

IPv6 challenge in Rwanda

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Agenda

- Need of more IP addresses globally
- IP space allocated to Rwanda
- Awareness
- What is next?



Need of more IP addresses

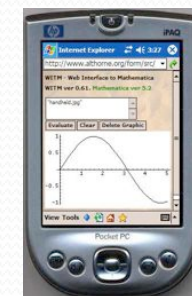
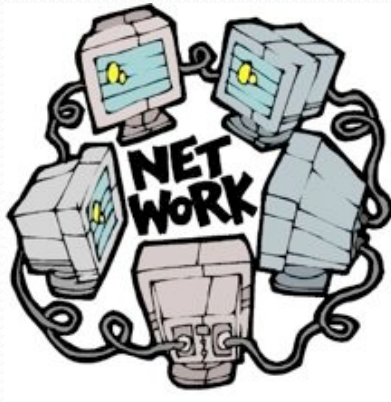
- Important for Network Communication
- Used to identify source and destination
- Widely used is IPv4
- 127.0.0.1



Need of more IP addresses

- IPv4 (32 bits) has 4,294,967,296 addresses;
- Growth in Internet Usage;
- More than 6 billions persons in the world;
- More and more connected devices;

Need of more IP addresses



Need of more IP addresses



Need of more IP addresses





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- Need of more IP space



Need of more IP addresses

- Getting back unused IP
- Broader range of IP (IPv6)

IPv4 Exhaustion prediction

- Tony Hain (Cisco) – Sept 2005
 - Dale Geesey (IPv6 summit journal) – Mar 2006
 - Geoff Huston (APNIC chief scientist) – ongoing
- 338 days – Less than a year from now
(<http://www.potaroo.net/tools/ipv4/index.html>)

IPv6

- Using 128 bits
- From 4,294,967,296 available IPv4 addresses
- To
340,282,366,920,938,463,463,374,607,431,768,211,456
(2^{128}) available IPv6 addresses
- Minimal allocation to a LIR /32 :
79.228.162.514.264.338.000.000.000.000 addresses

Exhaustion of IPv4 different than Y2K bug ☺



Awareness

- How many knew that exhaustion of IPv4 in less than a year?
- How many ISP engineers know how to configure network with IPv6?
- How many network and sys admin are aware of requirement to be IPv6 ready and use them in procurement?
- How many software developers consider the changes to come?

Awareness: opportunities

- Vision 2020 : Knowledge based economy
- IPv6 like new international language (new standard)
- Increased visibility as an up-to-date country
- Readiness
 - Business opportunities (accompanying measure for DC)
 - Killer application
 - Exporting knowledge



Awareness : Risk

- Since transition will have to come
- Crush program when obliged to start transition
- Reduced lifetime of software developed in Rwanda

IPv6 : What is next?

- ...

IPv6 : What is next?

- National IPv6 Task Force
- IPv6 readiness for new imported equipment
- Requirement of transition plan for all ISPs by x date
- Dual stack at Rinex
- Software development considering dual stack environment (not immediate and to study context)
- IPv6 courses in Universities
- Short hands-on trainings on IPv6 for network administrators



Conclusion and recommendations

- Let the ball start rolling...