

IP V6
HFTTT!

MEANWHILE AT CERN

ALL THESE SYSTEMS NEED TO BE RE-ADDRESSED!?

SHOCKING STORY!
AND ADDRESSES FOR ALL
UNBELIEVABLE!

APPROVED BY THE COMICS CODE AUTHORITY

LAUNCH INTO THE FUTURE 08.08.12

OS A&P COMICBOOK

IT'S STARTING

WE ARE RUNNING OUT

THUS IT BEGINS

IANA pool exhaustion: 2 Feb 2011

RR pool exhaustion: 25 Dec 2011

HOW DO WE IPV6 ALL OF THIS?

BY HAND?

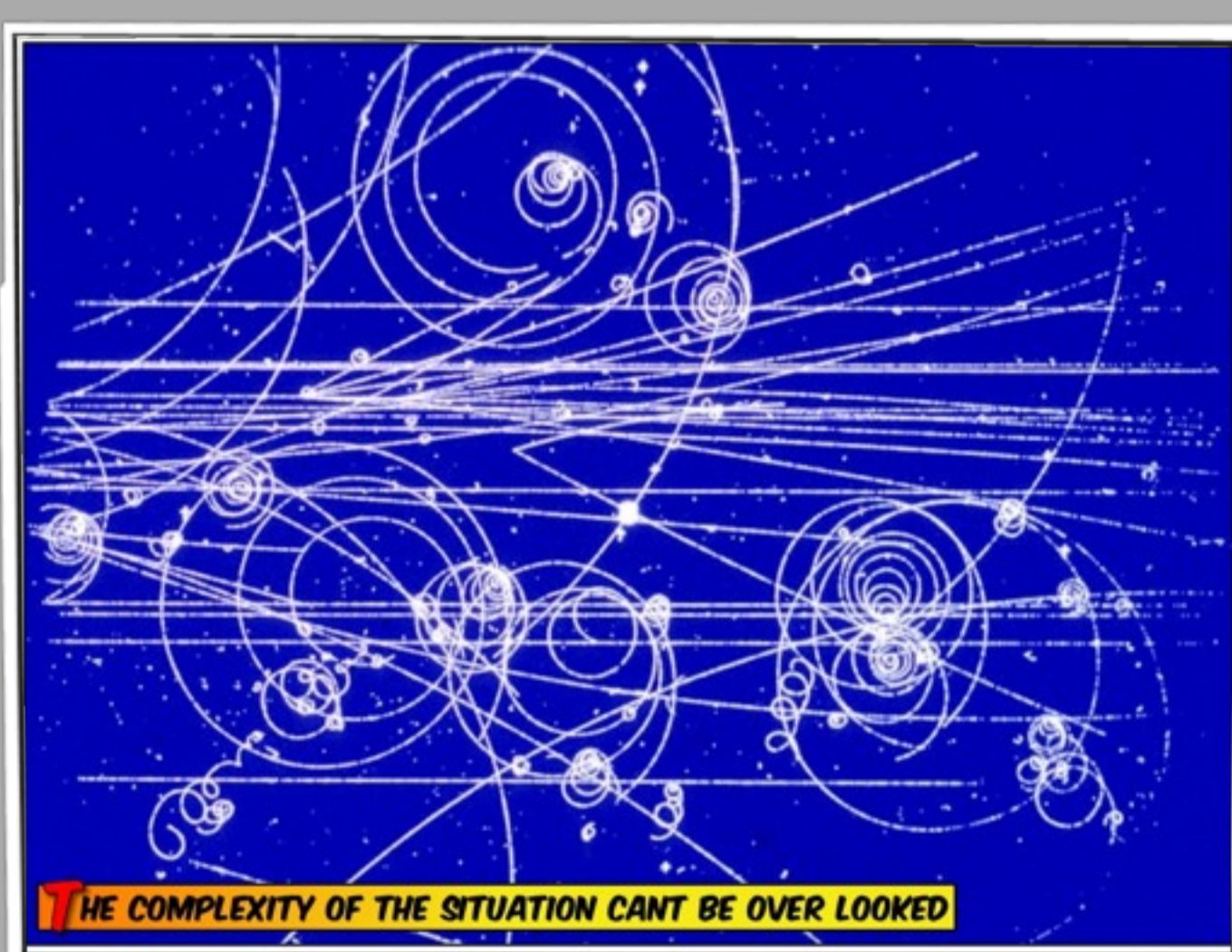
BY AUTOMATION?

WONT THIS BE AWFUL?

NOT AS BAD AS WE THINK

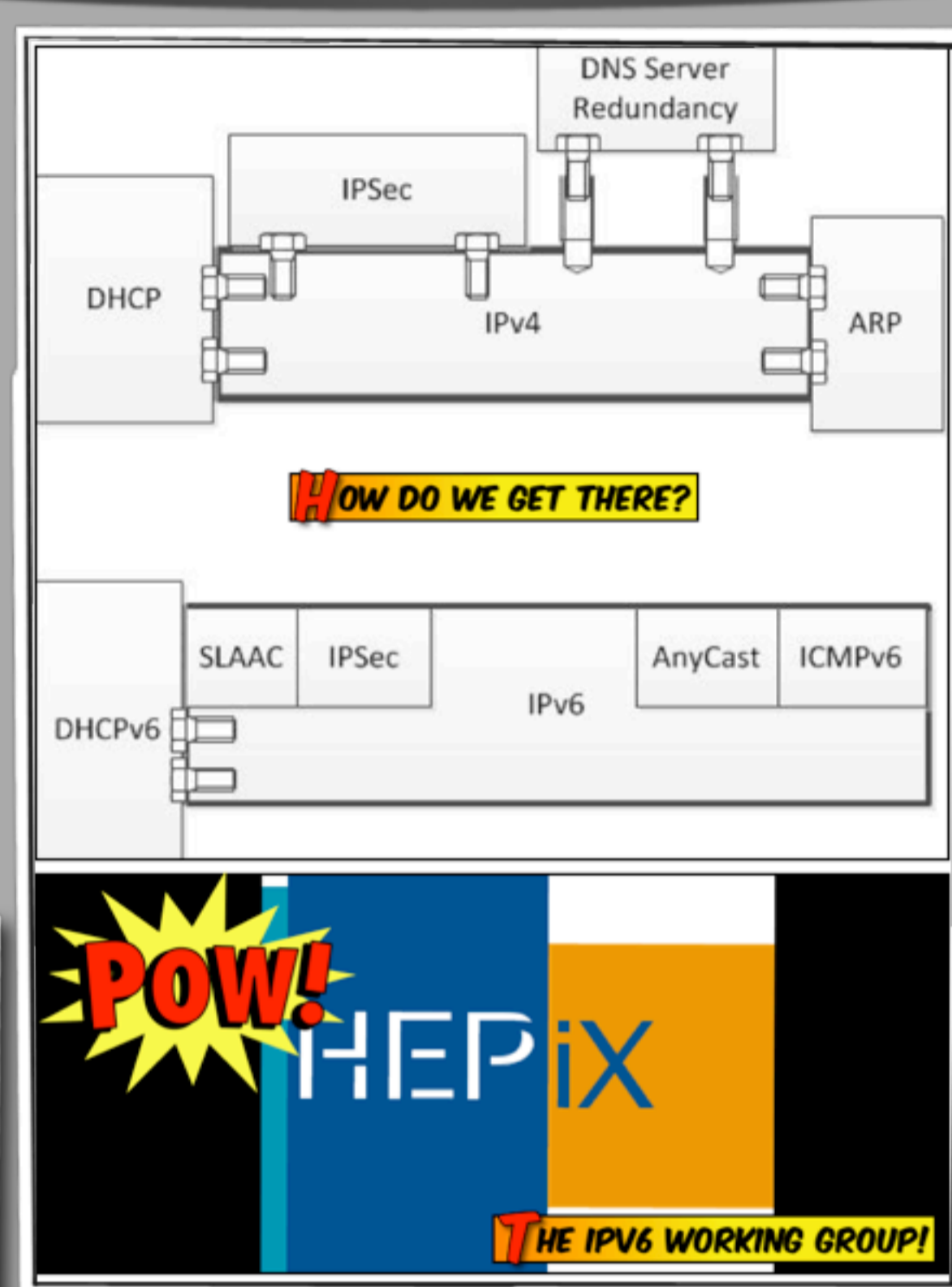
IPV4 & IPV6 INTERNET TOPOLOGY MAP JANUARY 2009

UP TAKE IS LESS THAN EXPECTED



The much-heralded exhaustion of the IPv4 networking address space has finally started. While many of the research and education networks have been ready and poised for years to carry IPv6 traffic, there is a well-known lack of academic institutes using the new protocols.

It has already been decided that WLCG services should be deployed with dual (IPv4 and IPv6) protocol stacks. IPv6-only services are unlikely to be needed for many years ahead but it is important to plan for the introduction of IPv6-only WLCG clients in the not too distant future.



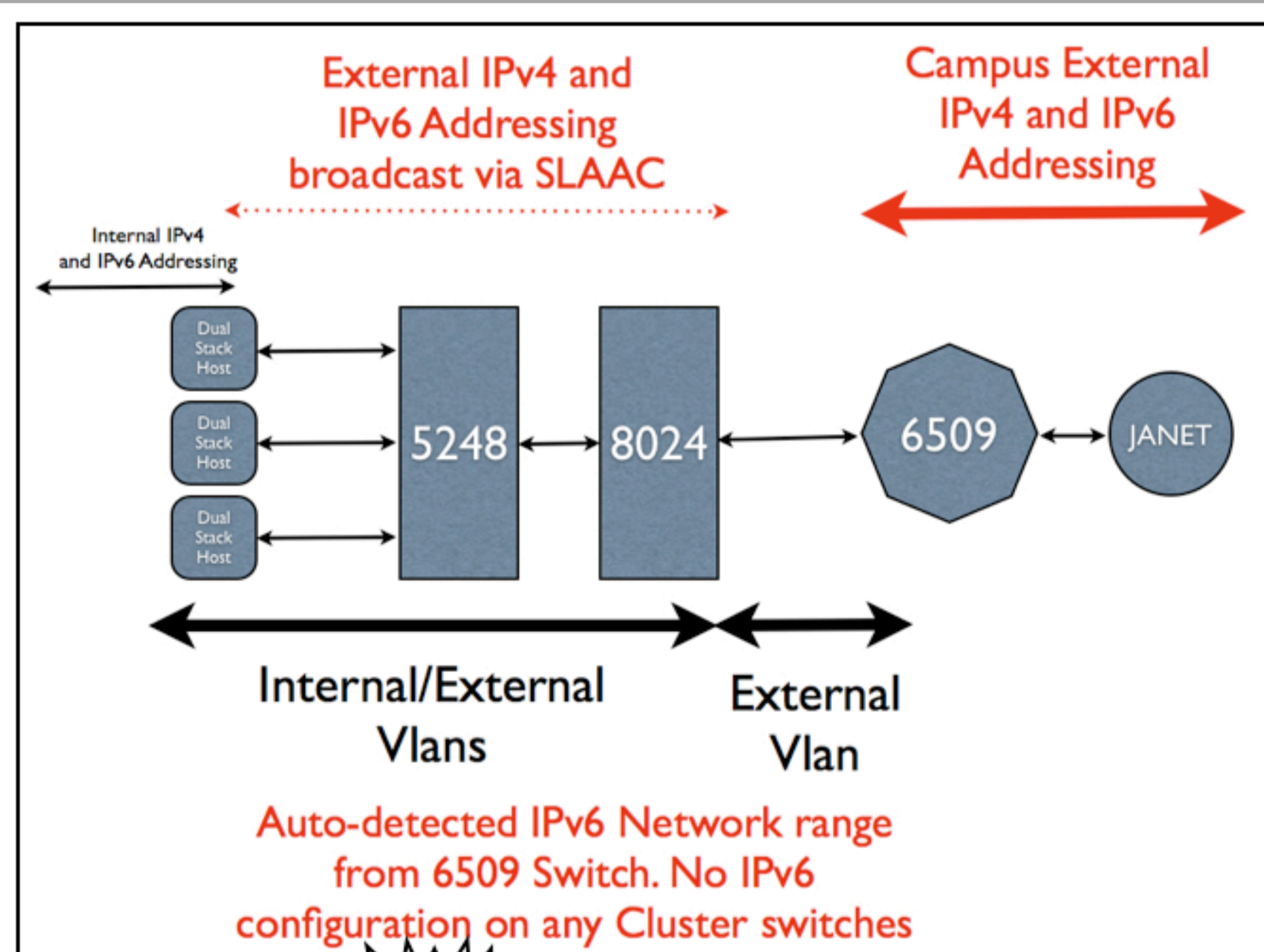
What Scotgrid tried

SLAAC on, SLAAC off

The approach taken at Scotgrid for the deployment of IPv6 has been a controlled one. We have rebuilt our test cluster comprising of:

A 1 Gigabit connection to JANET, A Cream CE, An ARC CE (near future), Batch Server, 10 TB LUSTRE Storage (near future), 10 TB DPM storage, 18 2.3 Ghz Workers Nodes, Scientific Linux 5

The primary mechanism for enabling IPv6 in this environment was to use SLAAC (Stateless address autoconfiguration) which is configured inside the University Campus Network. This allowed us to concentrate on testing the underlying connection mechanisms on the cluster itself. Other IP addressing mechanisms such as statically routing IPv6 and utilising OSPF v3 were found to be more processor intensive on the switching equipment utilised. Also, the amount of time it takes to manually key in a 128 bit address is counterproductive to the deployment.



Initial Findings

The entire IPv6 implementation was absolutely straight forward due to the network ranges both public and private being directly delivered from the Campus network. Global routing was also taken care of by this mechanism and due to this ease of implementation.

Scotgrid will be using SLAAC from now on for all IPv6 deployments.

Unforeseen consequences

While the configuration of SLAAC for an SLS environment at first appears straight forward. Turn it on and use a VLAN. There is an issue.

It works to well.

In a production cluster environment all devices which are capable of IPv6 will attempt to use these addresses as well as their assigned IPv4 addressing schemes. Presently, we have not generated enough data to categorically state that this will not be an issue.

For more information and regular updates on our progress please visit: www.scotgrid.ac.uk

