IPv6 address formats

The IPv6 address size is 128 bits. The preferred IPv6 address representation is: `xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx` where each `x` is a hexadecimal digit representing 4 bits. IPv6 addresses range from `0000:0000:0000:0000:0000:0000:0000:0000` to `ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff`.

In addition to this preferred format, IPv6 addresses may be specified in two other shortened formats:

- **Omit leading zeros**
  Specify IPv6 addresses by omitting leading zeros. For example, IPv6 address `1050:0000:0000:0000:0005:0600:300c:326b` may be written as `1050:0:0:0:5:600:300c:326b`.
- **Double colon**
  Specify IPv6 addresses by using double colons (`::`) in place of a series of zeros. For example, IPv6 address `ff06:0:0:0:0:0:0:c3` may be written as `ff06::c3`. Double colons may be used only once in an IP address.

An alternative format for IPv6 addresses combines the colon and dotted notation, so the IPv4 address may be embedded in the IPv6 address. Hexadecimal values are specified for the left-most 96 bits, and decimal values are specified for the right-most 32 bits indicating the embedded IPv4 address. This format ensures compatibility between IPv6 nodes and IPv4 nodes when you are working in a mixed network environment.

These two types of IPv6 addresses use this alternative format:

- **IPv4–mapped IPv6 address**
  This type of address is used to represent IPv4 nodes as IPv6 addresses. It allows IPv6 applications to communicate directly with IPv4 applications. For example, `0:0:0:0:0:ffff:192.1.56.10` and `::ffff:192.1.56.10/96` (shortened format).
- **IPv4–compatible IPv6 address**
  This type of address is used for tunneling. It allows IPv6 nodes to communicate across an IPv4 infrastructure. For example, `0:0:0:0:0:0:192.1.56.10` and `::192.1.56.10/96` (shortened format).

All of these formats are valid IPv6 address formats. Specify any one of these IPv6 address formats in iSeries™ Navigator.