# Allocation of IP Address and status of IPv6 implementation in India and need for its proliferation

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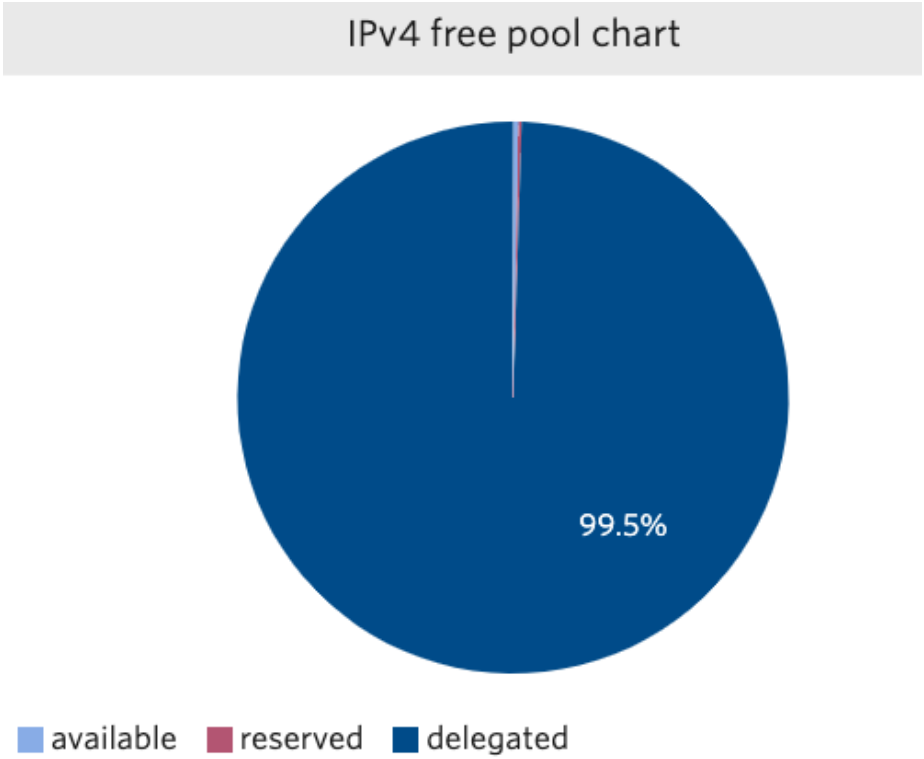
# IPv4 Depletion

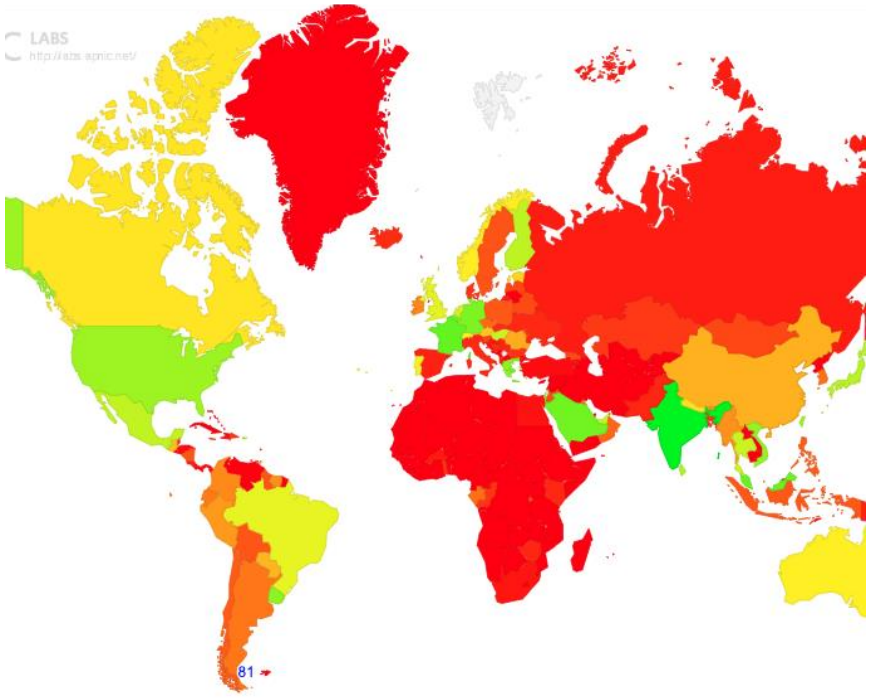


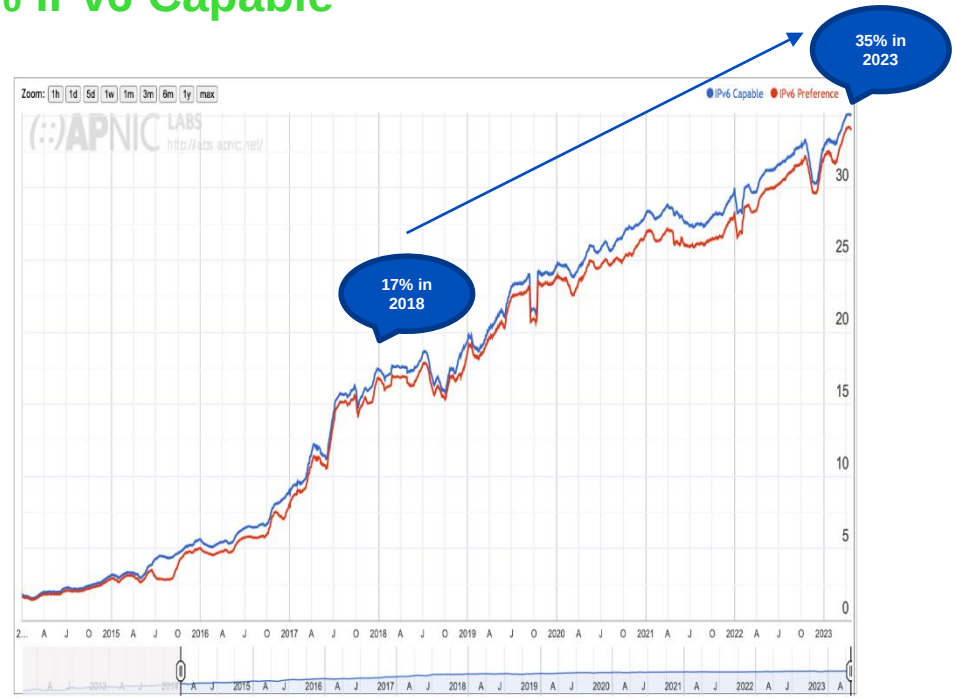

- **Delegated – 99.5%**
- **Reserved – 0.2%**
- **Available – 0.3%**

With IPv4 being close to depletion, the way forward is to transition to IPv6.

# IPv6 End User Readiness - APNIC stats

## The World is 35% IPv6 Capable




Source: https://stats.labs.apnic.net/ipv6

# IPv6 Table - World

## 18 countries over 50% IPv6 Capable in 2023

| Country | IPv6 Capable |
|---|---|
| India | 79.07% |
| Belgium | 66.62% |
| Saint Barthelemy | 65.54% |
| Malaysia | 65.50% |
| France | 65.29% |
| Saudi Arabia | 62.66% |
| Germany | 60.65% |
| Uruguay | 58.56% |
| Greece | 58.53% |
| Israel | 58.48% |
| Vietnam | 57.55% |
| Taiwan | 54.62% |
| Sri Lanka | 53.15% |
| United States of America | 52.91% |
| Montserrat | 51.85% |
| Japan | 51.17% |
| Finland | 50.40% |
| Puerto Rico | 50.29% |

# IPv6 End User Readiness by Region

| Region | IPv6 Capable |
|---|---|
| **Asia** | **40.57%** |
| Americas | 40.44% |
| Oceania | 34.11% |
| Europe | 29.42% |

| Sub Region | IPv6 Capable |
|---|---|
| **Southern Asia** | **64.16%** |
| Eastern Asia | 32.81% |
| South-Eastern Asia | 31.26% |
| Western Asia | 16.89% |
| Central Asia | 5.57% |

# Closer look at South Asia

## South Asia is 64% IPv6 Capable!


| Country | IPv6 Capable |
|---|---|
| India | 79.07% |
| Sri Lanka | 53.15% |
| Nepal | 37.95% |
| Bhutan | 24.62% |
| Bangladesh | 9.07% |
| Pakistan | 7.52% |
| Afghanistan | 0.47% |
| Maldives | 0.39% |

- India leading with 79%
- 2 out of 8 economies over 50%
- 4 out 8 economies over 20%

# Success in India

## India is 79% IPv6 Capable

| ASN | AS Name | IPv6 Capable |
|---|---|---|
| AS55836 | RELIANCEJIO-IN Reliance Jio Infocomm Limited | 97.66% |
| AS45609 | BHARTI-MOBILITY-AS-AP Bharti Airtel Ltd. AS for GPRS Service | 90.97% |
| AS38266 | VIL-AS-AP Vodafone Idea Ltd | 83.85% |
| AS45271 | ICLNET-AS-AP Idea Cellular Limited | 80.94% |
| AS24560 | AIRTELBROADBAND-AS-AP Bharti Airtel Ltd., Telemedia Services | 51.90% |

Led by Reliance Jio, Bharti Airtel and Vodaphone Idea

Use of IPv6 for India (IN)

# Success stories

*If they can do it, so can you!*

Our migration strategy was to allow existing users to make graceful switch to IPv6…

Users did not experience any issues, as they could still access the Internet via IPv4..

To help customers migrate from IPv4 to IPv6 in a seamless manner…

You need to consider redundancy/fallback, and ease of network maintenance….

https://www.apnic.net/community/ipv6/deploy-ipv6/#success

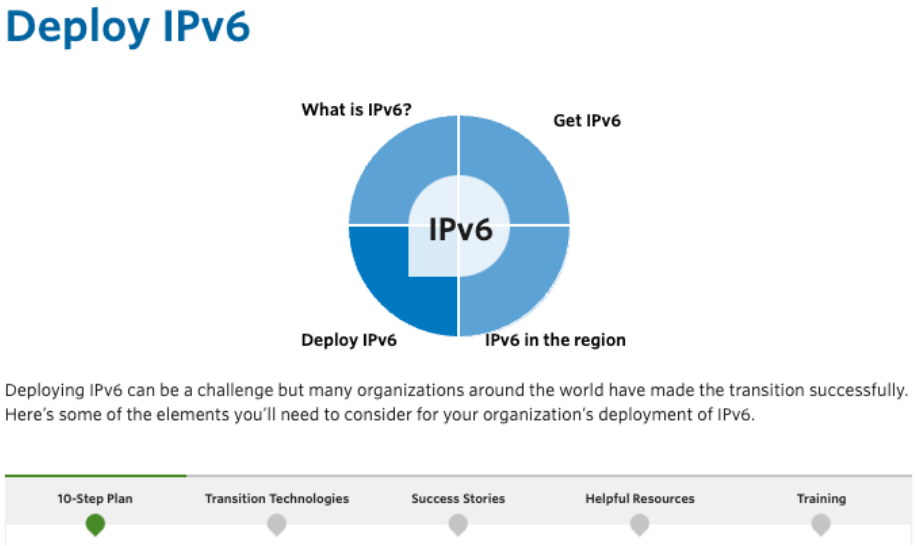
# Getting IPv6 is One Click away

- If you are an APNIC member and have IPv4 addresses, you can login to MyAPNIC and just “One Click” to automatically receive your IPv6 addresses.
  - If you have IPv4 allocation, you will receive a /32 IPv6 allocation
  - If you have IPv4 assignment, you will receive a /48 IPv6 assignment
- If you are not an APNIC member, you can submit a membership and resource application via APNIC website
  - https://www.apnic.net/get-ip/get-ip-addresses-asn/

# Technical Support

APNIC is ready to provide technical training and technical assistance for IPv6 deployment.

- Operational trainings
  - Direct country assistance (Gov)
  - Standalone workshops
  - Training at NOGs
- Technical Assistance
  - Remote or F2F
- Visit academy.apnic.net for upcoming training and workshops




- Plan, prepare, deploy. Find your 10 step plan here: apnic.net/community/ipv6/

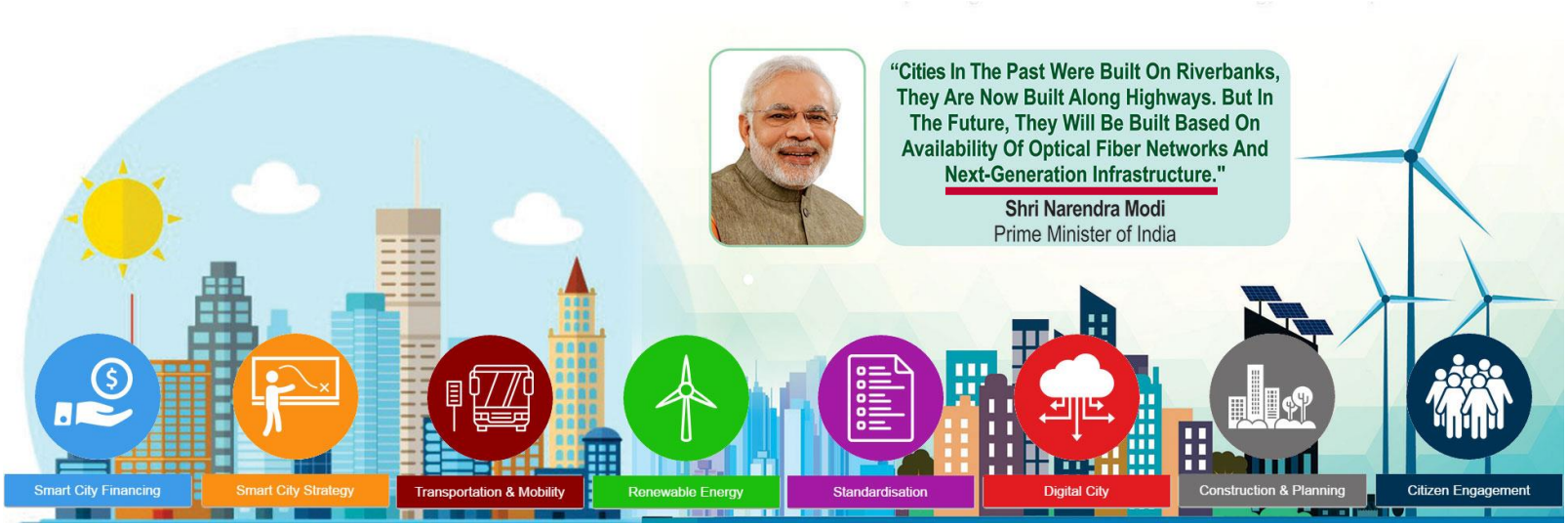
# NEED FOR PROLIFERATION


IPv6
FOR
EVERYTHING

# Digital India - Vision

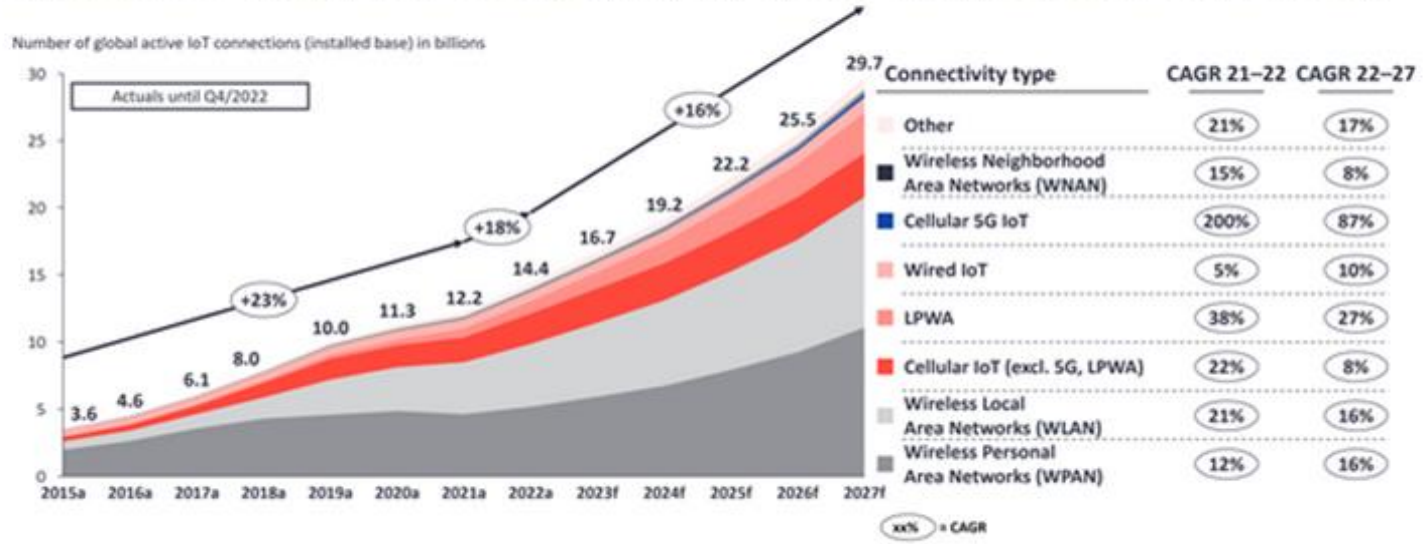
- **Digital Infrastructure as a core utility to Every Citizen**
  - Availability of high-speed internet as a core utility for delivery of services to citizens
  - Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen
  - Mobile phone & bank account enabling citizen participation in digital & financial space
  - Easy access to a Common Service Centre
  - Shareable private space on a public cloud
  - Safe and secure cyber-space

# Smart Cities India

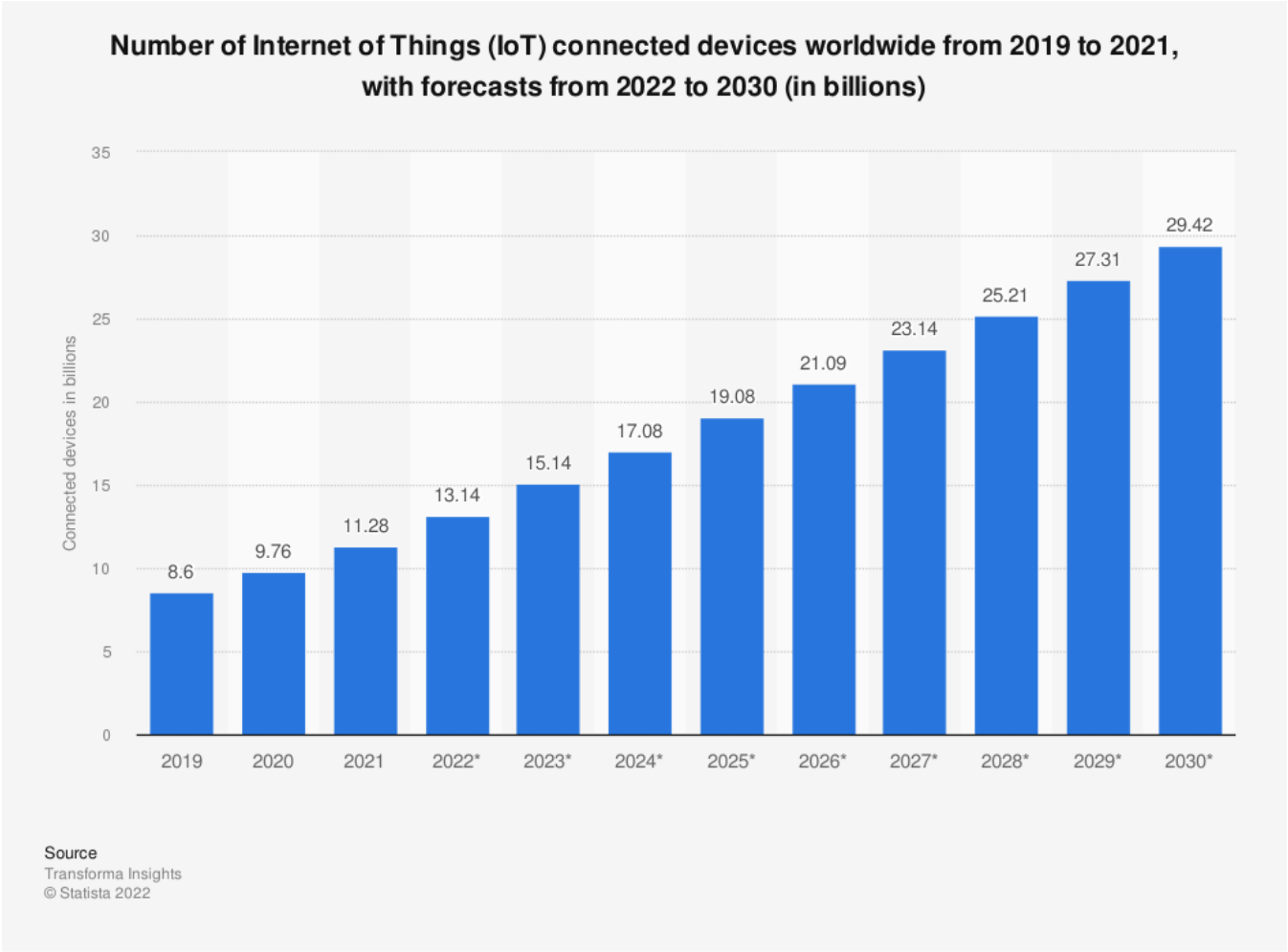


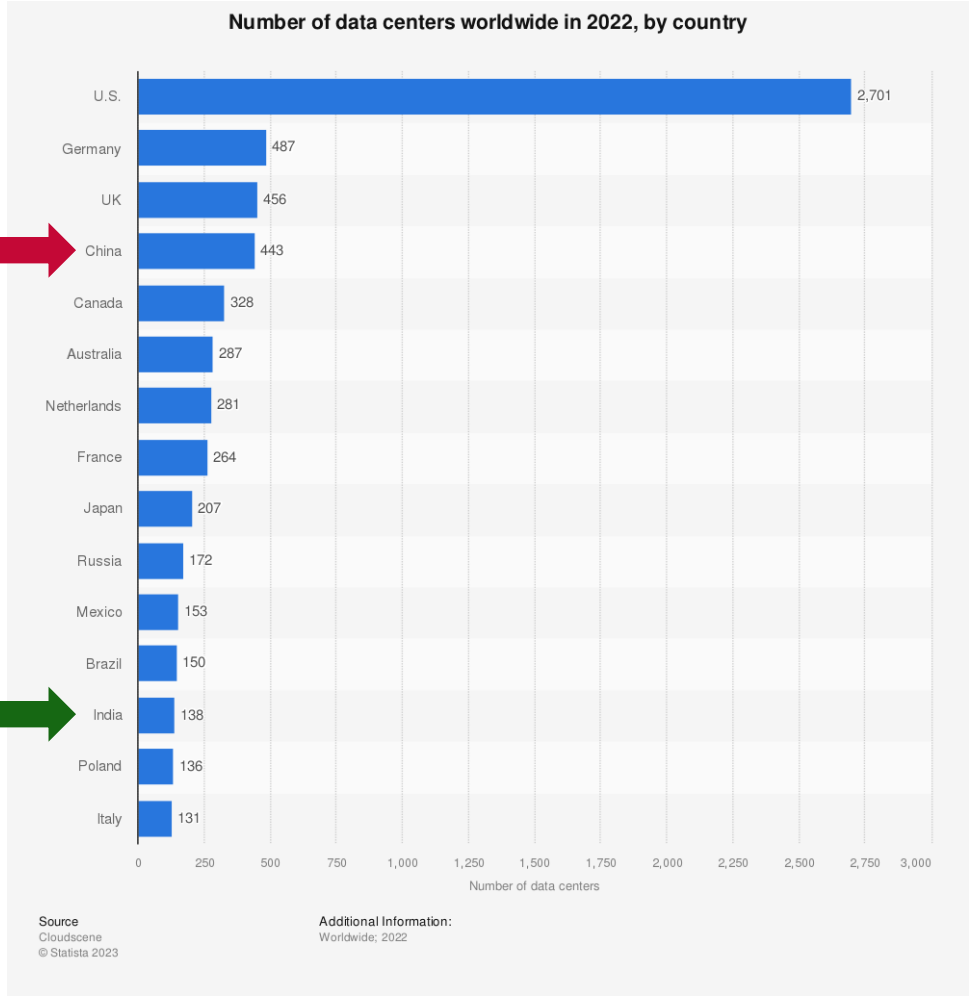

- **Vision Of Smart Cities Mission**
  - The objective of SCM is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment through the application of 'Smart' solutions.

# Global IoT market forecast (in billions of connected IoT devices)



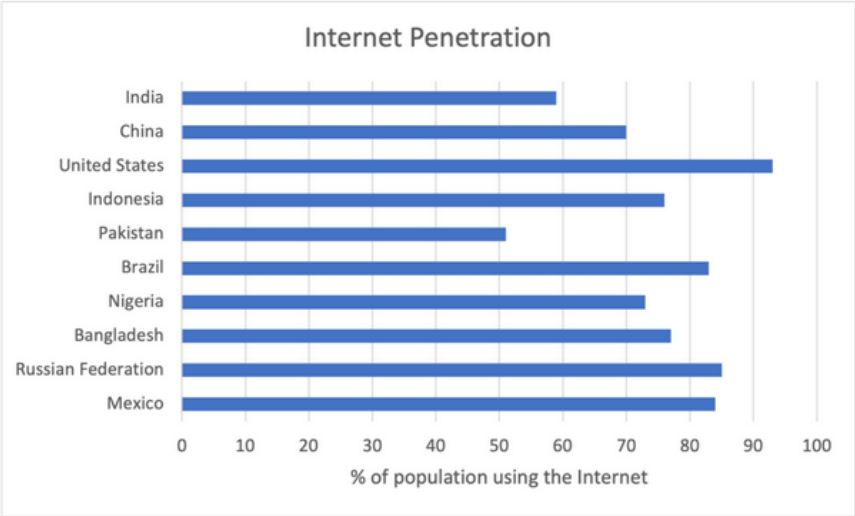

Source: May 2023, IoT Analytics


Number of Internet of Things (IoT) connected devices worldwide from 2019 to 2021, with forecasts from 2022 to 2030 (in billions)
Connected devices in billions
35
30
25
20
15
10
5
0
8.6
9.76
11.28
13.14
15.14
17.08
19.08
21.09
23.14
25.21
27.31
29.42
2019
2020
2021
2022*
2023*
2024*
2025*
2026*
2027*
2028*
2029*
2030*
Source
Transforma Insights
© Statista 2022


Number of data centers worldwide in 2022, by country
U.S. 2,701
Germany 487
UK 456
China 443
Canada 328
Australia 287
Netherlands 281
France 264
Japan 207
Russia 172
Mexico 153
Brazil 150
India 138
Poland 136
Italy 131
0 250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 2,750 3,000
Number of data centers
Source
Cloudscene
© Statista 2023
Additional Information:
Worldwide; 2022

# India’s Growth

- India secures 2nd rank in “Mobile broadband internet traffic within the country” and “International Internet bandwidth”.
- Internet connections jumped from 251 million in March 2014 to 836 million in June 2022, registering a growth of 232%.
- Broadband connections rise to 816 million in September 2022 from 61 million in March 2014, growing by 1238%.
- India added over 500 million new smartphone users over the last decade. Expected to have 850 million smartphone users by 2026, representing ~55% of the total population.




Source: Internet World Stats

- By the end of April 2023, India's population reached 1,425,775,850, with projections indicating further growth for several decades.
- Slightly higher than China's global record of 1.4 billion in 2022.
- While India appears to have passed China as the most populous economy, but the Internet penetration is less than China.

805
785

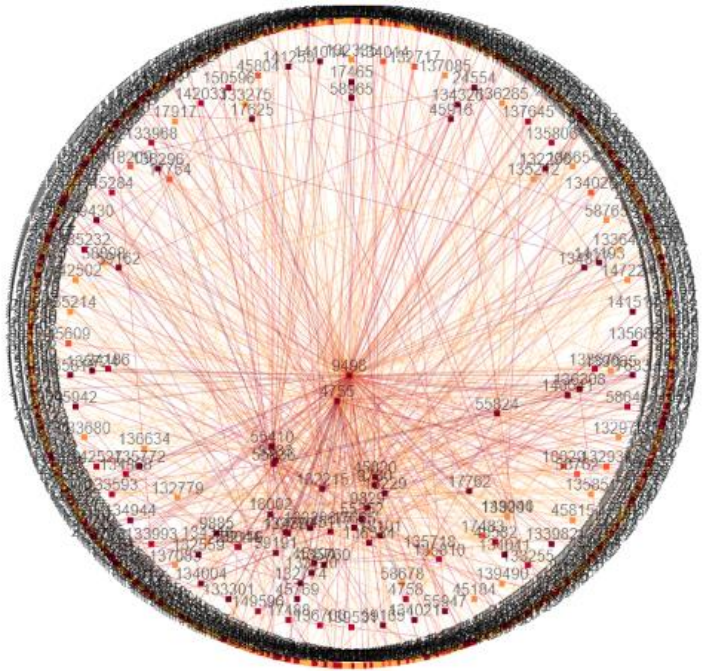
India

Group ASNs

**Visible IPv6 interconnections**

805 interconnections among
785 Autonomous Systems

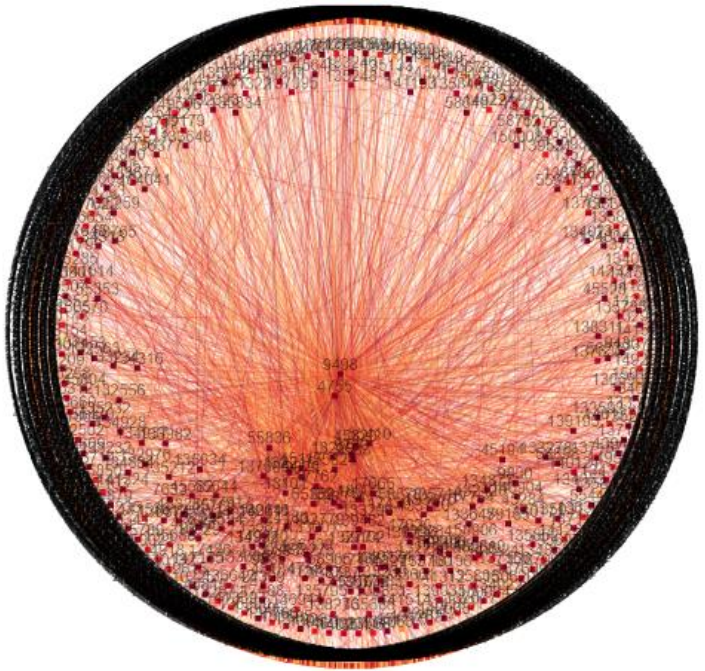
Search ASN here



**Visible IPv4 interconnections**

2932 interconnections among
2622 Autonomous Systems

Search ASN here



2932
2622

4738
4814

China

Group ASNs

**Visible IPv6 interconnections**

4738 interconnections among
4814 Autonomous Systems

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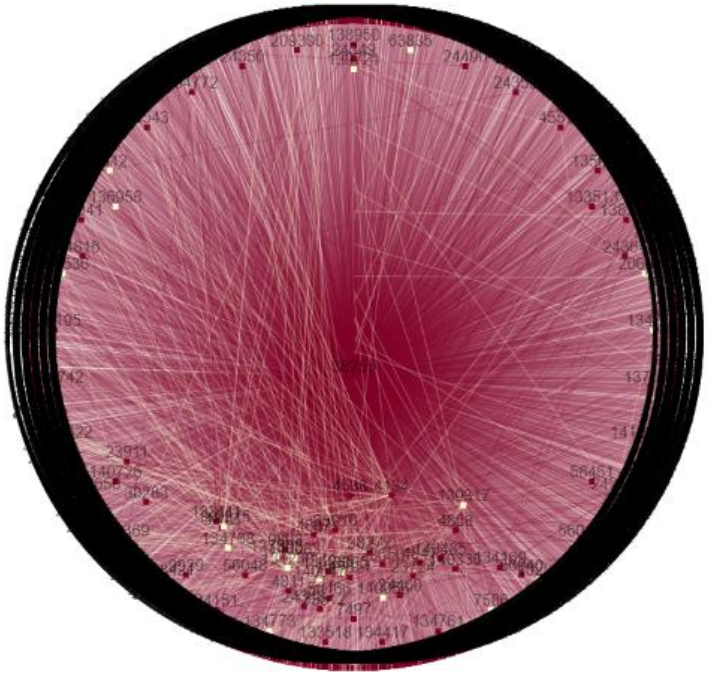
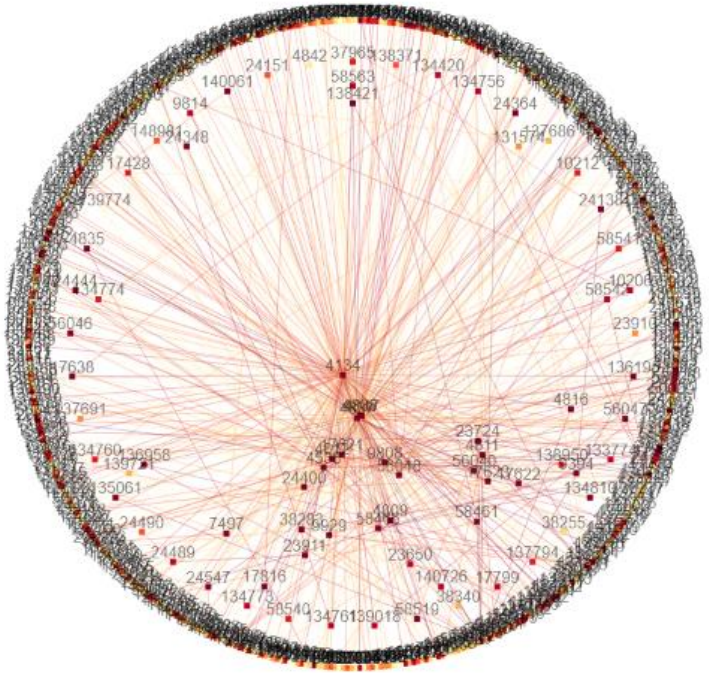


**Visible IPv4 interconnections**

660 interconnections among
564 Autonomous Systems

Search ASN here



660
564

# Towards Digital India and Smart Cities

**IPv6 offers the governments, ISPs, Academia, financial and businesses the ability to accommodate growth given IPv4 addresses have been exhausted.**

# THANK YOU