

# ServerWiz2 Overview

- Serverwiz2 is a hierarchically based XML editor that is targeted for representing a system topology.
- It has 3 primary concepts:
  - Instances
    - Node, card, connector, or chip
    - Chips can have units that specify subcomponents of that chip such as cores and bus interfaces
  - Busses/Connections
    - A connection between 2 units of 2 Instances
    - Connections are made at the level in the hierarchy where they exist in the real system
  - Attributes
    - Instances and Connections both have attributes
    - Attributes are variables that hostboot reads to direct the firmware

# Instance Creation

ServerWiz2 - C:\Users\IBM\_ADMIN\Documents\GitHub\ServerWizard2\ServerWizard2\xml\systems\demo.xml

**Add Instances** | **Add Busses**

Step 2: Select type of new instance.  
Only valid children will be visible

Instance Type:  Add Instance

Custom Name:  Delete Instance

Copy Node or Connector

Steps for adding a new instance  
1. Select parent instance in Instance Tree (sys-0 if just starting)  
2. Select new instance type in dropdown  
3. (Optional) Enter custom name  
4. Click "Add Instance"

Step 4: Click "Add Instance"

**Instances**

- sys-0
  - node-0
    - motherboard-0**
    - proc\_socket-0
    - membuf-0
    - bmc-0
    - vddr\_regulator-0
    - vddr\_enable-0
    - membuf\_vpd-0
    - dimmmconn-0
    - dimmmconn-1
    - pcieslot-0

Step 3 (optional): Enter custom name

Step 1: Select parent of new instance

Select Instance to view attributes

Attribute	Field	Value	Description
CLASS		CARD	Attribute indicating the target's class
LOCATION_CODE			Location Code
MODEL			Attribute indicating the target's model
POSITION		0	Position of target relative to node
TYPE		NA	Attribute indicating the target's type

New Open Save Save As... Import SDR Run Checks Force Update Exit

# Connection Creation

**1. Select Bus mode**

Select Bus: **NONE**

Select Card: **sys-0**

Delete Connection ☒ Show only busses of selected type

**Steps for adding a new connection:**

1. Select a bus type from dropdown
2. Select the card on which the bus is on from dropdown
3. Navigate to connection source in Instances Tree view on left
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

**2. Select Bus type**

**3. Select level in hierarchy**  
On which connection exists  
(more about this on next page)

**Instances**

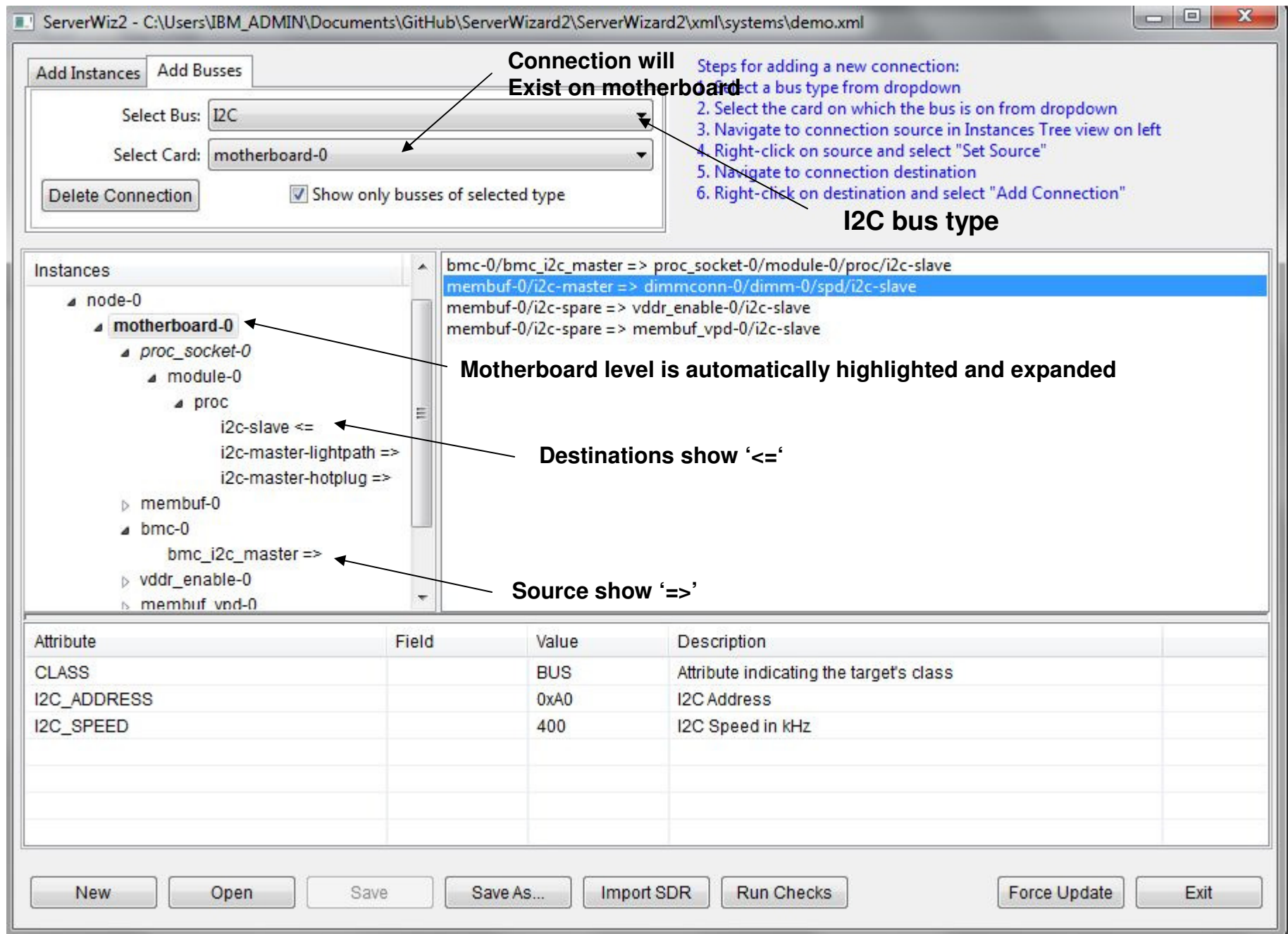
- sys-0
  - node-0
    - motherboard-0
      - proc\_socket-0
      - membuf-0
      - bmc-0
      - vddr\_regulator-0
      - vddr\_enable-0
      - membuf\_vpd-0
      - dimconn-0
      - dimconn-1
      - pcieslot-0

Attribute	Field	Value	Description
ADC_CHANNEL_FUNC_IDS		1,2,3,9,5,18,1...	ADC Channel function id. 16 channels.
ADC_CHANNEL_GAINS		27397,27397,...	ADC channel gain * 1000. 16 channels.
ADC_CHANNEL_GNDS		8,8,8,8,8,8,8...	ADC Channel ground. 16 channels.
ADC_CHANNEL_OFFSETS		0,0,0,0,0,0,0...	ADC channel offset * 1000. 16 channels
ALL_MCS_IN_INTERLEAVING_GROUP			System attribute. If all MCS chiplets are in an interle...
APSS_GPIO_PORT_MODES		0x0,0x3	APSS GPIO PORT MODES

New Open Save Save As... Import SDR Run Checks Force Update Exit

# Connection Hierarchy

- Connections must be created at highest common point in hierarchy or physically where wire exists. Here are some examples:
  - Simple single motherboard system
    - All connections are created at motherboard level so Selected Card = motherboard.
    - The motherboard is also obviously where the physical wires exist
  - System with memory riser cards
    - The DMI bus spans the motherboard and riser card
    - The motherboard level is selected because that is the highest common level in the hierarchy
  - Multi-node system with cables connecting nodes
    - System level is selected because that is highest common level in hierarchy





Add Instances

Add Busses

Select Bus: I2C

Select Card: motherboard-0

Delete Connection

☒ Show only busses of selected type

Steps for adding a new connection

1. Select a bus type from dropdown
2. Select the card on which the bus is located
3. Navigate to connection source
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

Instances

- node-0
  - motherboard-0
    - proc\_socket-0
      - module-0
        - proc
          - i2c-slave <=
          - i2c-master-lightpath =>
          - i2c-master-hotplug =>
        - membuf-0
        - bmc-0
          - bmc\_i2c\_master =>
        - vddr\_enable-0
        - membuf\_vpd-0

membuf-0/i2c-master => dimmconn-0/dimm-0/spd/i2c-slave

membuf-0/i2c-spare => vddr\_enable-0/i2c-slave

membuf-0/i2c-spare => membuf\_vpd-0/i2c-slave

To start a connection,  
Right click on source and  
select "Set Source"

Set Source

Select Card: motherboard-0

Delete Connection

☒ Show only busses of selected type

Steps for adding a new connection

1. Select a bus type from dropdown
2. Select the card on which the bus is located
3. Navigate to connection source
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

Instances

- node-0
  - motherboard-0
    - proc\_socket-0
      - module-0
        - proc
          - i2c-slave <=
          - i2c-master-lightpath =>
          - i2c-master-hotplug =>
        - membuf-0
        - bmc-0
          - bmc\_i2c\_master =>
        - vddr\_enable-0
        - membuf\_vpd-0

membuf-0/i2c-master => dimmconn-0/dimm-0/spd/i2c-slave

membuf-0/i2c-spare => vddr\_enable-0/i2c-slave

membuf-0/i2c-spare => membuf\_vpd-0/i2c-slave

To create connection,  
Right click on destination  
And select "Add Connection"

Add Connection

Add Cable

Select Card: motherboard-0

Delete Connection

☒ Show only busses of selected type

Steps for adding a new connection

1. Select a bus type from dropdown
2. Select the card on which the bus is located
3. Navigate to connection source
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

The screenshot displays a system configuration interface. On the left, a tree view under 'Instances' shows a hierarchy: sys-0 > node-0 > motherboard-0 > proc\_socket-0 > module-0 > proc > i2c-slave. The 'i2c-slave' node is selected, and its properties are shown on the right. The properties list includes 'i2c-master-lightpath =>' and 'i2c-master-hotplug =>'. Below these, a new connection is highlighted in blue: 'bmc-0/bmc\_i2c\_master => proc\_socket-0/module-0/proc/i2c-slave'. An arrow points from the text 'New Connection Shows here' to this highlighted line. At the bottom, a table lists attributes for the selected connection. The table has four columns: Attribute, Field, Value, and Description. The 'I2C\_SPEED' attribute is highlighted in blue, and an arrow points from the text 'Select connection to View attributes. For example, An I2C bus has an address and speed.' to this row.

Instances

- sys-0
  - node-0
    - motherboard-0
      - proc\_socket-0
        - module-0
          - proc
            - i2c-slave <=
            - i2c-master-lightpath =>
            - i2c-master-hotplug =>
            - membuf-0
            - bmc-0
              - bmc\_i2c\_master =>**
            - vddr\_enable-0

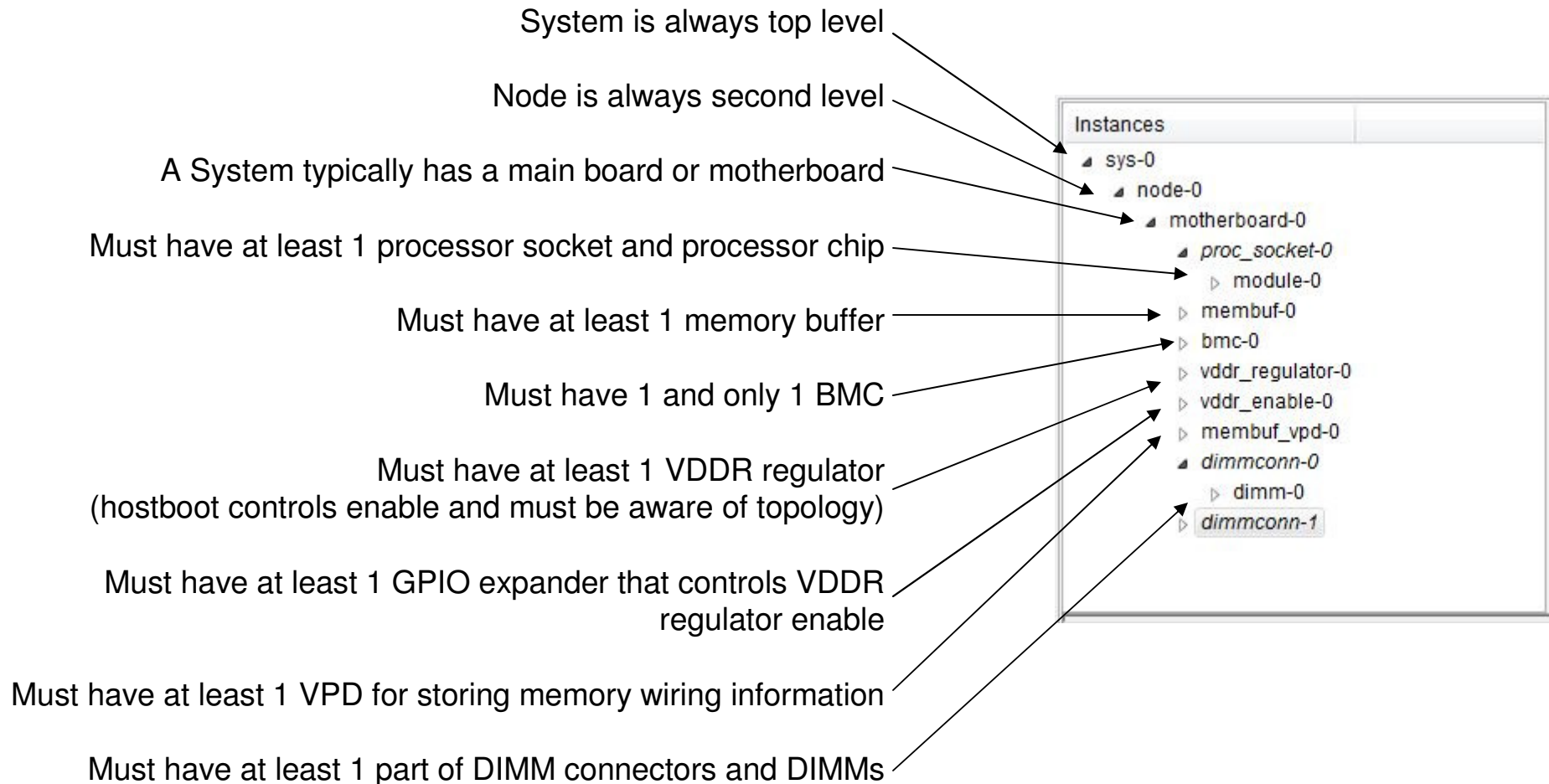
membuf-0/i2c-master => dimmconn-0/dimm-0/spd/i2c-slave  
membuf-0/i2c-spare => vddr\_enable-0/i2c-slave  
membuf-0/i2c-spare => membuf\_vpd-0/i2c-slave  
**bmc-0/bmc\_i2c\_master => proc\_socket-0/module-0/proc/i2c-slave**

**New Connection Shows here**

Attribute	Field	Value	Description
CLASS		BUS	Attribute indicating the target's class
I2C_ADDRESS		0xA0	I2C Address
<b>I2C_SPEED</b>		<b>400</b>	<b>I2C Speed in kHz</b>

Select connection to View attributes. For example, An I2C bus has an address and speed.

# Minimum System Requirements





# DMI

Add Instances
Add Busses

Select Bus:

DMI

Select Card:

motherboard-0

Delete Connection

☒ Show only busses of selected type

Instances

- ▲ sys-0
  - ▲ node-0
    - ▲ **motherboard-0**
      - ▲ proc\_socket-0
        - ▲ module-0
          - ▲ proc
 

mcs-0 (M0 DMI D) =>  
mcs-1 (M0 DMI C) =>  
mcs-4 (M1 DMI D) =>  
mcs-5 (M1 DMI C) =>
  - ▲ membuf-0
 

dmi <=

Steps for adding a new connection:

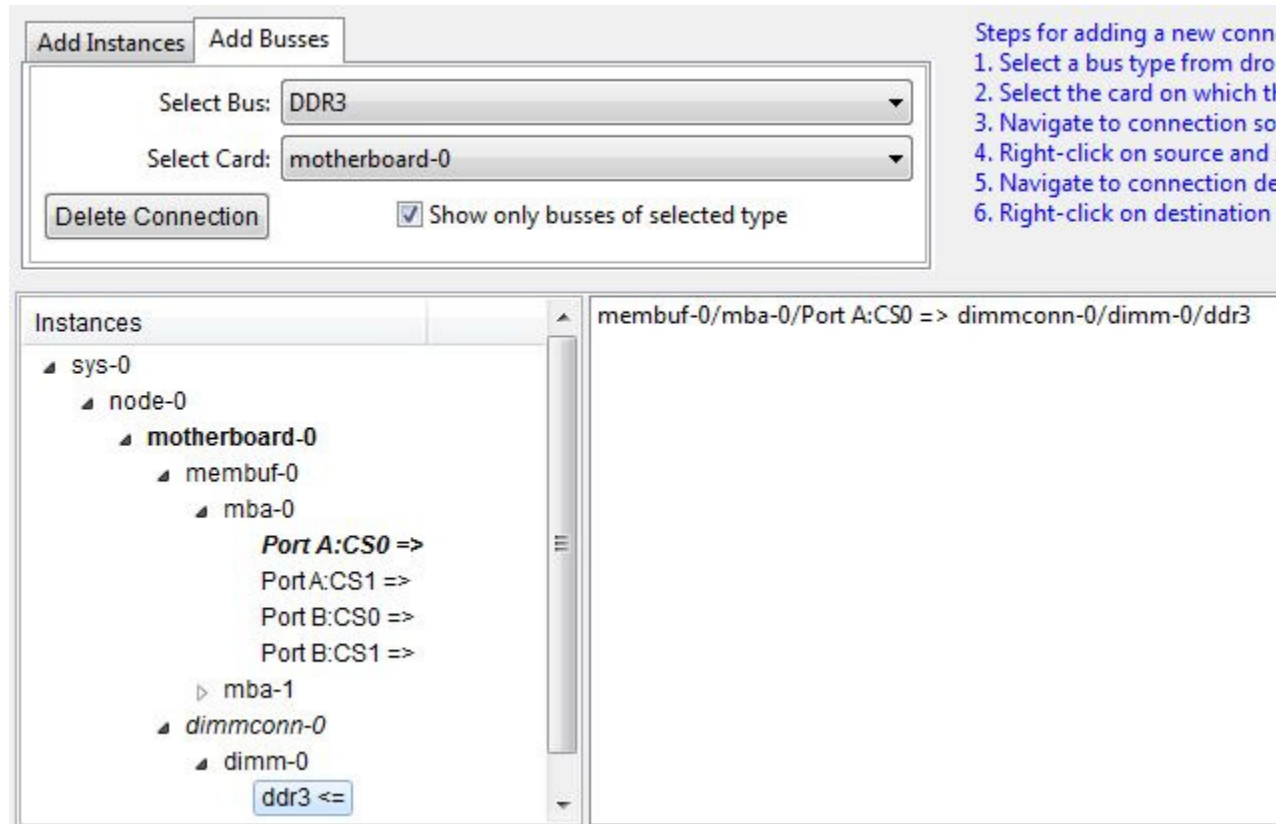
1. Select a bus type from dropdown
2. Select the card on which the bus is on from dropdown
3. Navigate to connection source in Instances Tree view on left
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

proc\_socket-0/module-0/proc/mcs-1 => membuf-0/dmi

Attribute	Field	Value	Description
CLASS		BUS	Attribute indicating the target's class
DMI_REFCLOCK_SWIZZLE			Defines Murano/Venice/Naples FSI GP8 refclock enable f...
MEMBUF_TX_MSBSWAP		0	Source: MRW: Downstream MSB Swap and Upstream MSB ...
PROC_TX_MSBSWAP		0	Source: MRW: Downstream MSB Swap and Upstream MSB ...

- Required Connections: All membuf's must have a DMI connection to a CPU
- The DMI name in the parenthesis match the schematic names
- If there is an lane reversal in the design, change the MSBSWAP attributes below to "1".

# DDR



- Required Connections: All DIMMs must be connected to a membuf
- The names for the DDR ports match schematic names. Make sure DIMM naming convention and connections match schematic. It will make the I2C connections more straightforward.

# I2C

**Add Instances**   **Add Busses**

Select Bus: I2C

Select Card: motherboard-0

Delete Connection   ☒ Show only busses of selected type

Steps for adding a new connection:

1. Select a bus type from dropdown
2. Select the card on which the bus is on from dropdown
3. Navigate to connection source in Instances Tree view on left
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

**Instances**

- ▲ *proc\_socket-0*
  - ▲ *module-0*
    - ▷ *proc*
  - ▲ *membuf-0*
    - i2c-master =>*
    - i2c-spare =>***
    - ▷ *bmc-0*
    - ▲ *vddr\_enable-0*
      - i2c-slave <=*
    - ▲ *membuf\_vpd-0*
      - i2c-slave <=*
    - ▲ *dimmmconn-0*
      - ▲ *dimmm-0*
        - ▲ *spd*

bmc-0/bmc\_i2c\_master => proc\_socket-0/module-0/proc/i2c-slave  
membuf-0/i2c-master => dimmmconn-0/dimm-0/spd/i2c-slave  
membuf-0/i2c-spare => vddr\_enable-0/i2c-slave  
**membuf-0/i2c-spare => membuf\_vpd-0/i2c-slave**

Attribute	Field	Value	Description
CLASS		BUS	Attribute indicating the target's class
I2C_ADDRESS		0xA0	I2C Address
I2C_SPEED		400	I2C Speed in kHz

- Required connections:
  - BMC to CPU I2C slave for OCC communication
  - Membuf I2C connections to DIMMs SPD
  - Membuf I2C connection to GPIO expander to VDDR enable
  - Membuf or CPU I2C connection to VPD
- For I2C busses, make sure I2C\_ADDRESS and I2C\_SPEED attributes match the design

# GPIO

Steps for adding a new connection:

1. Select a bus type from dropdown
2. Select the card on which the bus is on from dropdown
3. Navigate to connection source in Instances Tree
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

Instances

- node-0
  - motherboard-0
    - vddr\_regulator-0
      - vreg\_enable <=>
      - vreg\_pgood =>
    - vddr\_enable-0
      - io-0 (IO0) <=>
      - io-1 (IO1) <=>
      - io-2 (IO2) <=>
      - io-3 (IO3) <=>

vddr\_enable-0/io-0 => vddr\_regulator-0/vreg\_enable

- Required Connection: GPIO expander that controls the VDDR regulator enable. The GPIO port # from GPIO expander must match design.

# Power

Add Instances

Add Busses

Select Bus: POWER

Select Card: motherboard-0

Delete Connection

☒ Show only busses of selected type

Instances

▲ sys-0

▲ node-0

▲ motherboard-0

▲ membuf-0

vddr <=

▲ vddr\_regulator-0

vout =>

Steps for adding a new connection:

1. Select a bus type from dropdown

2. Select the card on which the bus is on for

3. Navigate to connection source in Instance

4. Right-click on source and select "Set Source"

5. Navigate to connection destination

6. Right-click on destination and select "Add Connection"

vddr\_regulator-0/vout => membuf-0/vddr

- Required Connections: VDDR regulator connection to membuf

# LPC Bus

Steps for adding a new connection

1. Select a bus type from dropdown
2. Select the card on which the bus
3. Navigate to connection source i
4. Right-click on source and select
5. Navigate to connection destinat
6. Right-click on destination and s

Instances

- sys-0
  - node-0
    - motherboard-0
      - proc\_socket-0
        - module-0
          - proc
            - lpc-slave <=
    - bmc-0
      - bmc\_lpc\_master =>

bmc-0/bmc\_lpc\_master => proc\_socket-0/module-0/proc/lpc-slave

- Required connection: The LPC bus connection between the BMC and one of the CPU's tells Hostboot which CPU is the master.



# Logical Association

Add Instances

Add Busses

Select Bus: LOGICAL\_ASSOCIATION

Select Card: motherboard-0

Delete Connection

☒ Show only busses of selected type

Steps for adding a new connection:

1. Select a bus type from dropdown
2. Select the card on which the bus is on from dropdown
3. Navigate to connection source in Instances Tree view on left
4. Right-click on source and select "Set Source"
5. Navigate to connection destination
6. Right-click on destination and select "Add Connection"

Instances

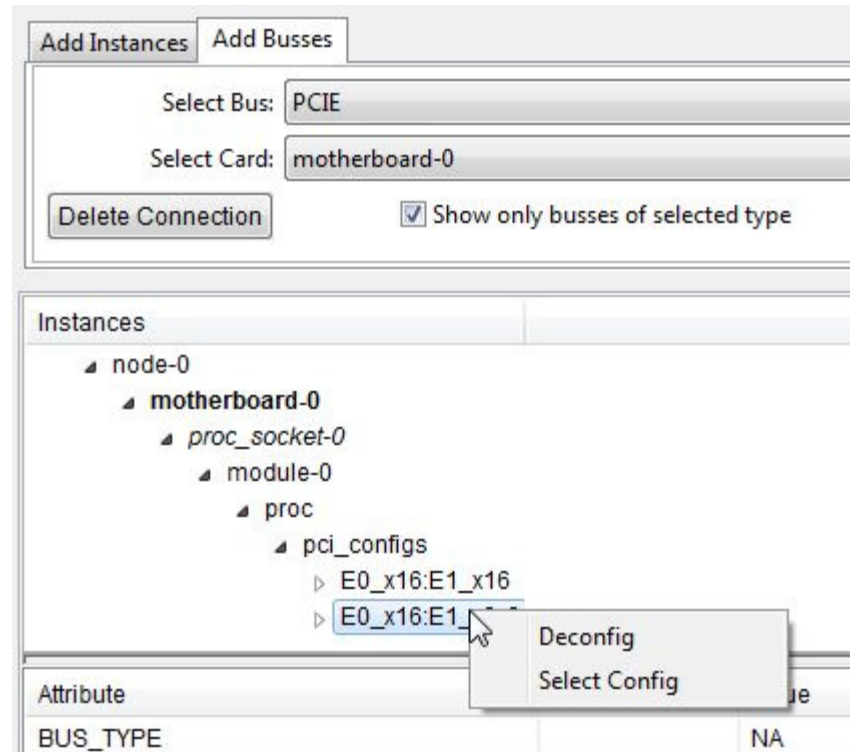
- sys-0
  - node-0
    - motherboard-0
      - proc\_socket-0
      - membuf-0
        - vpd\_assoc\_child <=
      - membuf\_vpd-0
        - vpd\_assoc\_parent =>

membuf\_vpd-0/vpd\_assoc\_parent => membuf-0/vpd\_assoc\_child

Attribute	Field	Value	Description
CLASS		BUS	Attribute indicating the target's class
ISDIMM_MBVPD_INDEX		0	Multiple centaurs can sometimes have their VPD locate...

- Required connections: VPD that contains membuf wiring information connection to membuf
- This is a virtual connection that tells hostboot where the VPD exists for each membuf. The VPD can alternatively be attached to the CPU I2C master
- This logical association concept could be extended to FRU LED associations

# PCIe



- The PCIe bus is unique in that it can be configured in several different ways. Under the “pci\_configs” parent, you will see the various configurations. To choose one, right-click and select “Select Config”. The other configurations will be hidden. To make all configurations visible, right-click and select “Deconfig”.

# PCIe

Add Instances

Add Busses

Select Bus: PCIe

Select Card: motherboard-0

Delete Connection

☒ Show only busses of selected type

Instances

motherboard-0

- proc\_socket-0
  - module-0
    - proc
      - pci\_configs
        - E0\_x16:E1\_x8x8
          - E0\_x16 =>
          - E1\_CLK0\_x8 =>
          - E1\_CLK1\_x8 =>
- pcieslot-0
  - pci\_card\_x16-0
    - pciep <=

proc\_socket-0/module-0/proc/pci\_configs/E0\_x16:E1\_x8x8/E0\_x16 => pcieslot-0/pci\_card\_x16-0/pciep

Steps for adding a new connection:

1. Select a bus type from dropdown

2. Select the card on which the bus is on from dropdown

3. Navigate to connection source in Instances Tree view on left

4. Right-click on source and select "Set Source"

5. Navigate to connection destination

6. Right-click on destination and select "Add Connection"

- Required Connections: None
- Here is an example where E0 is configured as a x16 and E1 is configured as 2 x8's.