



# IPv4 to IPv6 Bridging

On 13th May 2012, Network Box NBRS-5.0 achieved IPv6 Ready Certification - based on the latest Phase-2 4.0.6 test specification. Our IPv6 Ready ID number is **02-C-000779**, and you can find details of this at the [www.ipv6ready.org](http://www.ipv6ready.org) website. The Network Box IPv4 to IPv6 Bridging engine is designed to assist our customers with their migration to IPv6, not merely to act as an IPv6 device on the network. It is now IPv6 Ready certified to the Phase 2 criteria for the Core Protocols test specification.

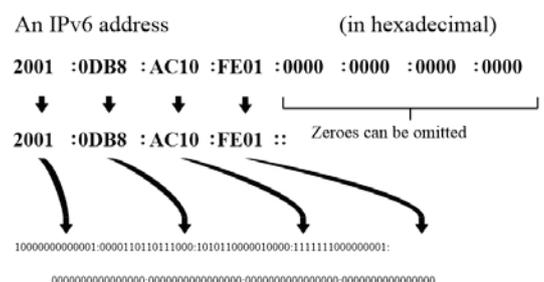
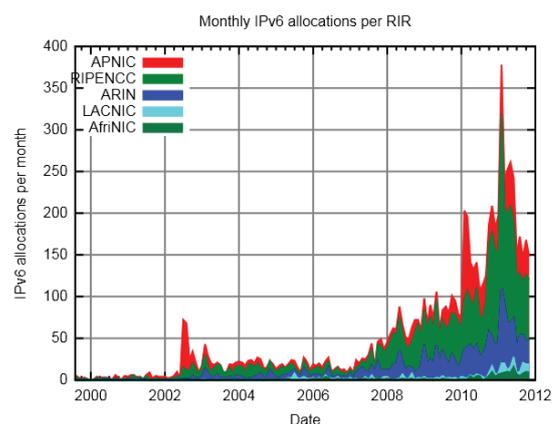
## Background

Many have been predicting the imminent death of today's Internet Protocol IPv4 for more than twenty years now, but somehow it keeps going on and on. It had its last 'reprieve' with extensive deployment of source NAT technology and RFC 1918 private addresses (10/8, 172.16/12 and 192.168/16). But, with last year's distribution of the final five /8 network blocks to the regional Internet registries (RIRs), IANA's exhaustion on 31 January 2011, and the RIR APNIC's exhaustion on 15 April 2011, it finally looks like the sun is setting on IPv4. The remaining RIRs are expected to deplete their pools within a few years.

So, "what is the big deal?", we hear people say - "All modern devices have IPv6 support". Well, the most pressing problem is a lack of experience and testing. IPv4 has had decades of real world experience. With billions of devices talking the protocol, most interoperability problems were resolved early on and any incompatibilities were relatively easy to see. This is not the case with IPv6.

Now, today we have a very large number of devices taking the dualstack approach, running their IPv4 network stacks alongside IPv6 stacks. The difference being that the IPv6 stack has had little to no testing. The IPv6 protocol itself is also significantly more complicated than its IPv4 predecessor. So, even though your Internet-connected toaster may have both IPv4 and IPv6 support, you can be vastly more confident that the IPv4 will work, when compared to IPv6.

Add on the problems of inter-operability between the two stacks (including the decision that must be made as to which stack should be used for a particular network connection), and you can start to see the problem.



## The Network Box Approach

While most of our competitors have basic support for IPv6, using a dual-stack approach it has only limited higher-level proxy support for the protocol.

Network Box takes this further, offering full native support for both IPv4 and IPv6 protocols at all levels. In addition, our engine supports translation services to assist with the co-existence and migration between these two protocols. Using router-level technologies, combined with high-level proxies and services, Network Box supports bi-directional translation between IPv4 and IPv6. This means that a customer with an internal IPv4-only environment can use his Network Box to accept both IPv4 and IPv6 traffic and translate it to the IPv4 infrastructure.

The goal of supporting IPv6 has guided many of the design and implementation decisions for Network Box, in particular the design and implementation of the system-wide configuration middleware components. From the point of view of Network Box, IPv6 is a first class citizen, recognised and supported to the same extent as the traditional IPv4.

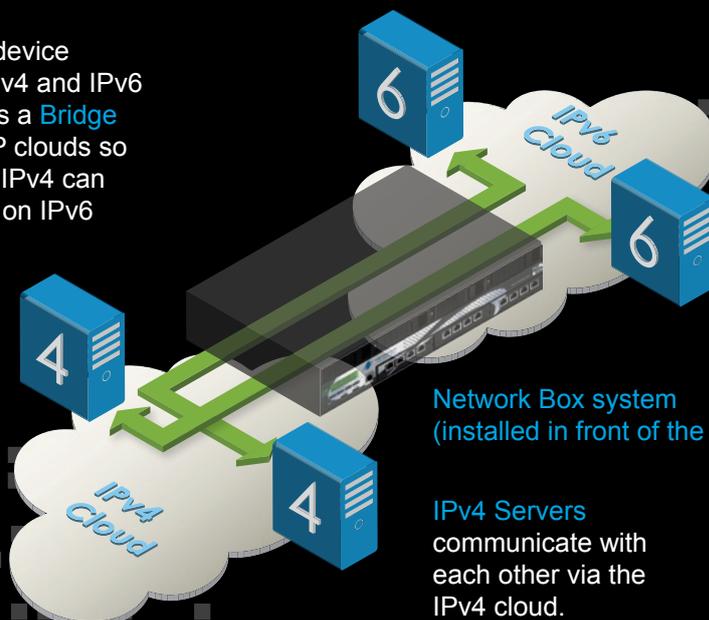
### Features

Certified to globally recognized IPv6 Ready Core Phase-2 Protocol standard

Automatic dual-stack interception mechanism combined with outgoing protocol translation

IPv6 Border Gateway Protocol offered as a service for customers

The Network Box device recognizes both IPv4 and IPv6 protocols. It acts as a **Bridge** between the two IP clouds so that computers on IPv4 can access computers on IPv6 and vice versa.

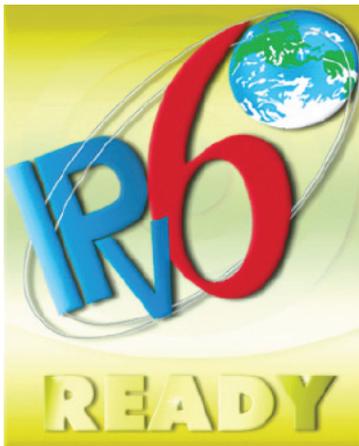


IPv6 Servers communicate with each other via the IPv6 cloud.

Network Box system (installed in front of the servers)

IPv4 Servers communicate with each other via the IPv4 cloud.

## IPv6 Ready



Beyond the success of support for IPv6 in the middleware layer, Network Box has realised the need to meaningfully demonstrate the correctness and compliance of IPv6 support at the lower network layers.

IPv6 Ready is an internationally recognised certification that is awarded to vendor products after they undergo a comprehensive set of tests that measure the compliance of the products IPv6 networking stack against formats, features and behaviours defined in the official IPv6 internet standards. It is the closest thing to guaranteeing inter-operability that we have today.



Network Box has spent significant time and effort fine tuning the implementation and configuration of the Network Box IPv6 networking layer, and succeeded in passing the IPv6 evaluations.

In addition, Network Box's security platform (Network Box 5) is the first Hong Kong developed product to achieve IPv6 Ready certification, and possibly the first product in the world to do so with the most up to date version of the test specification as of the end of 2011.

Section 1: RFC 2460 - IPv6 Specification	Section 2: RFC 4861 - Neighbor Discovery for IPv6	Section 3: RFC 4862 - IPv6 Stateless Address Autoconfiguration	Section 4: RFC 1981 - Path MTU Discovery for IPv6	Section 5: RFC 4443 - ICMPv6
Tool Version : REL_3_3_2 Test Program Version : VILC_5_0_0 Start : 2012/01/23 14:23:02 End : 2012/01/23 14:56:42	Tool Version : REL_3_3_2 Test Program Version : VILC_5_0_0 Start : 2012/01/23 14:56:46 End : 2012/01/23 16:56:11	Tool Version : REL_3_3_2 Test Program Version : VILC_5_0_0 Start : 2012/01/23 16:56:14 End : 2012/01/23 21:52:35	Tool Version : REL_3_3_2 Test Program Version : VILC_5_0_0 Start : 2012/01/23 21:52:37 End : 2012/01/23 22:15:17	Tool Version : REL_3_3_2 Test Program Version : VILC_5_0_0 Start : 2012/01/23 22:15:19 End : 2012/01/23 22:30:55
<b>Test Results</b> TOTAL : 54 PASS : 53 FAIL : 0 WARN : 0 SKIP : 0 N/A : 1	<b>Test Results</b> TOTAL : 236 PASS : 236 FAIL : 0 WARN : 0 SKIP : 0 N/A : 0	<b>Test Results</b> TOTAL : 45 PASS : 45 FAIL : 0 WARN : 0 SKIP : 0 N/A : 0	<b>Test Results</b> TOTAL : 16 PASS : 15 FAIL : 0 WARN : 0 SKIP : 0 N/A : 1	<b>Test Results</b> TOTAL : 25 PASS : 24 FAIL : 0 WARN : 0 SKIP : 0 N/A : 1