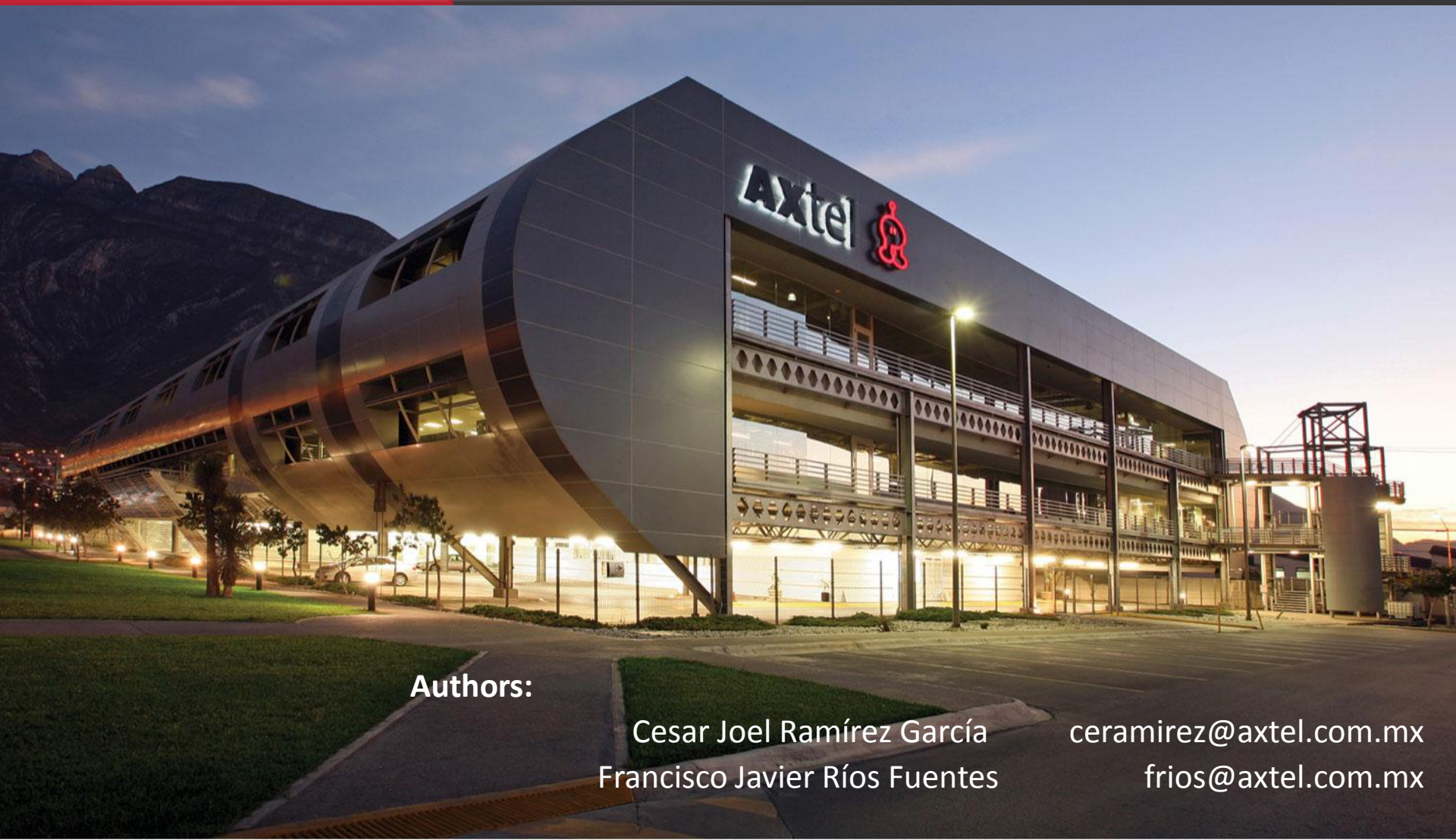
AXTEL Technology Evolution

"AXTEL IPv6 Study Case"



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About AXTEL

I. AXTEL started in 1999 as a fixed wireless access operator and is today the second telecom operator in Mexico.

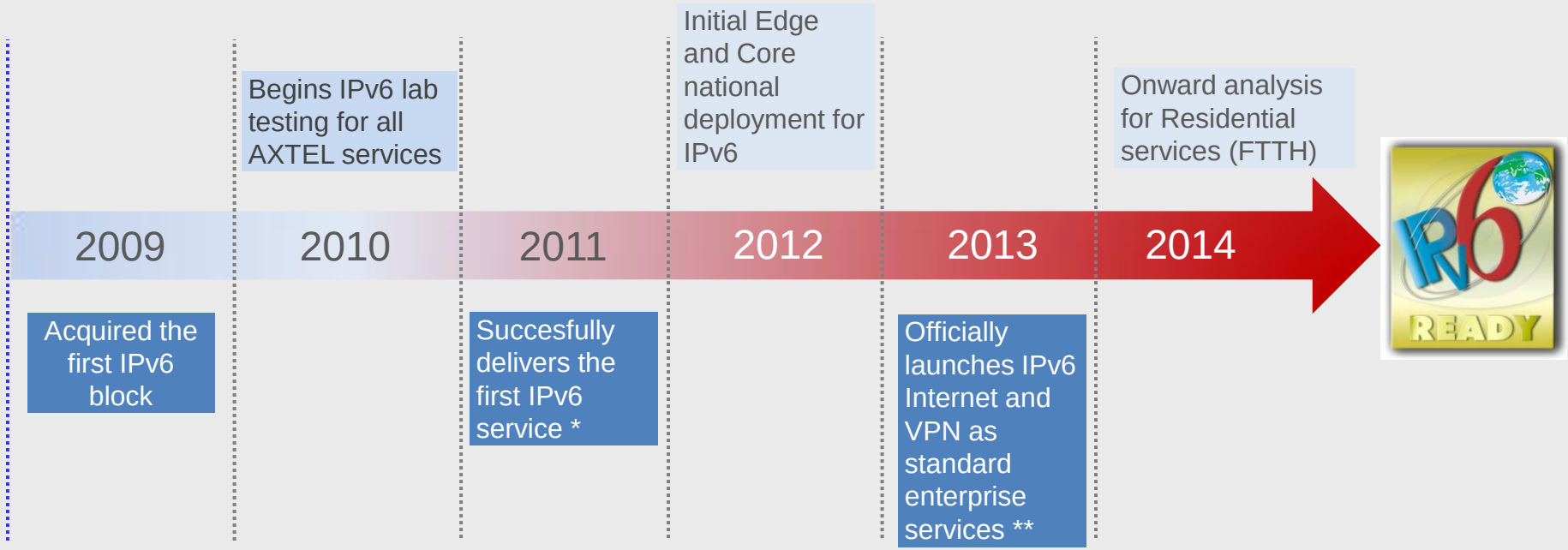
II. Has evolved through diverse technologies such as Wimax, FTTx, IPTV, WiFi Metro and others.

III. AXTEL has successfully promoted the development of a healthier industry through persistent lobbying with regulatory authorities.

IV. AXTEL currently offers broadband internet, Pay TV and ICT solutions in the residential, entrepreneurial, corporate, financial and government sectors.

For more info please visit http://axtel.mx/acerca-de-axtel

Historical Roadmap



* NIC Mexico: IPv6 Dedicated Internet service on first IPv6 compliant platform

** Integration process with IT Platform (OSS and BSS), corporate process, training, etc.

IPv6 Implementation Phases - Kickoff

I. IPv6 project is divided in 3 phases:
   a) Phase 0: IPv6 scope of project – Dedicated Internet and VPN services.
   b) Phase 1: IPv6 project definition and technology evaluation.
   c) Phase 2: IPv6 network and enterprise services deployment.

II. Recognizing the IPv6 **FACE** (IPv6 deployment challenges):
   a) **F**acing the “unknown”.
   b) **A**cquiring funds for the project.
   c) **C**onvincing the need for the project to the company.
   d) **E**stablishing the IPv6 team.

IPv6 Implementation Phases – Initial Analysis

I. Provider Assessment on core network.
   a) Define IPv6 compliant platforms.
   b) Detect “upgradeable” platforms for IPv6 compliancy.
   c) Eliminate non IPv6 complaint platforms from IPv6 transition solution.

II. Define the network IPv6 transition solution.
   a) Analyze all possible transition solutions in accordance to the AXTEL network requirements.
   b) Optimization strategy for IPv4 networks.
   c) Establish 6PE/6VPE+Dual Stack as the best solution.

III. Setup lab environment for testing all transition scenarios.
   a) Testing and documenting all deployment scenarios.

IPv6 Implementation Phases – Network Deployment

I. Optimize IPv4 deployed networks:
   a) Recover sub utilized IPv4 subnets (from legacy services).
   b) Update customer network assignment process.

II. DNS servers upgrade (support for A and AAAA records).

III. Configure IPv6 Route Reflection with iBGP peers.
   a) Upgrade Route Reflector Platform for IPv6 compliance.
   b) Configure Route Reflectors for IPv4/IPv6/VPNv4/VPNv6 families.
   c) Migrate central site IPv6 Access Routers to new Route Reflectors.
   d) Migrate all IPv6 Access Routers to new Route Reflectors.

IV. Implement dual stack with TIER1 Peers.

V. Deploy first IPv6 customer (central site).

IPv6 Implementation Phases – Service Deployment

I. Internal service process audit and update.
   a) Development of a new IPv6 service process (based on active IPv4 process).

II. Internal systems audit and update (BSS and OSS).

III. Update product documentation with new IPv6 functionalities:
   a) Marketing Product guides.
   b) Provisioning Guidelines.
   c) Network architecture.

IV. Operational training to support and Engineering teams.

V. IPv6 product introduction to sales and marketing teams.

VI. Official launch of IPv6 Internet and VPN as standard services.

Project Highlights

I. IPv6 business case.

IPv6 was analyzed as a business continuity necessity; nonetheless, the result of the financial business case was a ROI of approximately 4 years.

II. Initial requirements:

a) Analyze the IPv6 project impact within the company and the network.
b) Communicate to all company levels the urgency and importance of IPv6 evolution.
c) Assign human and financial resources to the project.
d) Teamwork effort between AXTEL and it's providers.
e) Lead a nation and company wide multifunctional team.

III. Challenges.

a) Biggest challenge: Establishing IPv6 as the main technology evolution project
b) Easiest challenge: Once the transition solution is defined and documentation is prepared, IPv6 deployment and implementation was very straight forward.

In Retrospective

If we could return to the beginning of the IPv6 project, what we would of liked then is…

I. More insight regarding how each of our different equipment providers were doing towards their evolution to IPv6.

II. The possibility to talk to another provider that had already implemented IPv6 in their network and learn from their experiences.

III. Support from our providers with people/team that had hands-on experience in an IPv6 evolution project.

IV. To have had IPv6 support, even years before the beginning of the project; as a required functionality in all or our network and IT equipment requirements.

Recommendations

I. Communicate to all company levels the urgency and importance of IPv6 evolution.
II. IPv6 is a primarily a business continuity case.
III. Test in a lab environment all your IPv6 deployment scenarios
IV. Begin IPv6 training in all the different technical, sales and marketing teams ASAP.
V. Evaluate the necessity of running a network audit or assessment to know where your network stands regarding IPv6.
VI. Assist to technology forums and ask other people about their experience in the IPv6 evolution. There are a lot of us in the same situation.
VII. Work closely with your equipment providers.
VIII. Implement double stack wherever possible.
IX. Avoid NAT techniques wherever possible.
X. Don’t be afraid of the IPv6 transition; as with many things the beginning is the toughest part.
XI. Cry out to the world when you are IPv6 Ready!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