



UNIVERSIDAD DE GUADALAJARA

Red Universitaria e Institución Benemérita de Jalisco

## Transición IPv6 caso UDG

Jaime Olmos de la Cruz  
jaime@noc.udg.mx  
@olmosv6



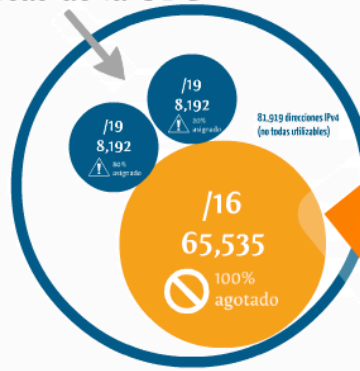
## Experiencias

- Agotamiento IPv4
- Despliegue IPv6
  - DNSv6 (AAAA)
  - Stateless vs stateful
    - EUI-64
    - DHCP6
  - Servicios IPv6 (Web, E-mail, etcétera)
- Tráfico IPv6
- Esquema multihoming
  - Balanceo de cargas
- Top 200 Akamai - World IPv6 Launch



Representa 3 veces +  
que direcciones

### Stock de direcciones IPv4 públicas de la UDG



# 241,744 estudiantes en 2014

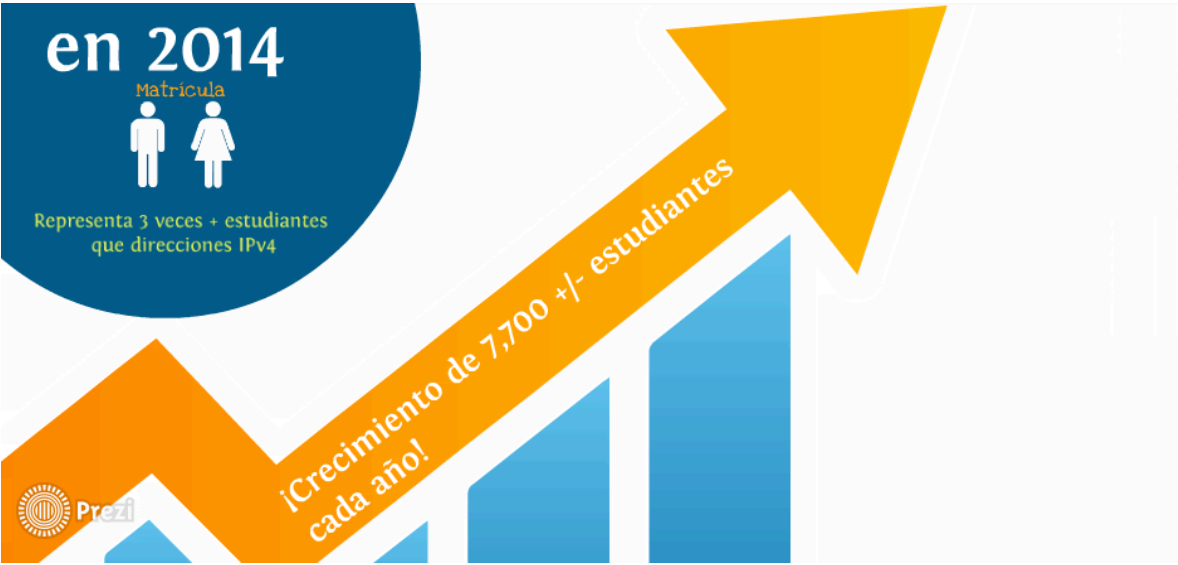
Matricula



Representa 3 veces + estudiantes  
que direcciones IPv4

eciones  
s de la UDG

de 7,700 +/- estudiantes

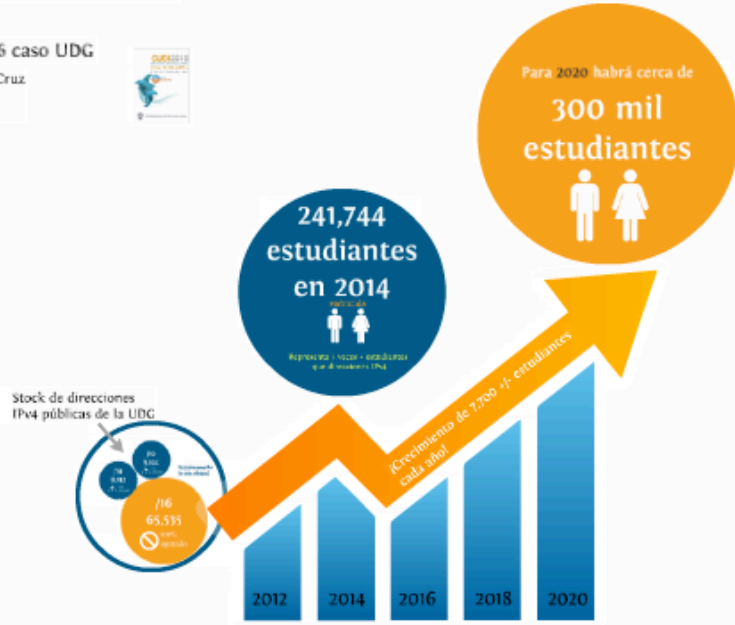




**UNIVERSIDAD DE GUADALAJARA**  
Red Universitaria e Institución Benéfica de Jalisco

**Transición IPv6 caso UDG**

Jaime Olmos de la Cruz  
jaime@noc.udg.mx  
@jolmosv6



Referencia:  
<http://datos.cerif.net/visualizaciones/geoip/geoip>  
 Informe de Actividades 2013-2014, Rectoría Universidad de Guadalajara

**IPv4**

$2^{32}$

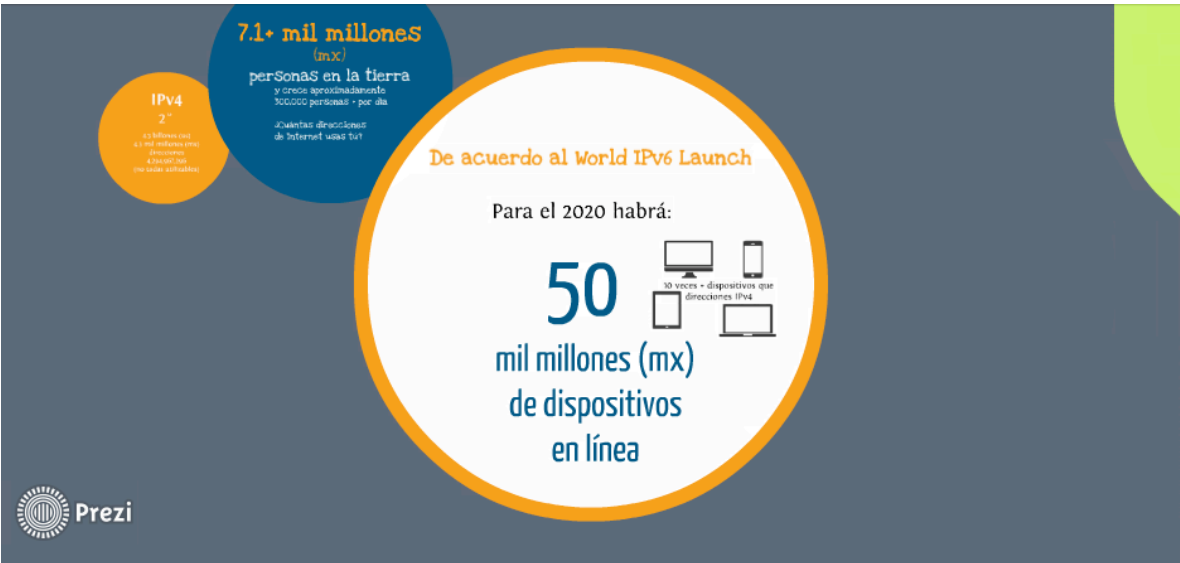
4.3 billones (us)  
 4.3 mil millones (mx)  
 direcciones  
 4,294,967,296  
 (no todas utilizables)

**personas**

y crece apr  
 300,000 per

¿Cuántas di  
 de Internet





IPv6 

$2^{128}$

340 undecillones (us)

340 sextillones (mx)

**direcciones**

340,282,366,920,938,000,000,000,000,000,000,000,000,000,000,000  
(36 dígitos después de 340)





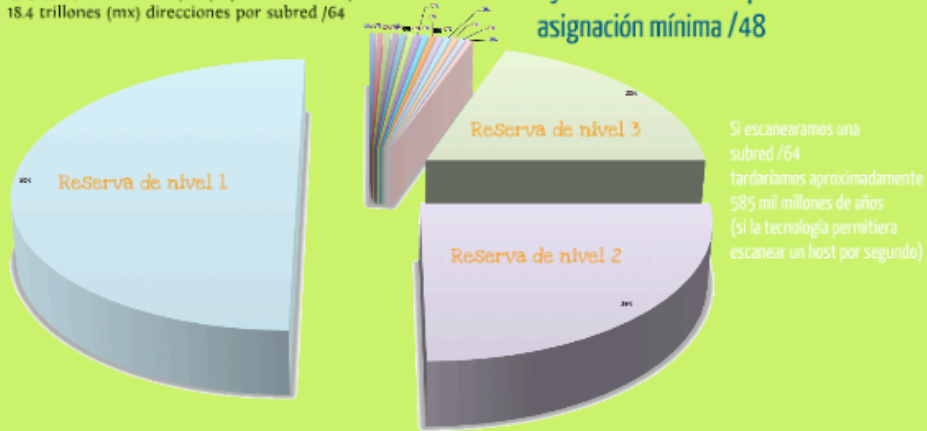
Podríamos asignar direcciones IPv6 a cada átomo en la superficie de la Tierra

# Plan de direccionamiento IPv6 UDG

2001:1210::/32

4,294,967,296 subredes /64 (capacidad en IPv4)  
18.4 trillones (mx) direcciones por subred /64

Hybrid monotonic and sparse allocation  
asignación mínima /48



Si escaneáramos una subred /64 tardaríamos aproximadamente 585 mil millones de años (si la tecnología permitiera escanear un host por segundo)

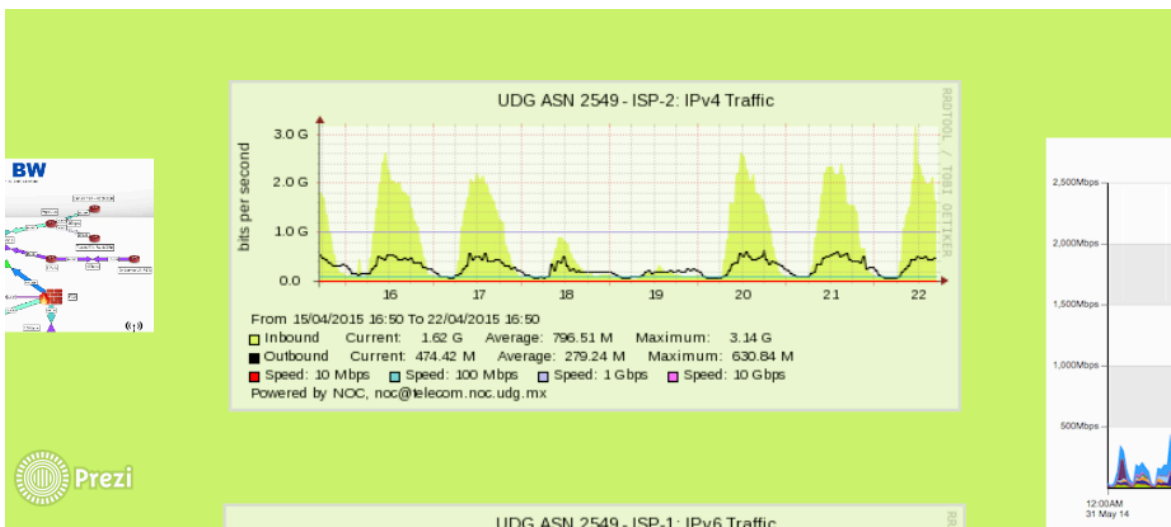
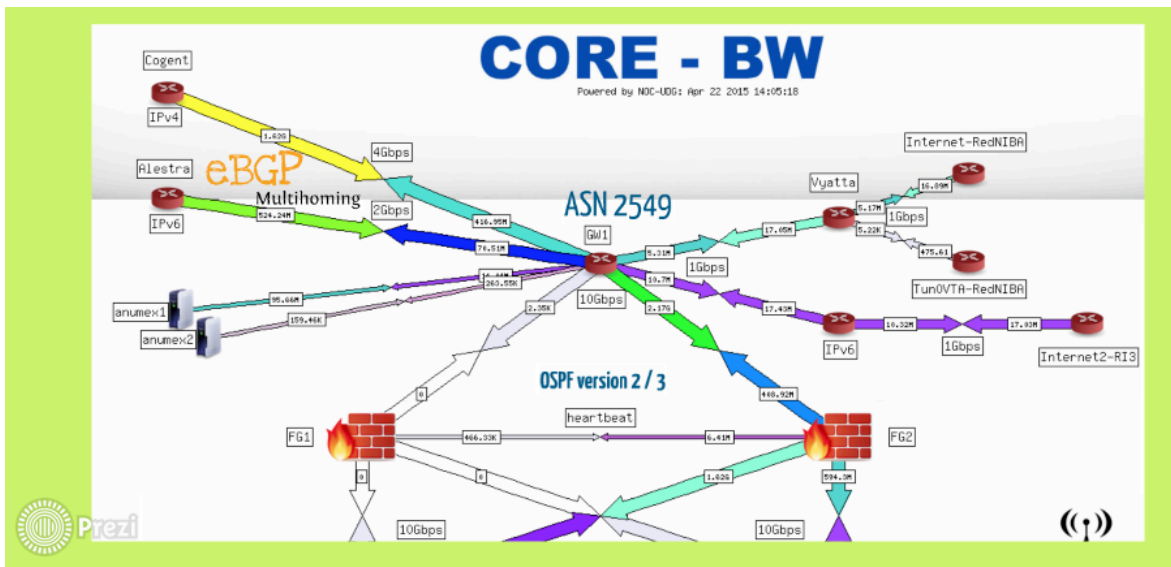
<http://www.internetsociety.org/deploy360/resources/ipv6-address-planning-guidelines-for-ipv6-address-allocation/>

DHCPv6 / EUI-64  
DNSv6  
IPv6 Service

Dual stack campus

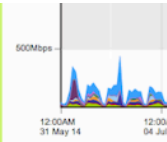
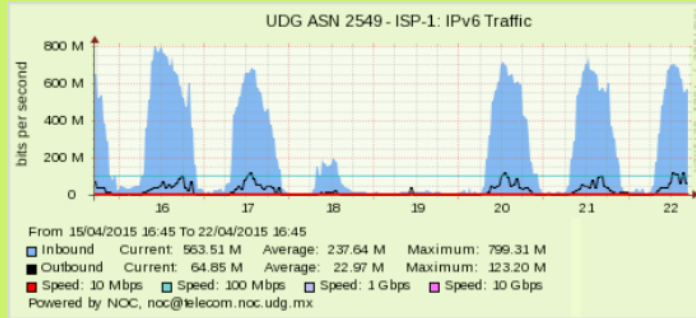




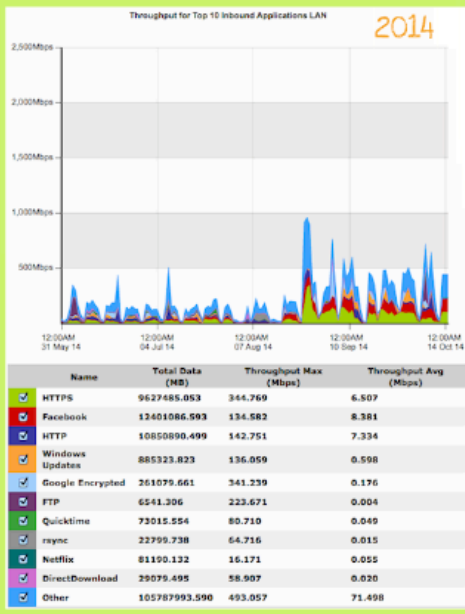
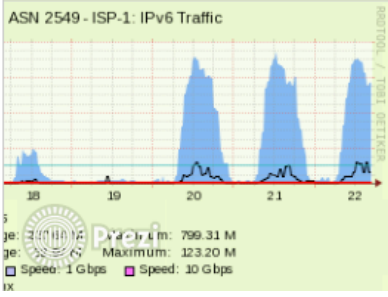
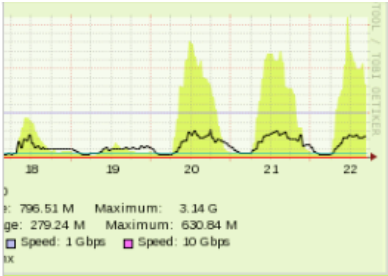


UDG ASN 2549 - ISP-1: IPv6 Traffic

Powered by NOC, noc@telecom.noc.udg.mx



Name	To
<input checked="" type="checkbox"/> HTTPS	9627
<input checked="" type="checkbox"/> Facebook	1240
<input checked="" type="checkbox"/> HTTP	1085
<input checked="" type="checkbox"/> Windows Updates	8853
<input checked="" type="checkbox"/> Google Encrypted	2610
<input checked="" type="checkbox"/> FTP	6541
<input checked="" type="checkbox"/> Quicktime	7301
<input checked="" type="checkbox"/> rsync	2279
<input checked="" type="checkbox"/> Netflix	8119
<input checked="" type="checkbox"/> DirectDownload	2907
<input checked="" type="checkbox"/> Other	1057



stateoftheinternet.com

Home Connectivity Security Trends Resources About

93	5.2%	I-MOBILE CZECH REPUBLIC a.s.
94	0.3%	TeliaSonera International
95	3.3%	DFN-Verein e. V.
96	5.2%	GIP Renater
97	44.3%	Universidad de Guadalajara
98	1.8%	M1 Connect Pte Ltd (formerly QALA Singapore Pte Ltd.)
99	23.3%	ARNES - Academic and Research Network of Slovenia
100	46.1%	The University of Hong Kong
101	17.0%	Source Cable (formerly Southmount Cable Limited)
102	16.8%	DIODOS Greek Research and Technology Network S.A

worldipv6launch.org

Network operator measurements, 11th February 2015 (notes)

(Hover over network name to see deployment trends for the Top 10)

Show 10 entries Search:

Participating Network	ASN(s)	IPv6 deployment
Monash University	56132	21.92%
TUBITAK ULAKBIM / ULAKNET	8517	2.08%
ARNES	2107	33.13%
Leibniz Supercomputing Centre	12816	35.83%
Brno University of Technology	197451	70.57%
BelWue	553	7.77%
Xfone 018	47956	9.43%
Universidad de Guadalajara	2549	27.78%
Greek Student Network	197121	7.88%
University of Vermont	1351	66.21%

Showing 61 to 70 of 313 entries

First Previous 5 6 7 8 9 Next Last

Percentage of Alexa Top 1000 websites currently reachable over IPv6

Measurements every hour from AS35425

Coordinación General de Tecnologías  
de la Información a través del NOC  
de la Universidad de Guadalajara



**iGracias!**

