



Business Transformation One Step at a Time

HOW TO EVALUATE THE IPV6 READINESS OF THE IT ENVIRONMENT



Ciprian Popoviciu, President & CEO Nephos6

Nephos (νέφος) = Cloud
6 = IPv6

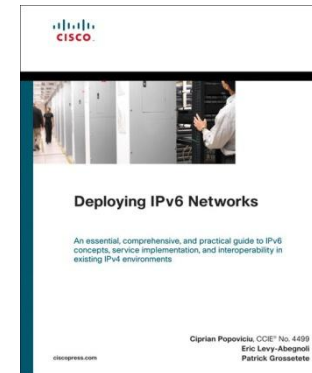
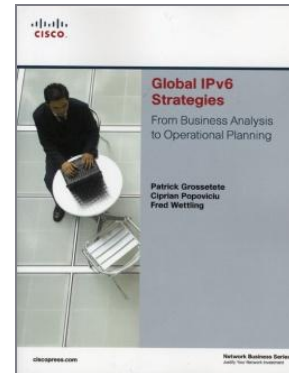
Certifications



CISSP **CCSK** **TOGAF**
CSCI **VCP** **PMP**



Thought Leadership

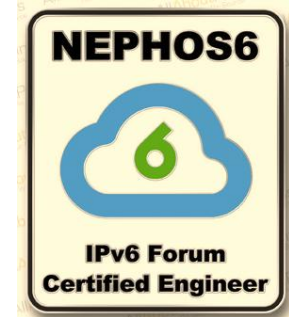


RFC 4779
RFC 5180
RFC 5375
RFC 5741
RFC 6105





- Can still register for IPv6 Forum Silver and Gold IPv6 Engineer cert exam. Get one of these

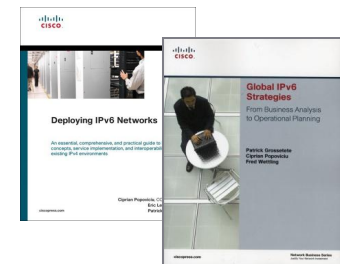


- World IPv6 Launch. Deploy IPv6 today. Get one of these



- Take the survey. Get a book

https://www.surveymonkey.com/s/nephos6_survey2





-  The IPv6 Transition Context
-  Scope of an IPv6 Assessment
-  Performing the IPv6 Readiness Assessment
-  Conclusions



1. The IPv6 Transition Context

“You cannot ignore Cloud and you cannot wish IPv6 away.”

IPv6 Business Problem



- 78% of IT leaders said made/making the transition to IPv6
- 94% of work began within the past two years
- 54% deemed the move essential to the organization
- 73% were concerned about missing out on the benefits
- 92% indicate that security team is involved in transition efforts
- 56% believe responsibility should fall on SP and the company
- 63% indicate an executive committee is overseeing the effort
- 55% have sought/plan to seek assistance of consultants



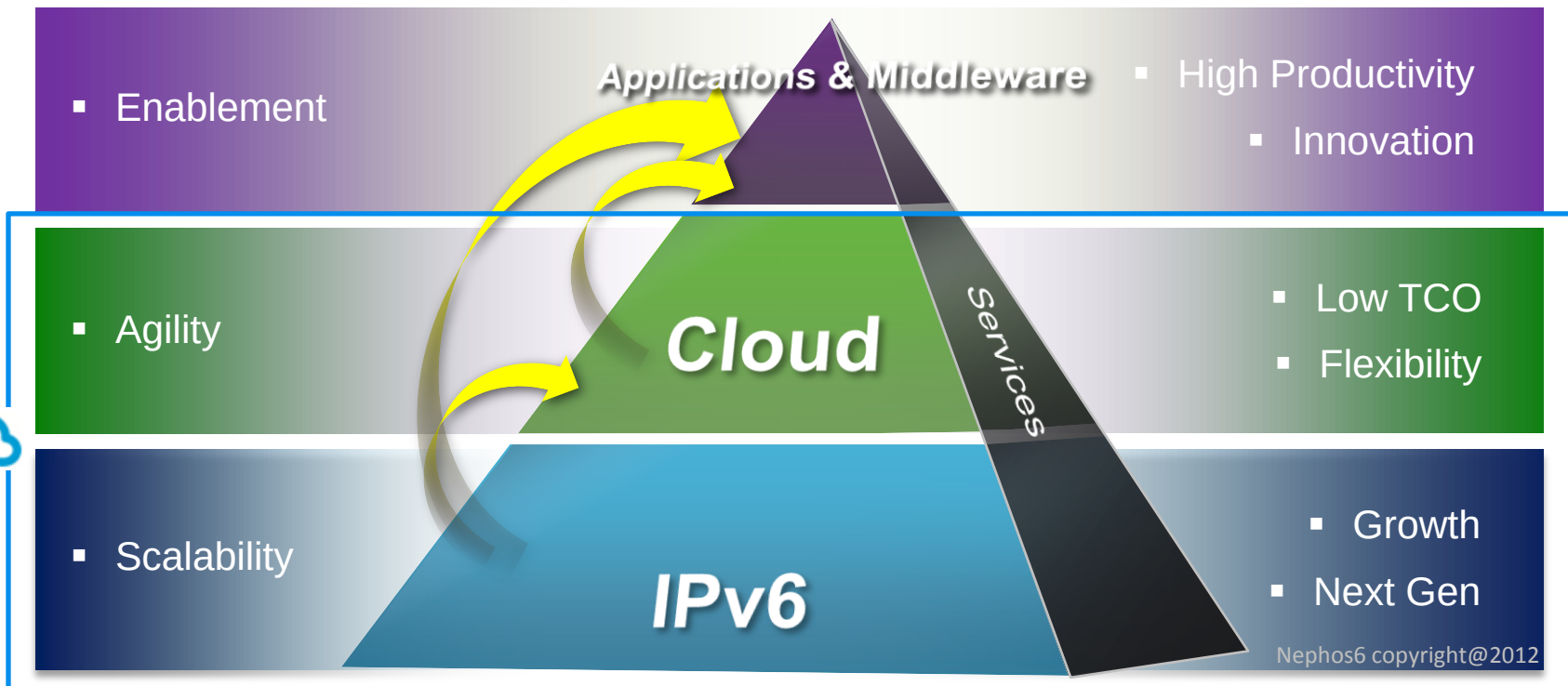
Cisco Survey: <http://www.networkworld.com/news/2011/052411-cisco-ipv6.html>

IT Space – Three Major Inflexion Points



Driver

Business Results



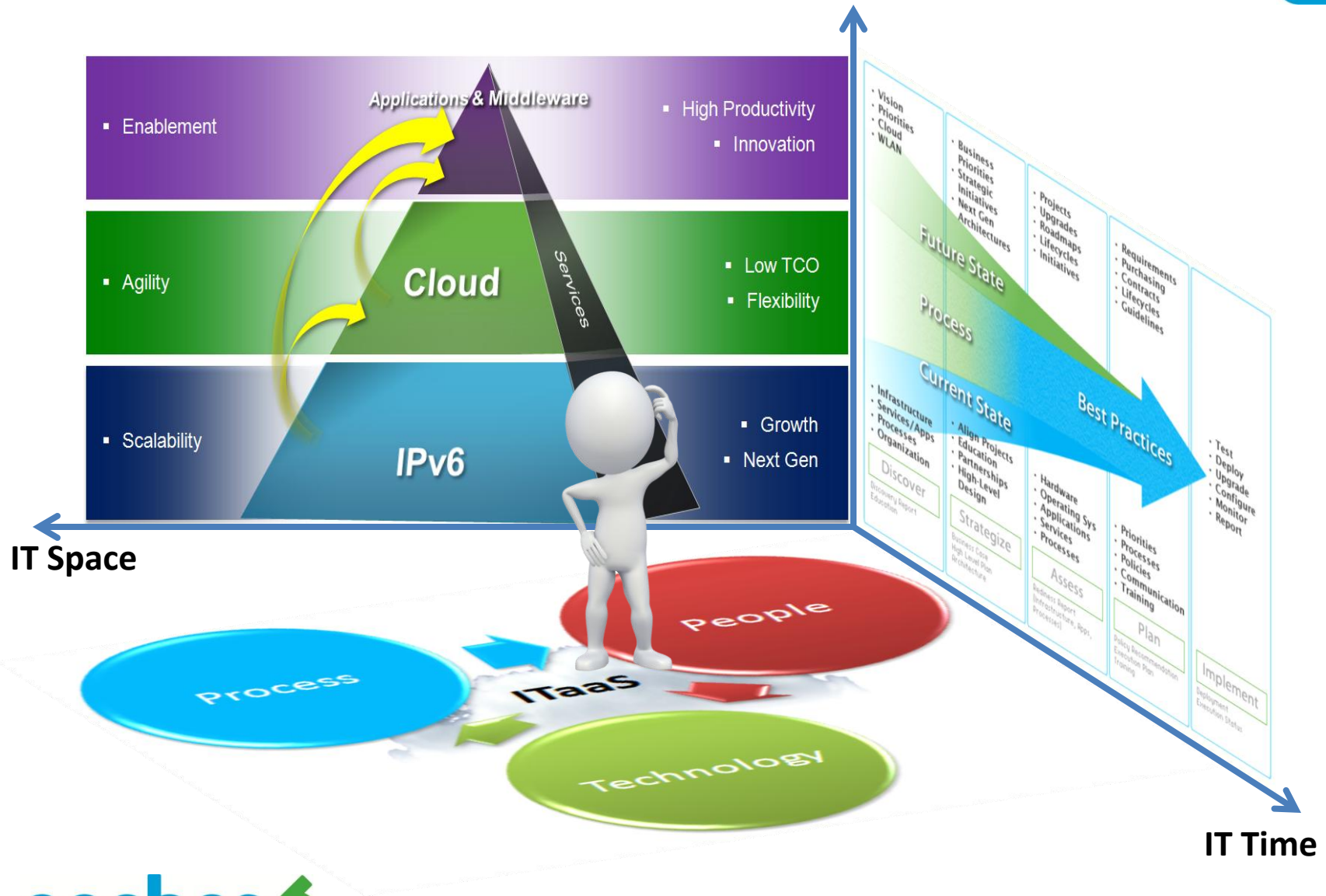
The inflexion points are complex, simultaneous, interrelated and touch every aspect of the IT environment

IT Time – Five Steps to IPv6 ... and Cloud



The transition is going to take time which makes it important to start early and to keep the lifecycle perspective in mind

IT Brane Approach



One Size Does Not Fit All



IPv6 adoption is an organizationally unique proposition

Trappings of the Shortcuts



- Sitting on the fence costs money. The early adopters will not have time to clean things up for everyone
- Reliance on vendor advice for short term solutions means buying into their roadmap constraints and agendas
- Reliance on data provided by vendor sponsored tests is at best an OK first approximation of your true needs



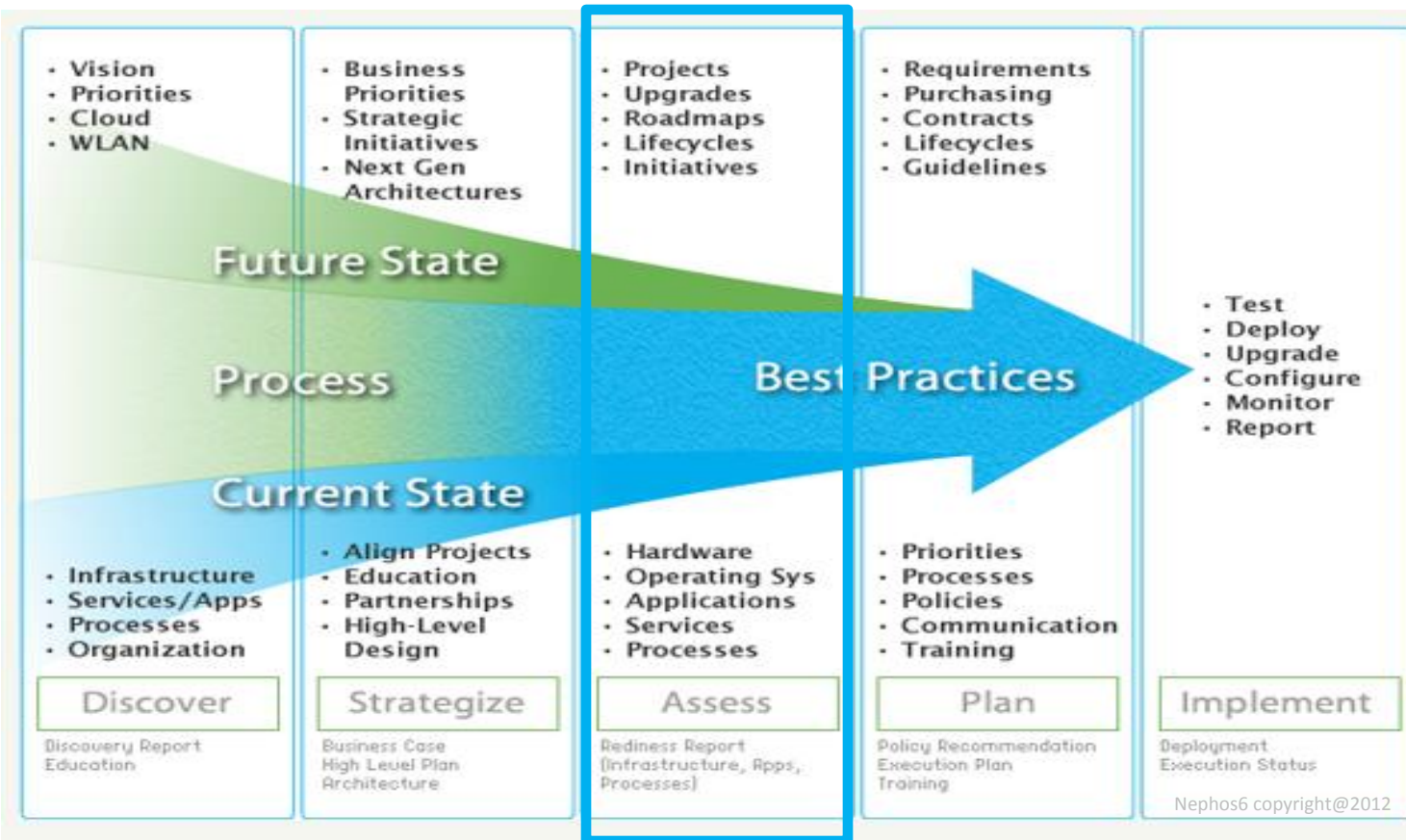
It is tempting to put up an IPv6 façade to lack of readiness but that investment could lead to negative ROI.



2. Scope of the IPv6 Assessment

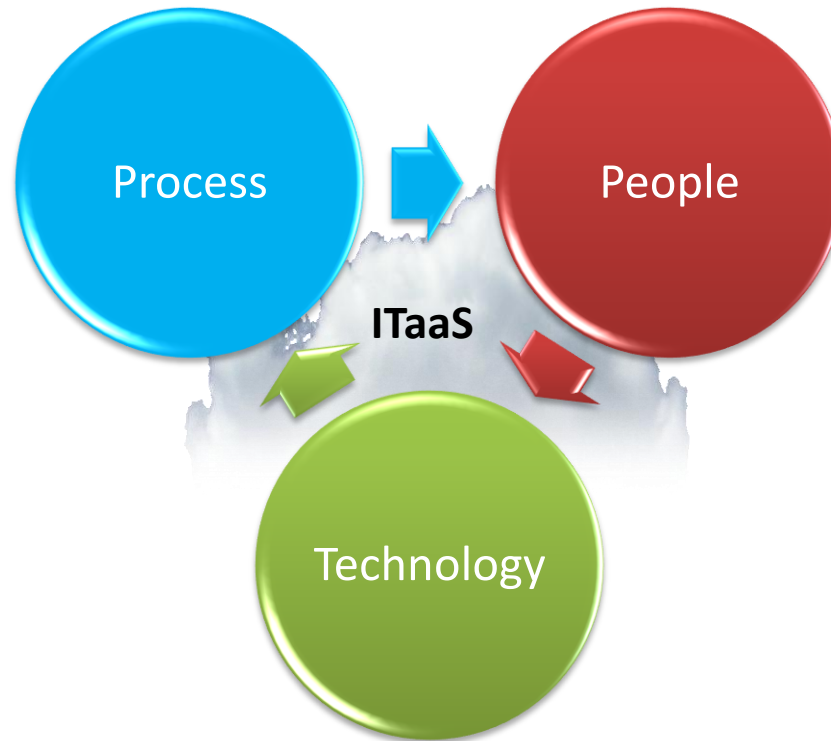
“IPv6 touches every aspect of the IT environment.”

When to Assess Readiness?



Have a target architecture in mind before you take on a true assessment effort.

What to Assess?



In the end it is about the three key dimensions of any IT environment.



Security Risk Management

Management (IPAM, NM)

Business Customers Employees Partners

Applications

Servers Desktop Production Line Mobility

FW, IPS, IAM WAN OP DHCP, DNS, LB VoIP

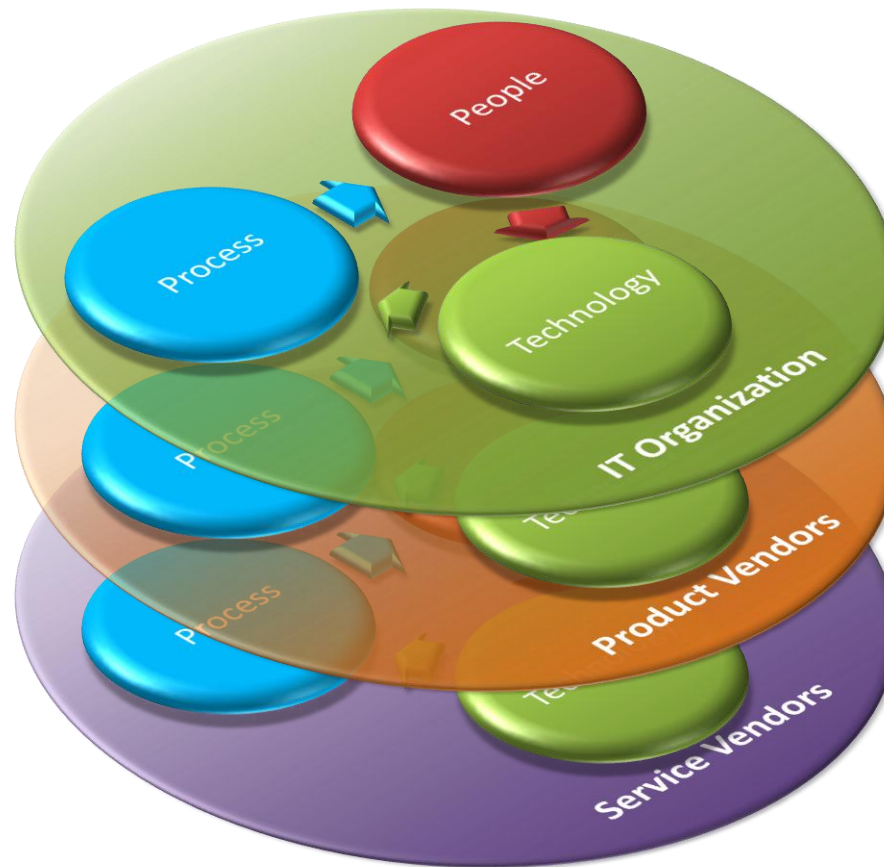
Branch Campus WAN DC Internet Access

Profile OS Middle ware Road Map

HW Topo IGP QoS Mcast Mcast Mcast Mcast

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Whose Readiness to Assess?



The timeline and the success of your IPv6 project depends on the IPv6 readiness of many other organizations

Divide and Conquer



- IPv6 readiness assessment is a big undertaking, proportional with the scope of the transition (touches every aspect of IT)
- Some assessment is better than no assessment however, know relatively early what you assess against
- Divide the scope in domains and prioritize based on the IT initiatives and IPv6 transition roadmap
- Start early so you can leverage processes
- Keep it vendor independent



Do not underestimate the work that will go into a thorough assessment process.



3. Performing the IPv6 Readiness Assessment

“Assessment is not a one time shot, it is a continuous process throughout the transition process.”

The Definition of a Profile

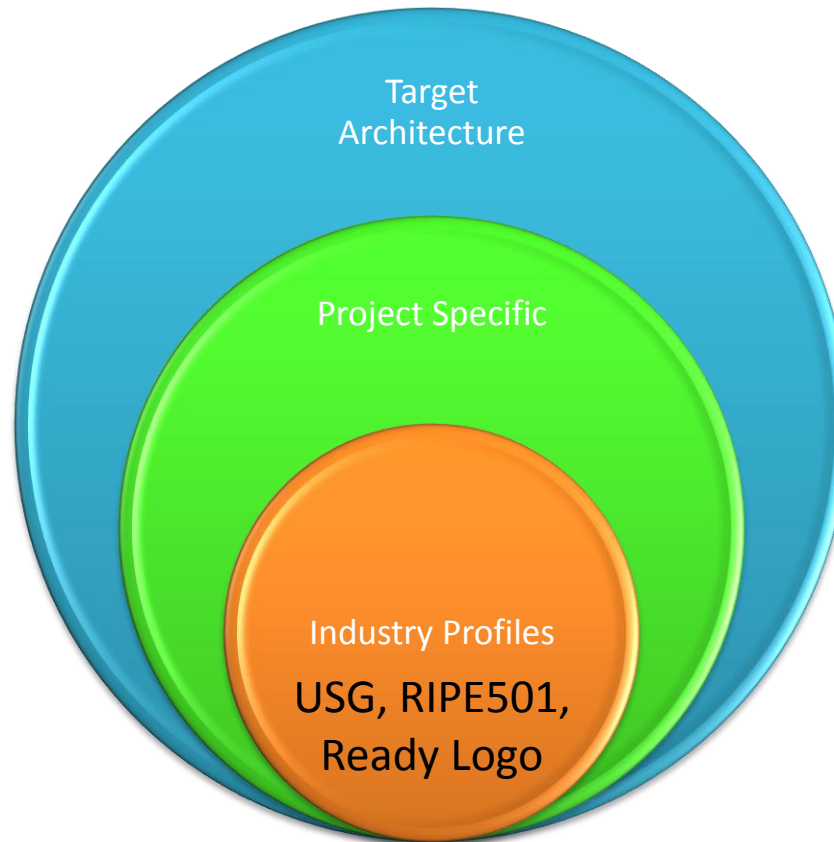


- The Profile consists of a set of capabilities required to support the target architecture within a:
 - Place in the infrastructure (host, router, etc)
 - Component of a service (application, process, etc)
 - Role in the organization (architect, designer, ops, etc)
- The Profile will evolve in time
- The Profile represents the template for purchasing policy updates



Assessment is performed against a profile that reflects the target architecture of the environment (IP version independent).

Building a Profile



Starting with a commonly accepted, industry defined profile is a reasonable first step. Personalize with specific requirements

Assessing Against a Profile



- A product is compared to the profile and based on a predefined heuristic (relevancy and priority of features) it can typically fall into one of three categories:
 - Ready (Green)
 - Not Ready but can become ready (Yellow)
 - Not Ready and cannot become ready (Red)
- The decision depends on specific IT environment needs, in-flight/upcoming projects and the overall IPv6 project plan

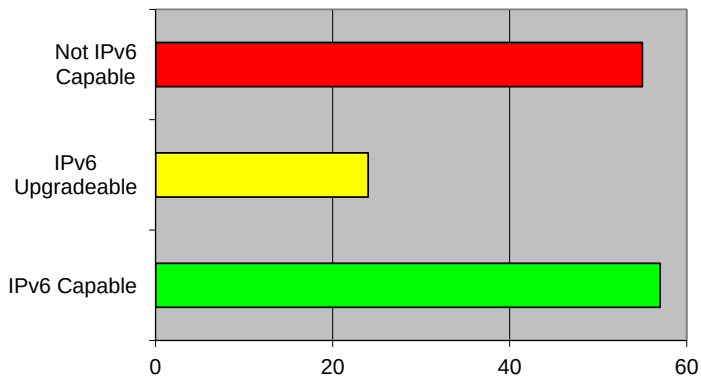


The status of an assessed element will change in time depending on changing requirements and changes to the element.

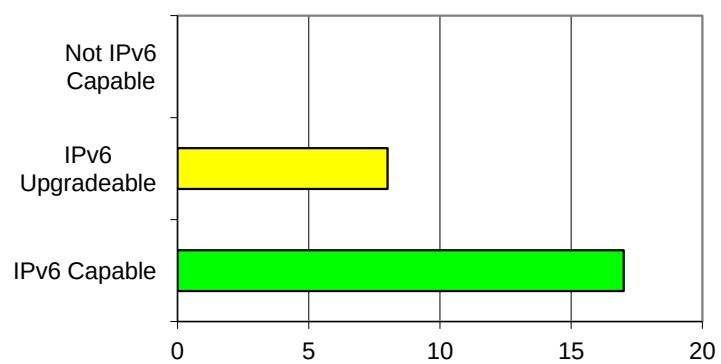
IPv6 Readiness Assessment Instance



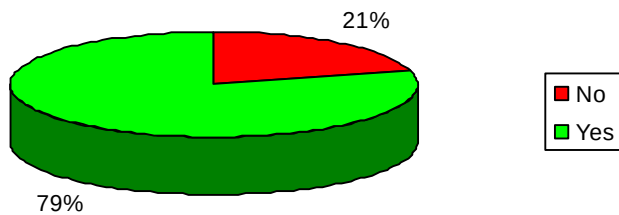
Switches



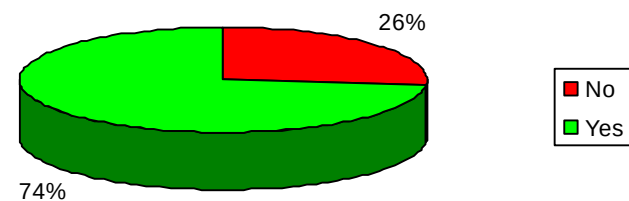
Routers



IPv6 Capable Desktops



IPv6 Capable Servers



April 11, 2012 – Denver Campus



- The industry profiles (USG, RIPE501, IPv6 Ready Logo) evolve in time based on changes in the protocol, deployment best practices, other requirements
- The Profile will evolve as well and it has to be constantly maintained up to date based on changes in target architecture and new services requirements
- Along with the profile changes, the purchasing policies must be updated as well



The reference profile changes based on additional knowledge coming into the industry and the organization.

IPv6 Readiness Assessment Lifecycle



- IPv6 is not a feature or a service and its enablement goes over several years so IPv6 Readiness Assessment is not a one time activity
- The Profile and the Environment are evolving and so does the readiness standing
- Other projects insert new capabilities to the infrastructure. Hopefully they are aligned with the target architecture and so is the current profile.



Expect to assess IPv6 readiness on a regular basis while the environment transitions to dual-stack and IPv6 only.

Translating Profiles into Procurement



- Baseline Criteria
- Functional Criteria
- Unique Requirements
- Drive this mix of needs into specific procurement language
 - Reference RFCs
 - Reference Logo
- Require certification

USGv6-V1 Host Requirements Template:

- [M] – **IPv6 Basic Requirements** – see section 6.1.
 - [O:1] – **SLAAC** – require support of stateless address auto-configuration.
 - [O:1] – **DHCP-Client** – require support of stateful (DHCP) address auto-configuration.
 - [Y/N] – **PrivAddr** – require support of SLAAC privacy extensions.
 - [Y/N] – **SEND** – require support of neighbor discovery security extensions.
- [M] – **Addressing Requirements** – see section 6.6.
 - [Y/N] – **CGA** – require support of cryptographically generated addresses.
- [O] – **Application Requirements** – see section 6.11.
 - [Y/N] – **DNS-Client** – require support of DNS client/resolver functions.
 - [Y/N] – **SOCK** – require support of Socket application program interfaces.
 - [Y/N] – **URI** – require support of IPv6 uniform resource identifiers.
 - [Y/N] – **DNS-Server** – require support of a DNS server application.
 - [Y/N] – **DHCP-Server** – require support of a DHCP server application.
- [M] – **IP Security Requirements** – see section 6.7.
 - [M] – **IPsec-V3** – require support of the IP security architecture.
 - [M] – **IKEv2** – require support for automated key management.
 - [M] – **ESP** – require support for encapsulating security payloads in IP.
- [O] – **Transition Mechanism Requirements** – see section 6.4.
 - [Y/N] – **IPv4** – require support to enable interoperation with IPv4-only systems.
- [O] – **Network Management Requirements** – see section 6.8.
 - [Y/N] – **SNMP** – require support of network management services.
- [M] – **Multicast Requirements** – see section 6.9.
 - [Y/N] – **SSM** – require full support of multicast communications.
- [O] – **Mobility Requirements** – see section 6.10.
 - [Y/N] – **MIP** – require support of capability for this host to be a mobile node.
- [O] – **Quality of Service Requirements** – see section 6.3.
 - [Y/N] – **DS** – require support of Differentiated Services capabilities.
- [M] – **Link Specific Technologies** – see section 6.5.
 - [O:1] – **Link** – require support of 1 or more link technologies.
 - [Y/N] – **ROHC** – require support of robust packet compression services.



5. Conclusions

Some Observations



- Products and services are making progress however, there is still some ways to go, continue to keep up an informed pressure on vendors
- Knowledge is developing in the market but slowly because the demand is still fluctuating
- Experience is very difficult to find.



- IPv6 Assessment is big, multifacted undertaking, don't forget to fully assess vendors
- Aim for the target profile, not some trivial requirements
- It is an ongoing process, think lifecycle
- Divide and conquer, automate, leverage existing lifecycles
- Start early, it has great ROI
- Keep it vendor independent



Get started today!



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e: contact@nephos6.com

p: (919)647-4773

w: www.nephos6.com