

# NATIVE IPV6 FOR ADSL CUSTOMERS

OR:  
CHALLENGES IN NATIVE IPV6 WITHOUT TUNNELLING

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Internode



Tuesday, 8 December 2009



## ITS (STILL) ALL ABOUT ADDRESS SPACE

(ALL ELSE CAN BE PATCHED INTO IPV4,  
AND ITS NOT ABOUT CONTENT)

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**IF WE GET  
THIS RIGHT,  
NOBODY  
NOTICES!**



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**IN 2008, I SAID:**

**“PLANNED FOR 2009:  
NATIVE IPV6 OVER PPP  
(AUTOMATIC DUAL STACK)”**

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DID WE GET THERE?

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DID WE GET THERE?

YES!

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## News & Media



**Internode has invited customers to participate in an Australia-first technical trial of IPv6, running natively on its national ADSL broadband network.**

**Australia-first native ADSL IPv6 access trial**

**06-11-2009**

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## WHAT HAVE WE DONE?

**NATIVE DUAL-STACK OVER PPP (v6+v4)**

**AVAILABLE FOR ALL INTERNODE ADSL LINES**

**ITS A TRIAL - BUT ITS REAL, AND IT WORKS**

**NO USER CONFIGURATION KNOBS**

**(THATS THE WHOLE POINT!)**

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# BEATING THE CHICKEN AND EGG PROBLEM

KEY REASON TO DEPLOY @ INTERNODE:  
CREATE LEVERAGE WITH VENDORS  
(TO FIX THEIR MANY REMAINING GAPS)

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## ROUGH EDGES REMAIN

SHORTAGE OF BEST PRACTICE CONSENSUS  
ALLOCATION APPROACH DEBATES  
AMBIGUITY IN CONFIGURATION SETTINGS  
(STILL) VENDOR BUGS ALL OVER THE PLACE!

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# MOVING FROM TRIAL TO FULL PRODUCTION

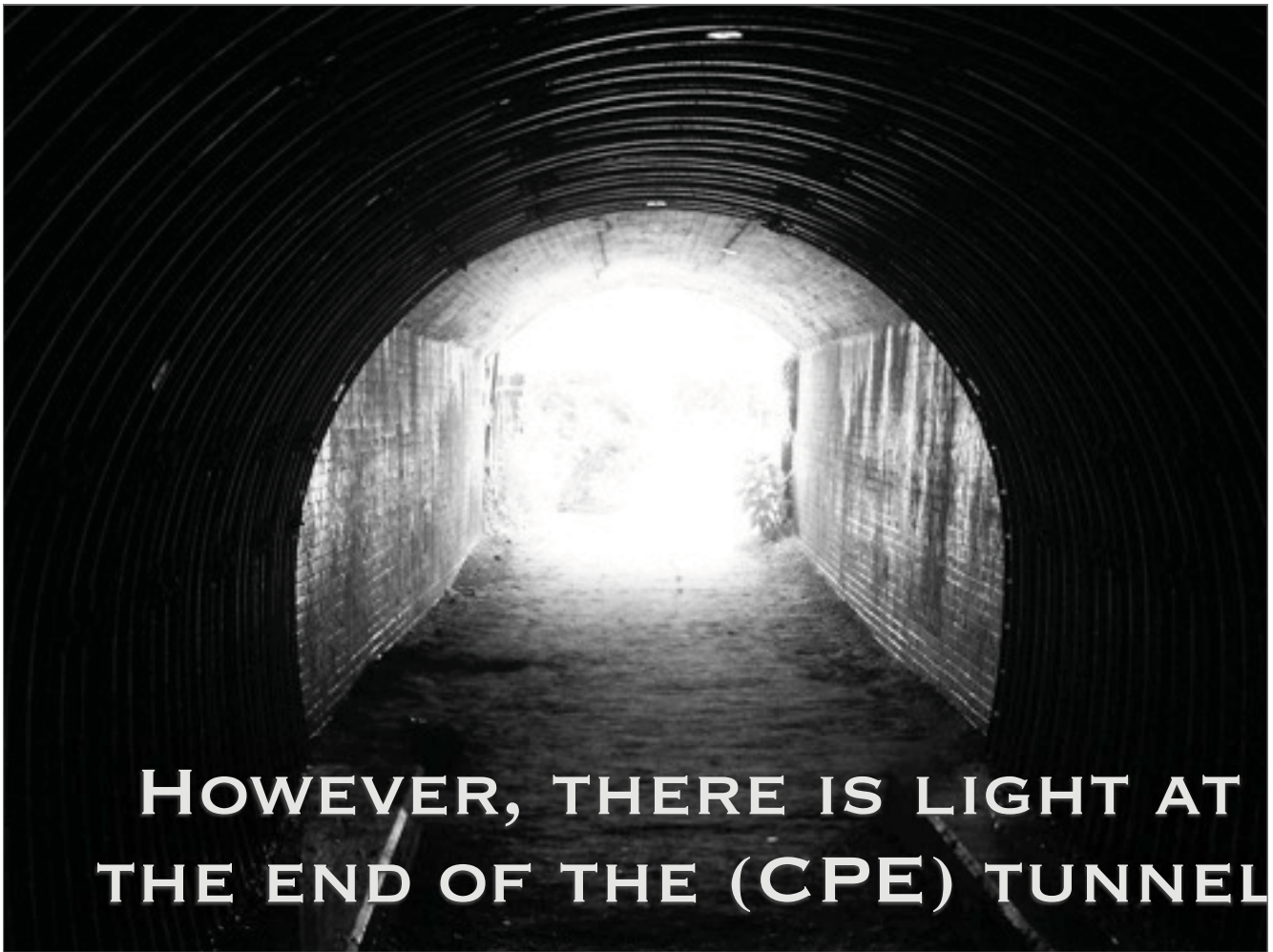
FULL BILLING SUPPORT IN OUR SYSTEMS  
FLEXIBLE + AUTOMATED IPV6 ALLOCATOR  
FULL MEASUREMENT/CONTROL IN ROUTERS  
DHCPV6 STILL NOT QUITE 'THERE YET'  
COMMERCIAL LEVERAGE STILL BUILDING  
(ROUTER VENDORS STILL TARDY, CLAIMING  
NO BUSINESS CASE TO FIX THINGS - STILL)

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CONSUMER  
CPE REMAINS  
THE KEY  
BOTTLENECK



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**HOWEVER, THERE IS LIGHT AT  
THE END OF THE (CPE) TUNNEL**

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**MEANWHILE...**

**... BACK AT THE COALFACE**

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# IS THE (IPV4) WORLD REALLY GOING TO END?

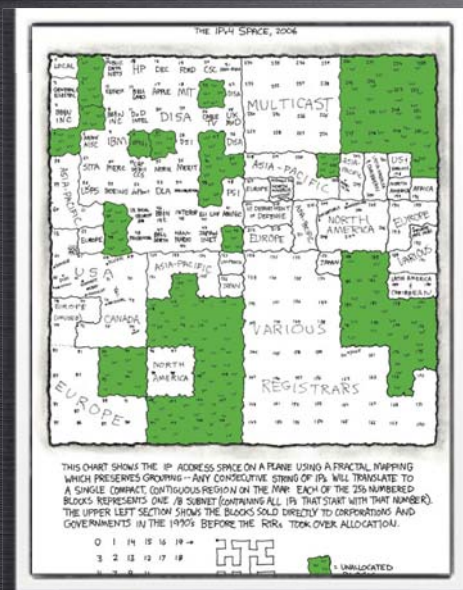
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SOURCE:  
XKCD, 2006

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MUCH OF THIS SPACE CAN BE RECLAIMED

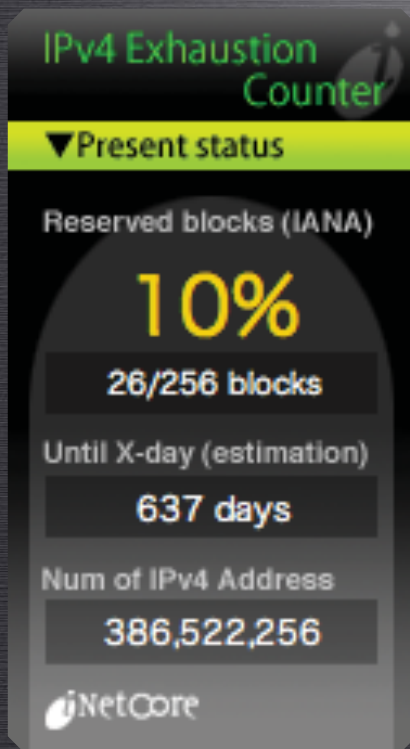
INCLUDING:  
 MASSIVE CLASS A'S  
 IP MULTICAST SPACE  
 +  
 V4 RANGES WILL BE  
 TRADED ONCE 'EXHAUSTED'

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DOOMSDAY  
 COUNTER  
 17 Nov 2008  
 (AT THE 2008  
 IPv6 SUMMIT)

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7TH DEC 2009

386 REAL  
DAYS LATER

“X-DAY” IS  
ONLY 169  
DAYS NEARER

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AND:

“THE NATS  
ARE GETTING  
BIGGER...”

(LARGEST ISPs ARE DEMANDING IT)

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THERE IS STILL NO  
COMPELLING DIRECT  
BUSINESS CASE FOR AN  
ISP TO DEPLOY IPV6

NO DIRECT EXTRA INCOME  
+  
NO CURRENT EMERGENCY

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HOW CAN AN ISP  
JUSTIFY DEPLOYING IPV6 ?

OTHER THAN FOR 'FIRST MOVER ADVANTAGE':  
TOO LATE, INTERNODE ALREADY DID IT :)

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# PASCAL'S WAGER



Blaise Pascal : 1623-1662

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# PASCAL'S WAGER



Blaise Pascal : 1623-1662

WHETHER TO BELIEVE IN GOD?

COMPARED UPSIDE VS DOWNSIDE RISK

$S/GOD/IPV6;$

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# PASCAL'S IPV6 WAGER



Blaise Pascal : 1623-1662

LET US WEIGH THE GAIN AND THE LOSS  
IN WAGERING THAT IPV6 WINS (...)  
IF YOU GAIN, YOU GAIN ALL;  
IF YOU LOSE, YOU LOSE NOTHING.  
WAGER, THEN, WITHOUT HESITATION  
THAT IPV6 WINS.

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IT TAKES A LONG TIME TO GET THE HANG  
OF DEPLOYING IPV6  
(DEVIL IS IN THE DETAIL)

REAL WORLD COSTS TO DO IT ARE (NOW)  
MOSTLY STAFF TIME, NOT HARDWARE

THERE IS NO REAL DOWNSIDE,  
AND YOUR GEEKS WILL LOVE YOU FOR IT

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# THE CONCLUSION:

ISP'S (AND BUSINESSES) SHOULD  
DEPLOY IT - NOW

(EVEN IF GEOFF HUSTON TURNS OUT TO BE RIGHT)

THERE IS LITTLE TO LOSE,  
AND YOU'LL BE A HERO IF GEOFF IS WRONG

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[HTTP://IPV6.INTERNODE.ON.NET](http://ipv6.internode.on.net)

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