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| NetSpeed Register Address Map Proposal |

# Overview

The default release of NocStudio implements a “Node based” address map of NoC elements, with space reserved for the maximum number of nodes (256), the maximum number of layers (8), with a maximum of noc elements per node (32), each with an 8kB space. While this has some nice properties for decoding simplicity, the NoC space allocated is fixed to 256 nodes x 256kB = 64MB, which when future proofed to 8192 nodes expands to 2GB.

Customer feedback has indicated that this is over-large and needs to be shrunk. Another drawback of the node based addressing scheme is that depending on the floorplan, positions of routers on given nodes etc, different portions of the NoC space might be used, thereby requiring the entire space to be reserved though only a portion might be in use for a given configuration.

A new scheme for Regbus address space is detailed in this document. This scheme moves away from node based addressing, to a more traditional addressing scheme. Salient features :

* NoC space is now compressed, and not sparse, resulting in a smaller reserved footprint.
* User control is available to reserve the address range to be allocated for NoC elements, and NocStudio will operate within that space when possible, and indicate an error if the range is insufficient.
  + NoC elements must all be present in a contiguous address block
* NoC elements may be bridges and routers, and also other NetSpeed agents such as Coherency IP blocks, and the Tunnel block that will allow Regbus access from primary layer host bridges. Other such NetSpeed IP blocks may be added in the future.
* Users may also configure Host registers through Regbus. These ranges do not have to be contiguous, but must be situated within the 4GB Regbus addressable space.

# Address Map



* Max 4GB regbus addressable space
* Contiguous and compressed NoC space with a User Programmable base address
  + Pre-allocated space for User specified host bridges using the “N” value
  + Pre-allocated space for NocStudio generated agents, agent bridges and routers by using the User estimated “M” value.
  + Future plan is to reduce per element address space from 8KB; routers and ringmasters will likely drop to 1-2kB.
* User space for host configuration registers
  + User defined range using lo-hi
  + Does not have to be contiguous
  + Must fit within Regbus addressable 4GB space.

Document Changes/Revisions

*Documentation Changes* include additions, deletions, and modifications made to this document. This section identifies the changes made in each release of the document.

Document Revision A

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