**VME Interface**

**Avalon 16-bit Slave Interface**

|  |  |  |
| --- | --- | --- |
| **Byte Address Offset** | **Operation** | **Description** |
| 0x000 0000 - 0x0FF FFFF | Read/Write | A24 Address Space |
| 0x100 0000 - 0x100 FFFF | Read/Write | A16 Address Space |
| 0x0200 0000 | Read | VME Interrupt Vector\* |

**Avalon 32-bit Slave Interface**

|  |  |  |
| --- | --- | --- |
| **Byte Address Offset** | **Operation** | **Description** |
| 0x000 0000 – (2^(A32\_WIDTH+2)-1) | Read/Write | A32 Address Space |

**\*** Note: VME Interrupt is cleared when reading VME Interrupt Vector

The A24 and A16 addresses only access 128 16-bit words each for Cyclone IV test board. If the host accesses an address outside that range it will generate a bus timeout.

The design will generate one VME IRQ to the host.  The new design handles all VME IRQ levels 1-7.  The PCOAB design only handled IRQ3 and IRQ6.  The BUS\_ERROR\_ALERT will generate a VME IRQ level 6.  The board itself will provide two vectors: 0xFE for the BUS\_ERROR\_ALERT and 0xFF for spurious interrupts. These vectors are the same as the PCOAB. 

The design will handle the VME IRQ level priority.  If VME IRQ level 3 and 6 come in at the same time the design will select the level 6 interrupt and generate the one IRQ to the host.  When the host reads location 0x0600\_0000 (actual host address) the design will return either 0xFE or 0xFF. The host reading of location 0x0600\_0000 will automatically reset the VME IRQ.  A new VME IRQ to the host will be issued for the VME IRQ level 3 interrupt.  When the host reads location 0x0600\_0000 the design will provide the associated interrupt vector[7:0] in the read data.  The VME IRQ to the host will also be cleared.

As you can see there is only one location associated with the VME IRQ levels 1-7.  The design handles the level priority and provides the associated vector.  Location 0x0600\_0000 is only used to respond to VME interrupts.  The host does not know what the level was only the vector associated with the interrupt.  Since the vectors are all unique that is all the host needs to know.

Location 0x0600\_0000 is a 16-bit value which is the same as the VME A16 and A24 address spaces.  The 8-bit vector is provided in the lower byte (vme\_db[7:0]).  Same as PCOAB.

A32 Avalon-MM window is offset by A32\_OFFSET 4-byte words on VME bus. BIG\_ENDIAN enables automatic endian conversion from Avalon-MM to VME.