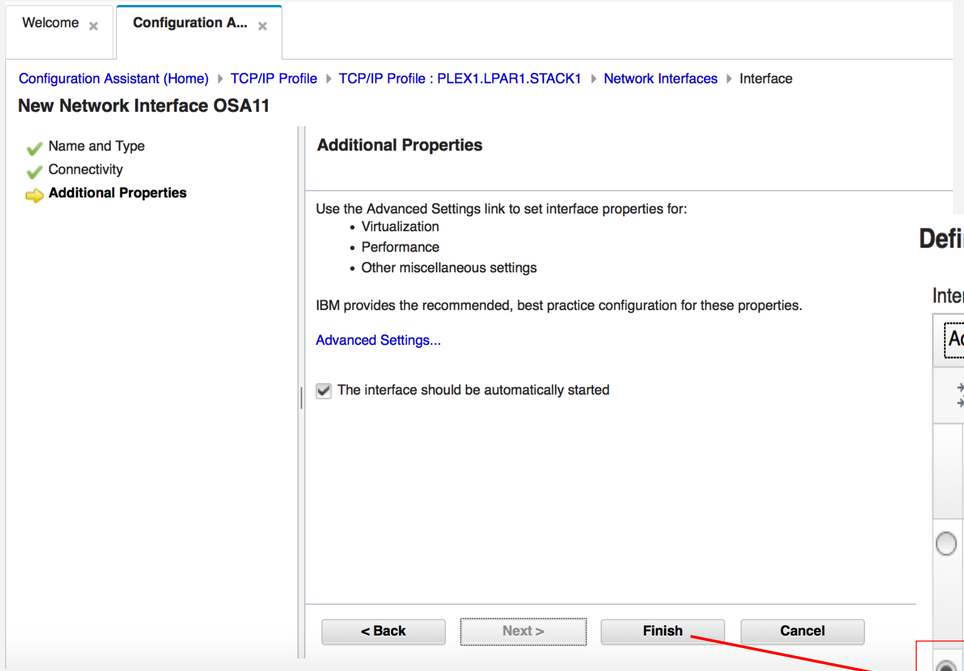


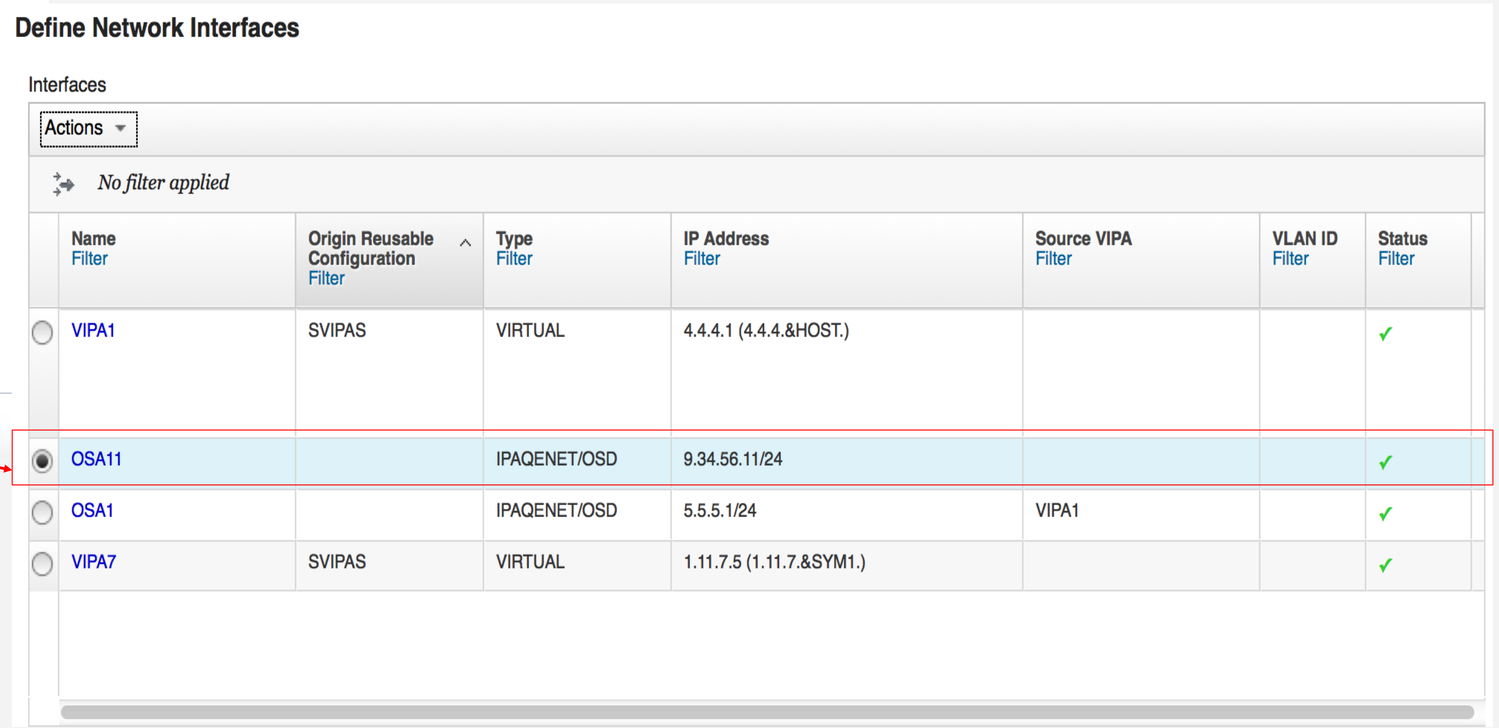




Next page

Enter basic characteristics of the interface and its connectivity information.

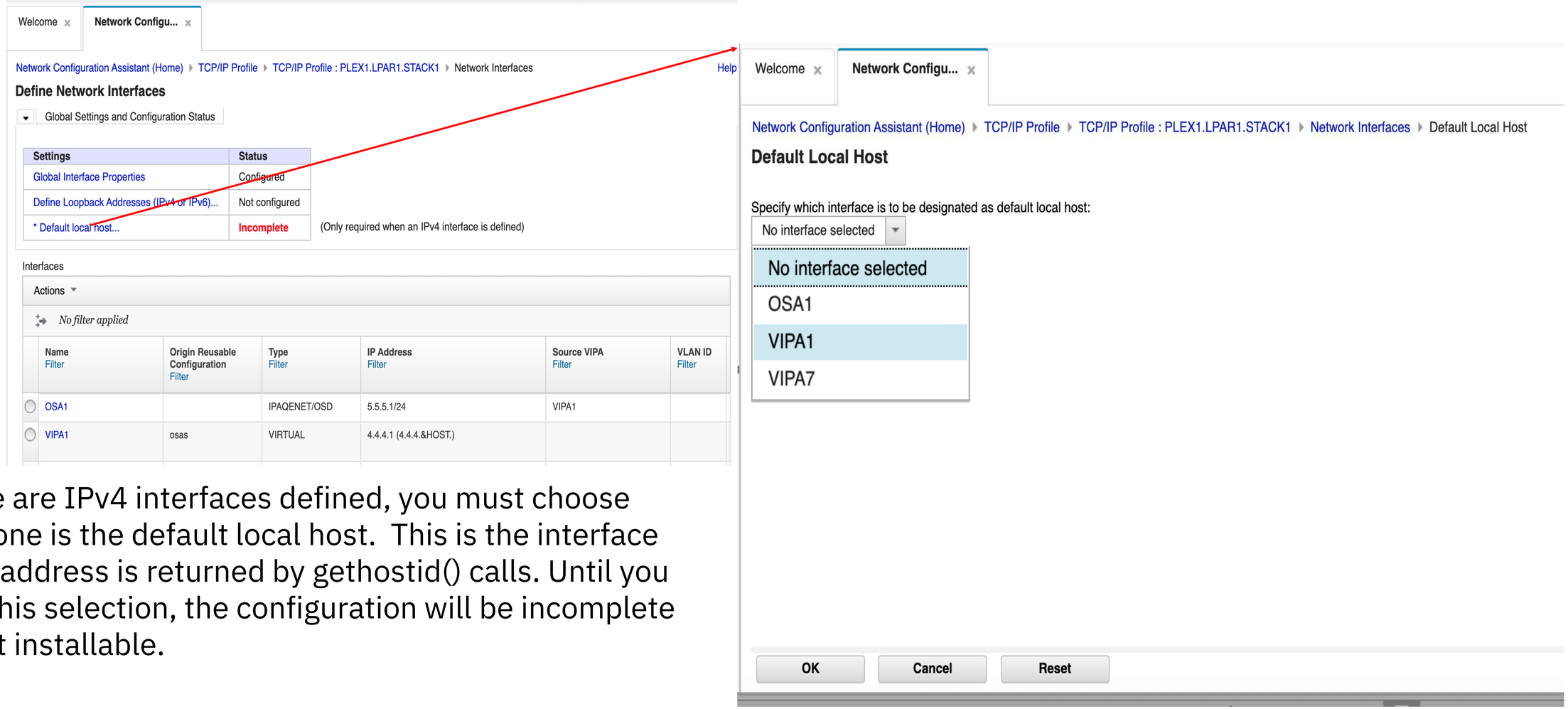
# TCP/IP profile example: defining a TCP/IP interface




After you click **Finish** on the interface definition wizard, you can see the new interface in the interface table.

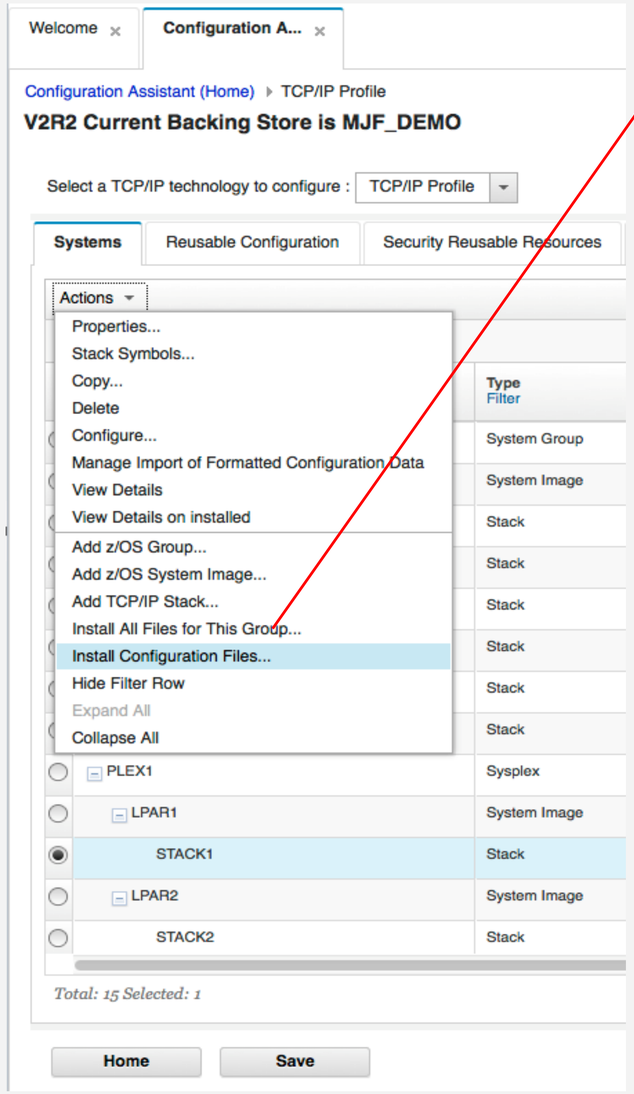
# TCP/IP profile example: default local host

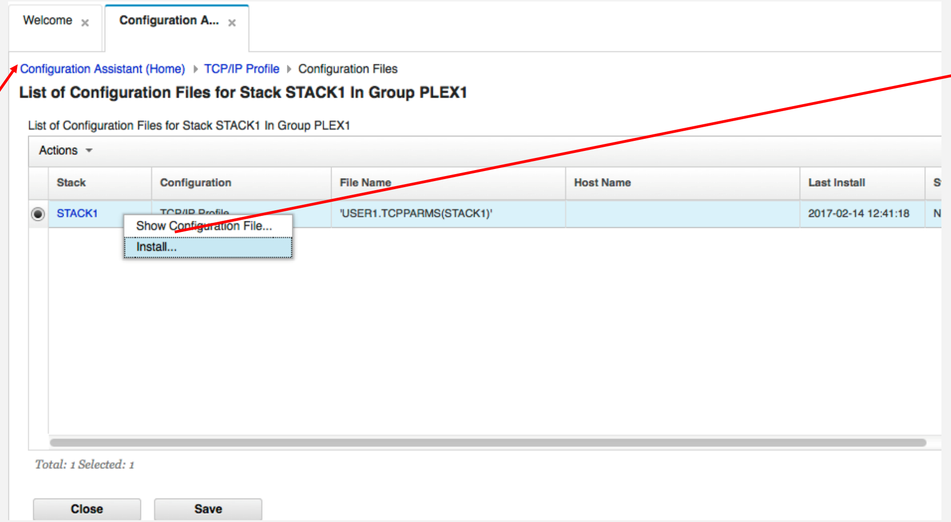


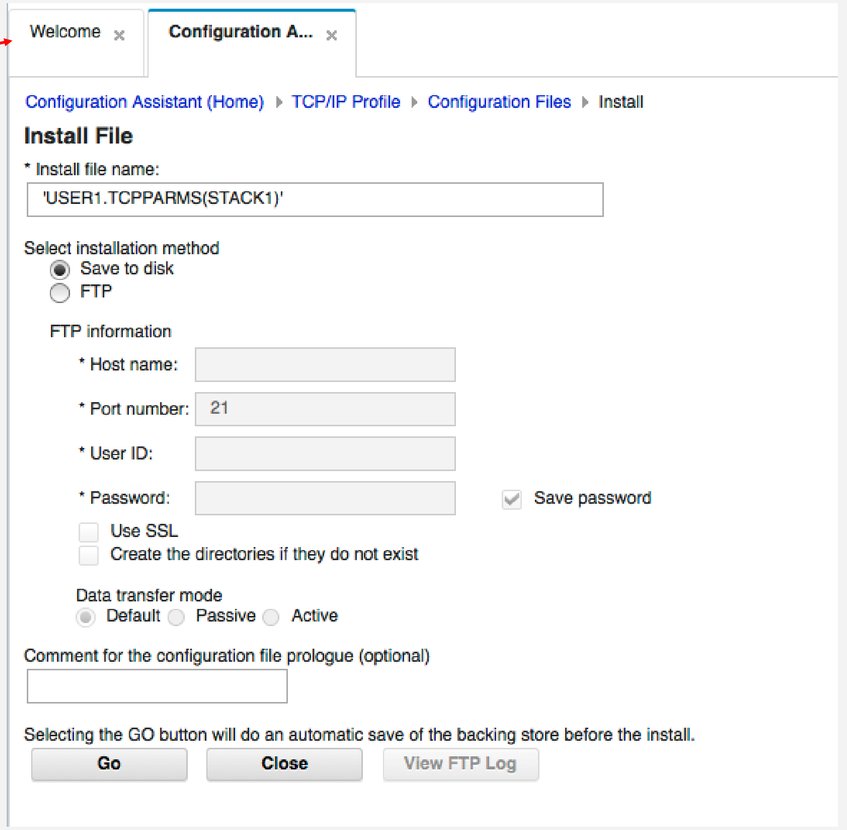

If there are IPv4 interfaces defined, you must choose which one is the default local host. This is the interface whose address is returned by gethostid() calls. Until you make this selection, the configuration will be incomplete and not installable.

This is required because unlike with the flat file TCP/IP profile, there is no “first” interface in the profile that can serve as the default.

# Installing the configuration

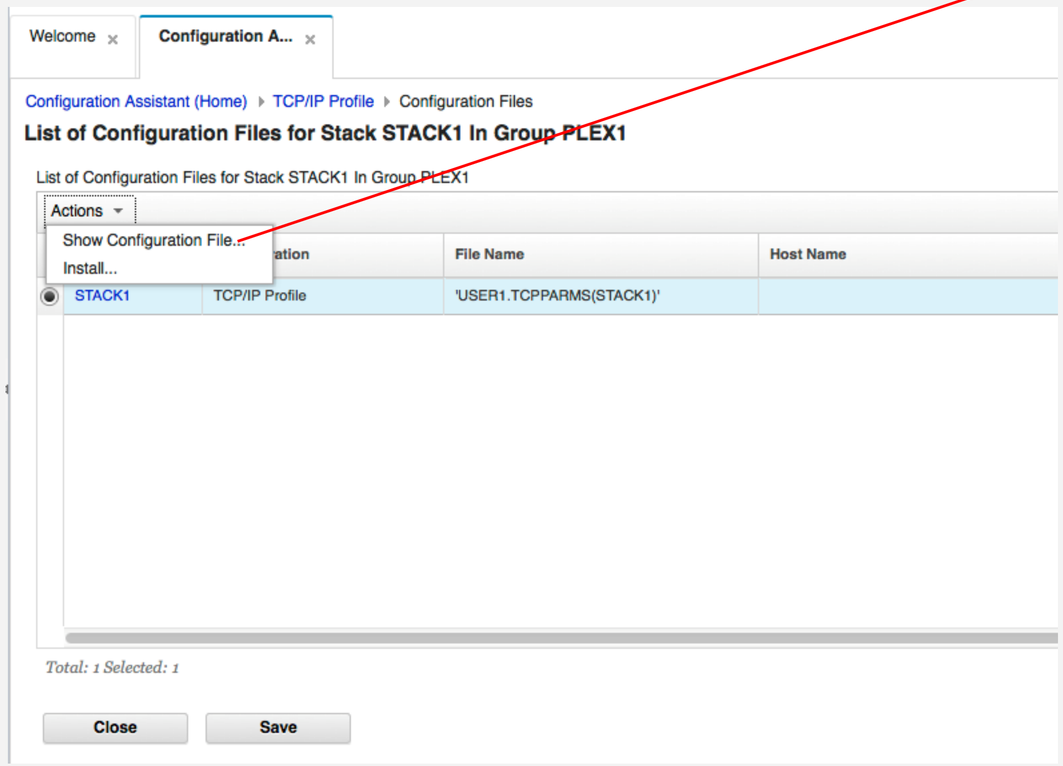


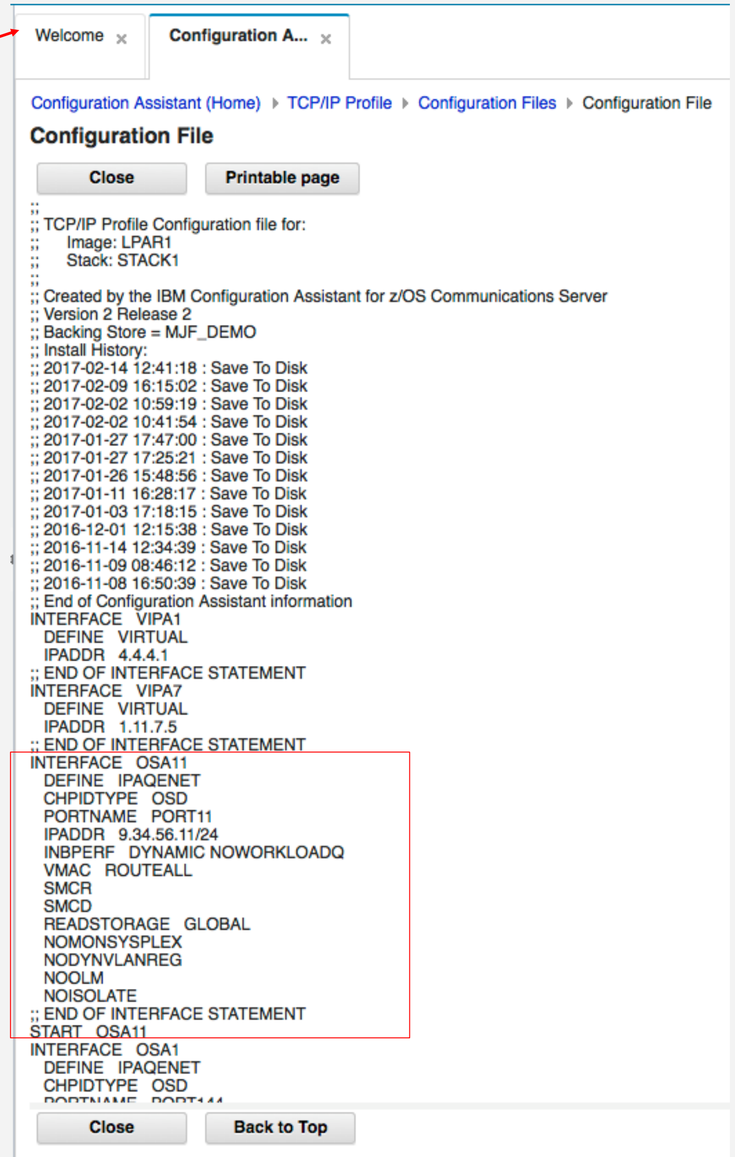




Installing the configuration means generating the TCP/IP profile and putting it in place, to be read next time the stack starts. You can either save it to the file system of the image that z/OSMF is running on, or FTP it to another image.

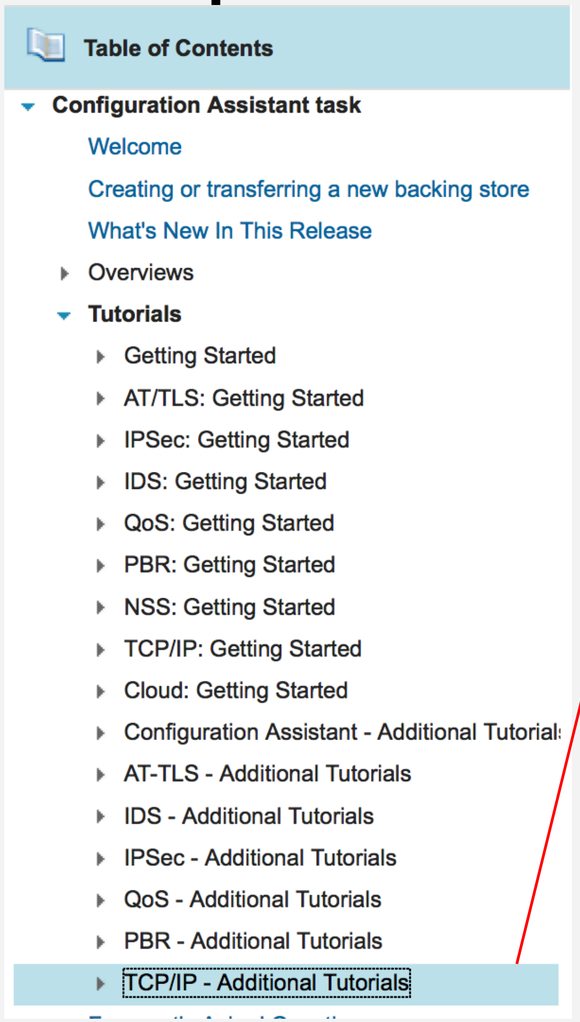
# Viewing the generated configuration

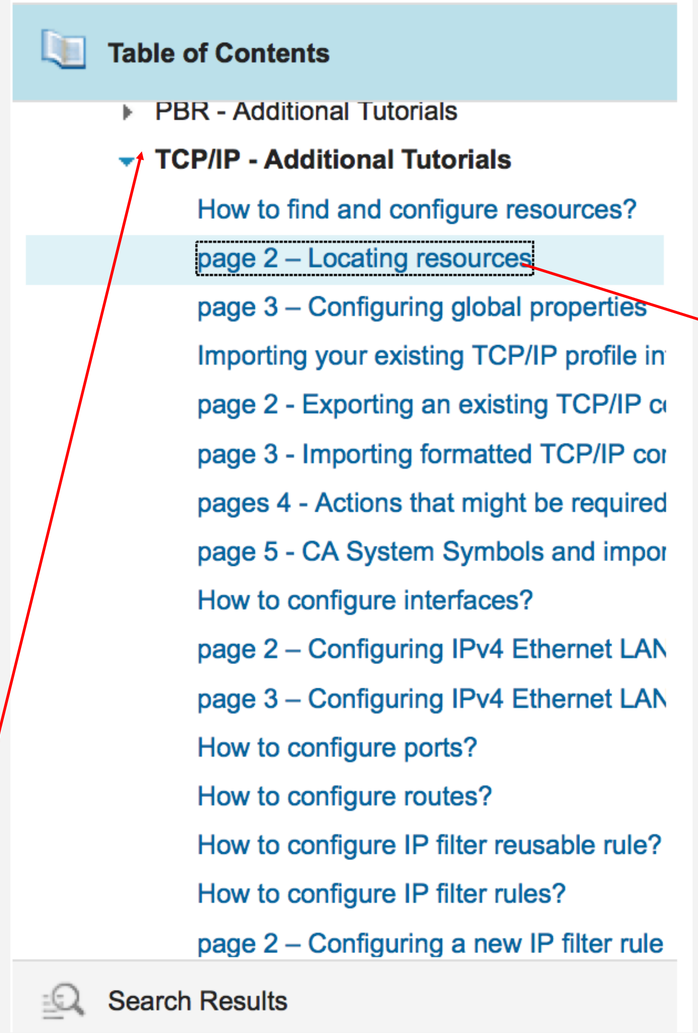



This example shows how to view the generated TCP/IP profile from the install panel for a stack. The OSA11 interface we created earlier is highlighted.

# Where can I find <TCP/IP profile statement> in the NCA panels?



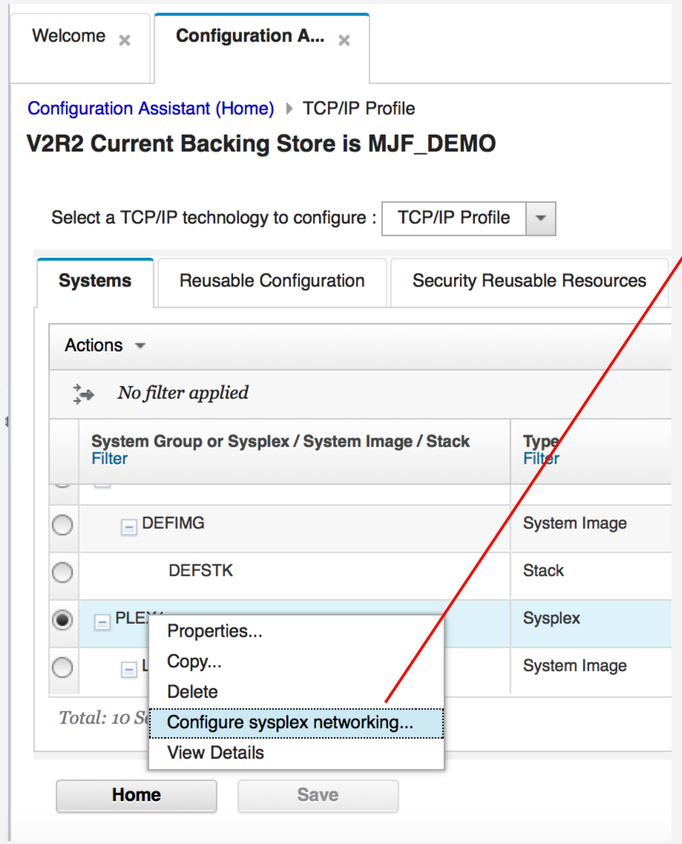

This is an example of one of many tables in this help panel that you can use to find where the resource you're looking for is located within the Network Configuration Assistant.

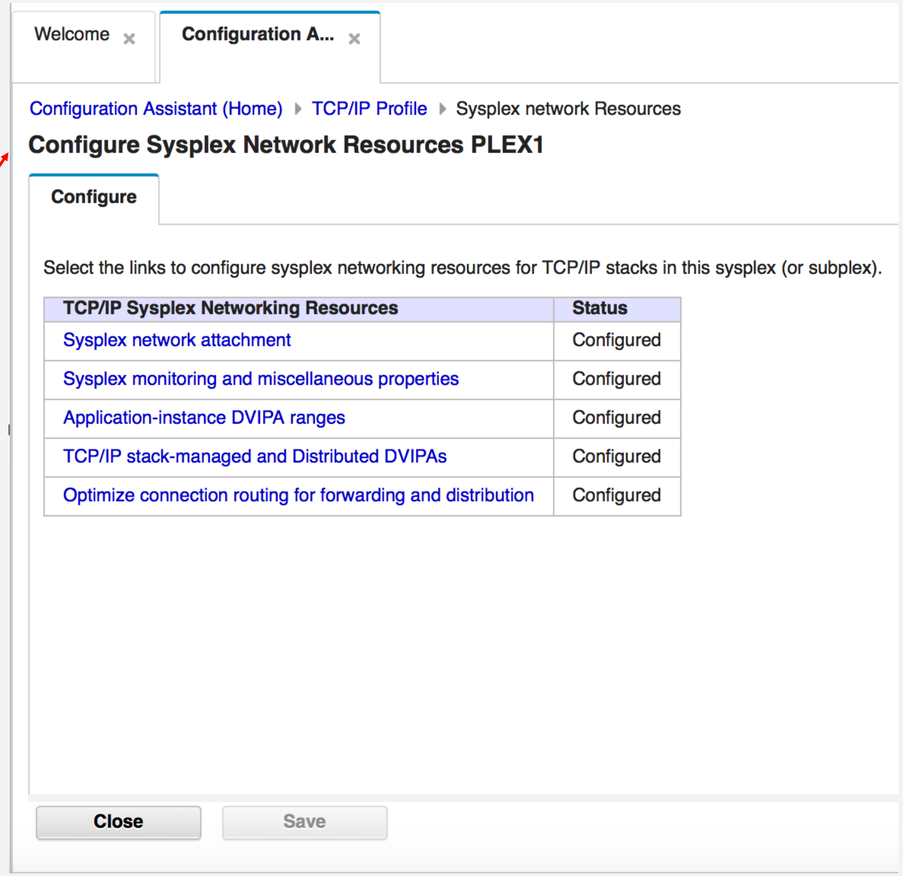
| | |
|---|---|
| | • Additional Settings link |

Table 2. Panel location for the GLOBALCONFIG statement

| Parameter | Panel location |
|---|---|
| AUTOIQDX | Global Interface Properties > Ensemble Settings |
| ECSALimit | Performance and Protocol > TCP/IP Storage tuning |
| EXPLICITBINDPORTRANGE | Source IP Addressing > Source IP Addressing Selection Rules |
| IQDMULTIWRITE | Performance and Protocol > Global network device |
| MAXRECS | Management and Traces > Additional Settings |
| MLSCHKTERMINATE | Security Advanced Settings |
| POOLIMIT | Performance and Protocol > TCP/IP Storage tuning |
| SEGMENTATIONOFFLOAD | N/A |
| SMCGLOBAL | Performance and Protocol > stack only |
| SMCR | Performance and Protocol > stack only |
| SYSPLEXMONITOR | Sysplex monitoring and miscellaneous properties (common and custom) > AUTOREJOIN, DELAYJOIN, MONINTERFACE, NOJOIN, RECOVERY, TIMERSECS |
| SYSPLEXWLMPOL | Sysplex monitoring and miscellaneous properties (common and custom) |
| TCPIPSTATISTICS | Management and Traces > Additional Settings |

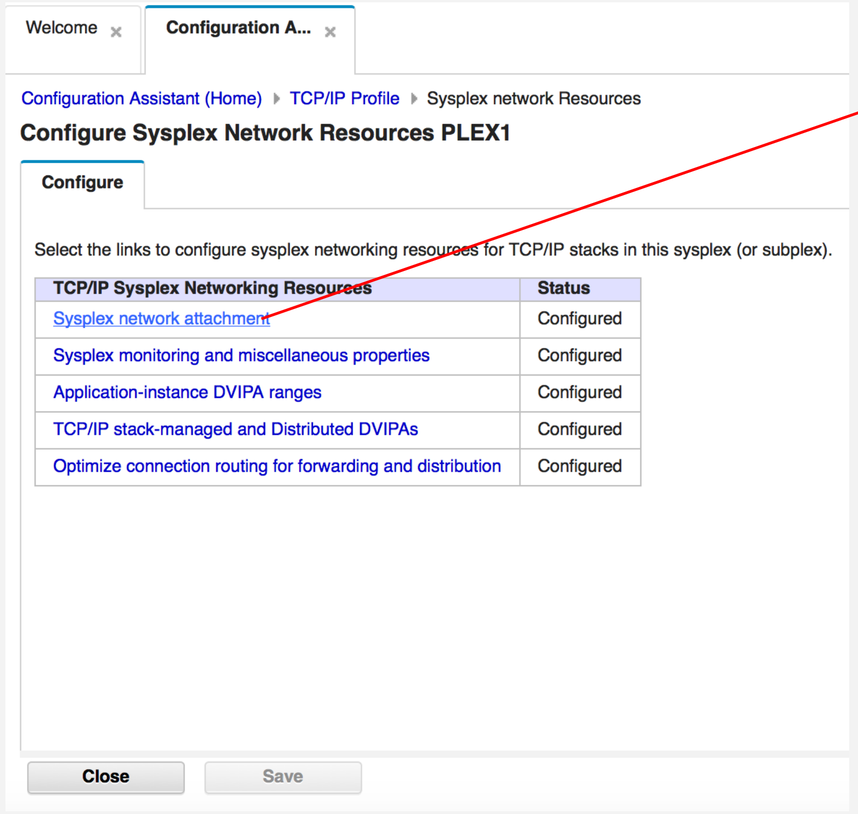
# Sysplex single-system representation

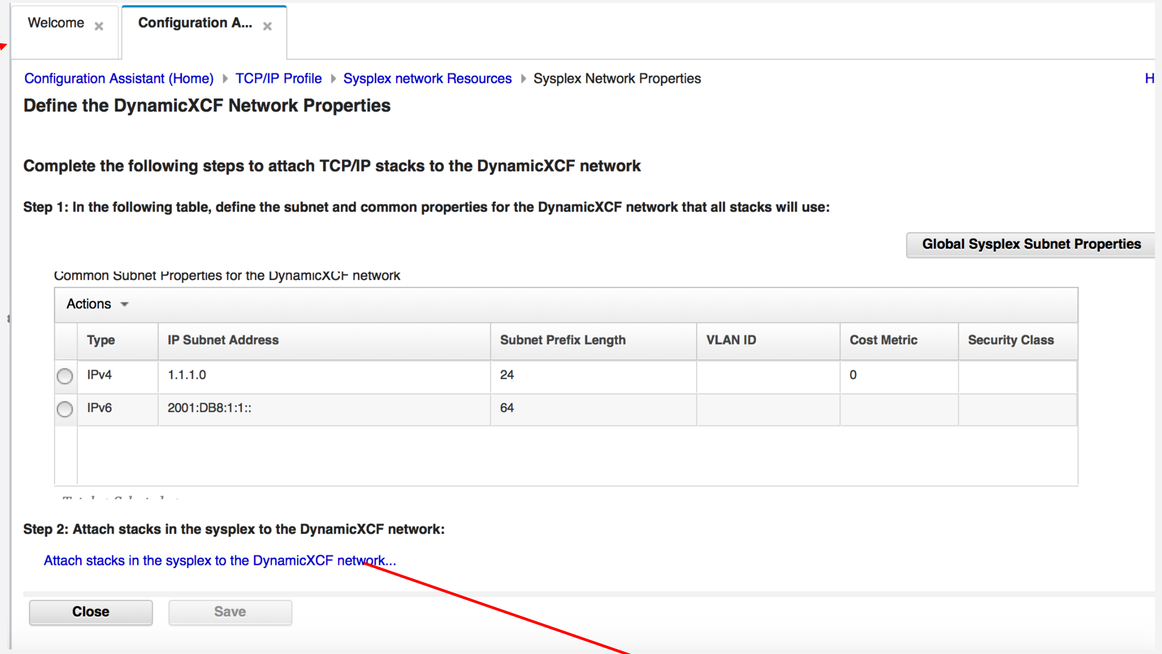



- Network Configuration Assistant implements the “single system image” concept of the z/OS sysplex
- Sysplex networking parameters are configured as one task for all stacks in the sysplex and Network Configuration Assistant pushes the necessary configuration to each stack
  - Simplifies the coordinated definition that’s required for flat file sysplex definition

# Sysplex example – Dynamic XCF network

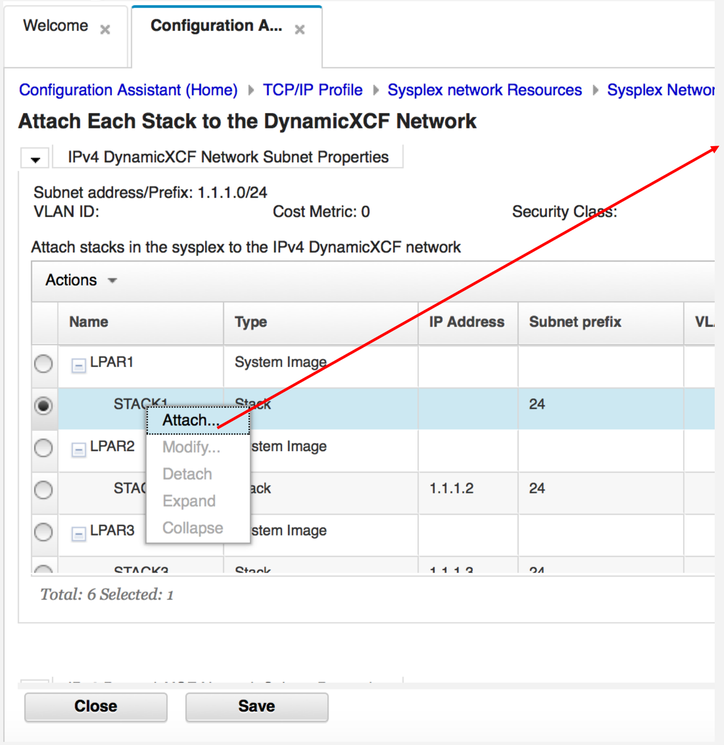


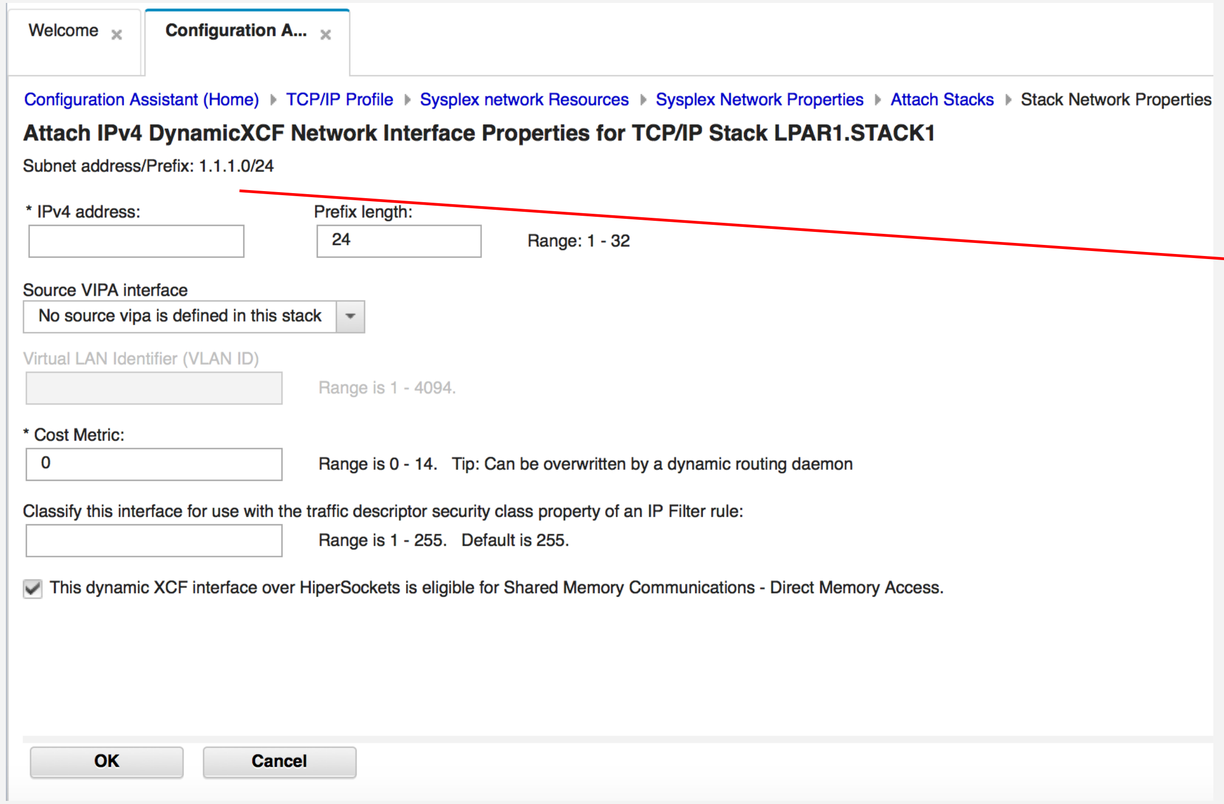




Next page

- First you define the Dynamic XCF subnet for the sysplex, using these panels
- Then you attach individual stacks to Dynamic XCF, on the next panel

# Dynamic XCF continued



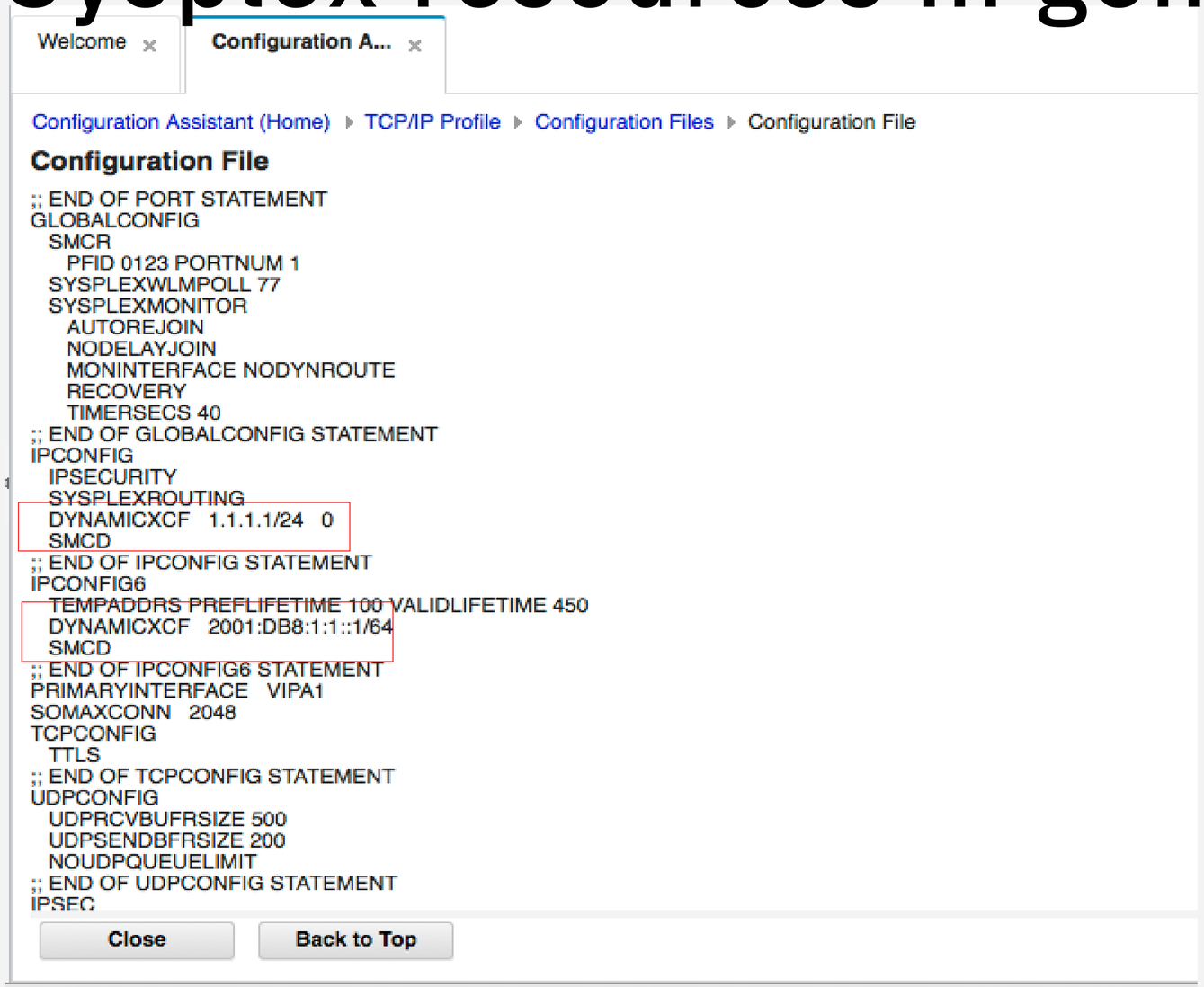

On this panel, NCA reminds you of the dynamic XCF subnet and warns you if your attachment address is outside that subnet.

- On this panel you attach a stack to the sysplex by specifying its Dynamic XCF IP address and any other Dynamic XCF characteristics
- Similar steps for IPv6 Dynamic XCF

# Dynamic XCF example continued

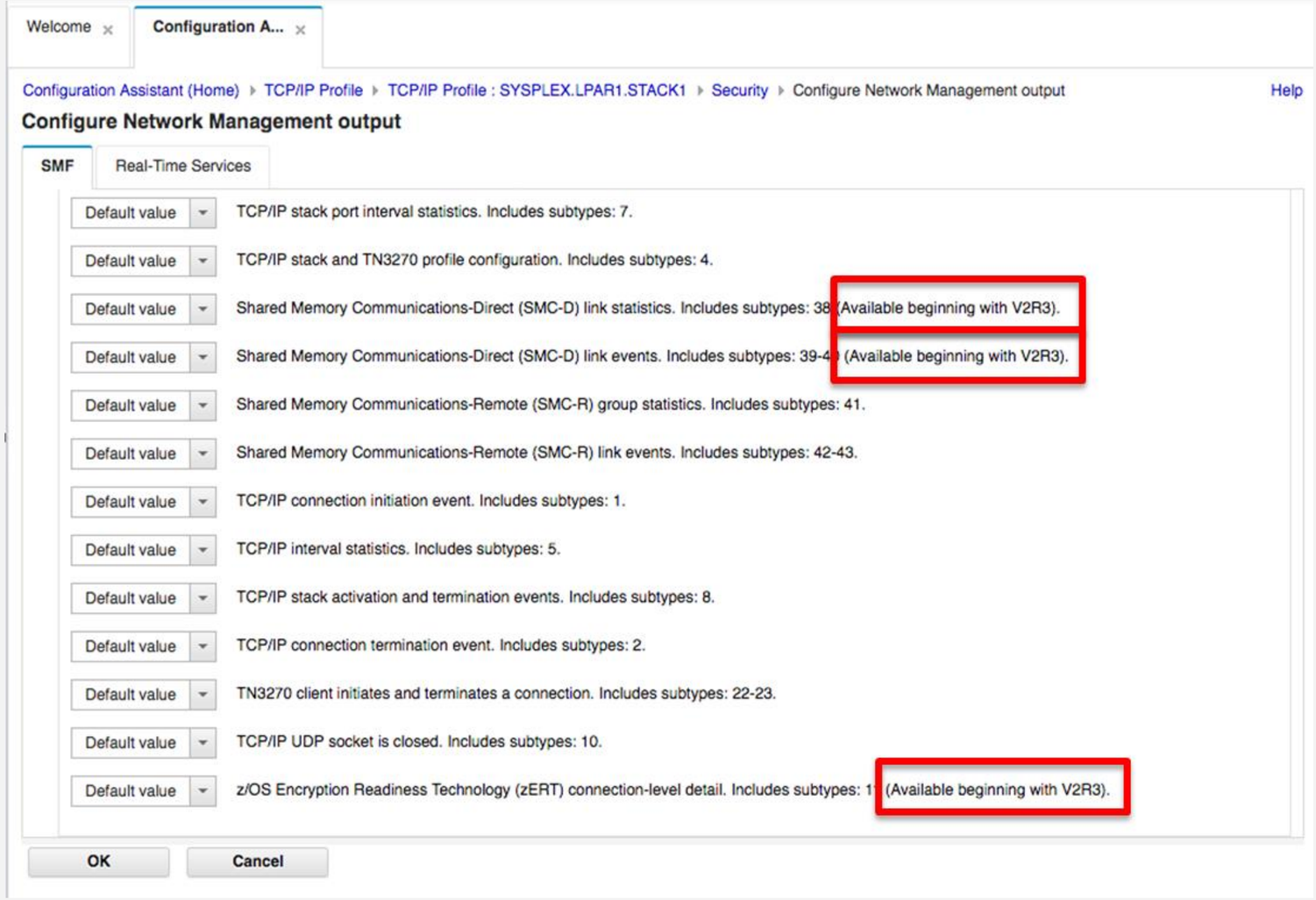
- Once all the stacks have been attached to the sysplex, Network Configuration Assistant pushes the correct DYNAMICXCF statement to each stack in the sysplex
  - Other sysplex resources such as Dynamic Distributed DVIPAs, VIPARANGE DVIPAs, and VIPAROUTE routing work similarly
- Since all the sysplex resources for a sysplex are configured in a central place, this reduces coordination between stack configurations and errors that can result from mis-coordination.

# Sysplex resources in generated configuration




This example shows the DYNAMICXCF statements created in the generated profile for STACK1 after it's been attached to the sysplex.

# TCP/IP profile multiple release considerations




There are always three releases of TCP/IP supported by Network Configuration Assistant: the current z/OS release and the previous two (n-2). V2R2 is the earliest release with TCP/IP profile support in NCA.

- Release-only parameters are noted on the panels but can still be configured for downlevel stacks.
  - However they will not generate configuration when installed for downlevel stacks
  - If you later change the release to the level that supports the parameters and reinstall, the parameters will then be generated

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