48 bit Node-IDs (NIDs) and 64-bit Events FAQ

Why have you chosen such large node-ids and events?

In order to prevent conflicts and confusion, node-ids and events must to be globally unique, even in the face of absent nodes during configuration. The easiest way to do this is by having a large enough id-space that global uniqueness can be assured easily. This allows disparate clubs to meet and combine their modules without conflicting NIDs or Events.

Are there any other advantages of large node-ids and events?

Yes, in addition to the above, large NIDs and Events allow easier integration of legacy systems. These systems' id and event-equivalents can be used to construct globally unique NIDs and Events. For example, Loconet turnout commands can be used to construct unique Events by pre-pending the Loconet-NMRAnet gateway's NID to the command number.

Why not chose shorter ids and events?

While shorter ids and events are attractive in the short term, they introduce intractable problems, such as limiting interconnectivity of nodes which have been configured separately, difficulties in guaranteeing global uniqueness and difficulty in routing.

Why not intermix short and long ids and events and let users chose which they want to use?

This would cause confusion between the two standards and add complexity to achieve interconnectivity between the two. It is much simpler to maintain one standaed throughout. However, for the CAN implementation of NMRAnet, we have defined NID aliases which are 16-bits to compensate for CAN's short packet length.

These take up a large amount of space, how can small nodes afford this?

This appears that this is space inefficient -- however, a large id-space solves a lot of problems that are difficult to solve with a smaller space, and will likely reduce the overall size of the system code. Simple nodes should have simple needs for Events and actions, and should be able to handle large NIDs and Events. In addition, technology advances will quickly mitigate the lack of space in microprocessors. Moore's Law suggests that microprocessor ability doubles every two years, therefore four years from now microprocessors will handle 64-bit events as easily as 16-bit events are handled today. Already microprocessors such as ARM7 have 128k flash, 34k RAM, Ethernet, and Can for $7/100.

How are these 'unique' ids and events assigned?

There are several ways to assign a unique NID to a node, for example: (1) A manufacturer can assign a unique NID from the list assigned to it by the NMRA; (2) A club can assign a NID from its list of assigned numbers; (3) A club member can assign a NID from his/her list assigned by the club; (4) A user can assign an NID assign to him/her by an automated NID-assignation website. Similarly, an event can be assigned in several ways, for example: (1) A node can pre-pend its NID to a 16-bit event number; (2) A user can assign a NID from his/her list; (3) Software can assign a unique event by constructive-methods.