IPv6 Helps Tunisie Telecom Network Transformation and Upgrade

TT EN CHIFFRES

6 Millions + clients

>99% couverture des citoyens

1er
TT Meilleure Internet Mobile en Tunisie 19-20-21 & 2022 selon nPerf

96%
Couverture population 4G

2,2 Gbps
le 1er TRIAL 5G en Tunisie avec un débit dépassant

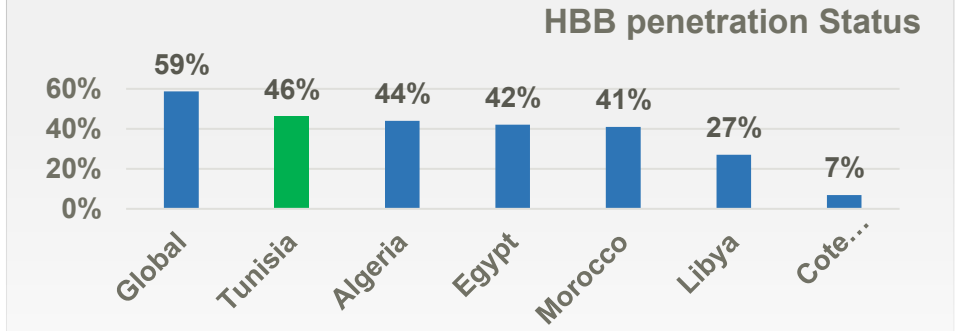
~ 90%
Nombre de stations radio fibrées.

1er
Opérateur présent dans les **zones Blanches** et partenaire technologique des événement de la Tunisie

30 000
de Klm de FO sur tout le territoire Tunisien

TT Accelerates Strategic Transformation

Tunisia HBB Penetration Reached 46%, Rank NO.1 In North Africa



Carry out strategic transformation to Enable into All-Fiber Era

FTTH Home Pass(K)

100K 2023 → 250K 2024 → 500K 2025

FBB Download Speed

50Mbps Minimum Universal Service

100Mbps Minimum Urban

Package Design

Entry Package : 50Mbps

Mainstream Package : 100Mbps

Operation & Maintenance

Installation ≤ 3 Days

Restoration ≤ 1 Day

First Call Resolve > 50%

Full-Service Intelligent IP Network Build First

TT Business Typical Scenario

B2C : Mobile Application Experience

Gaming
Low Latency & Jitter
High Bandwidth

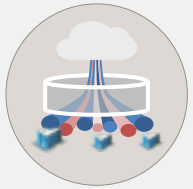
B2H : Home Broadband Stability

Video Meeting
Less Packet Loss
Low Latency

B2B : Premium Leased Line

Tele-Medicine
Ultra-Low Latency
Absolutely Reliability

Characteristics of Target Network



IPv6 as the next hop

- Smooth Protocol Interworking
- E2E Automation

E2E Automation

- Intent-Driven Traffic Forwarding
- Network Quality Assurance

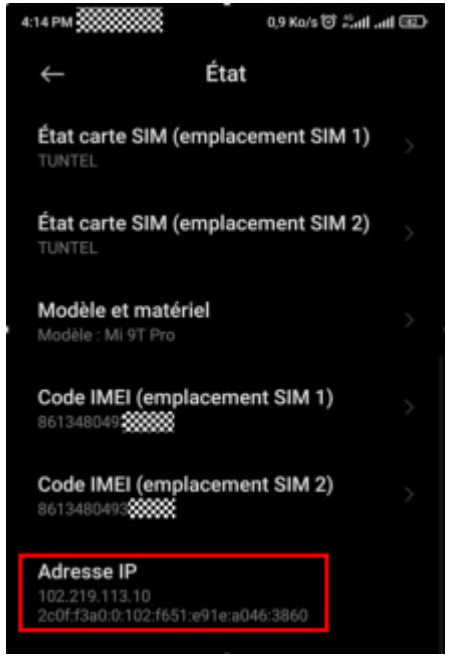
Assure Experience (high speed/low latency)

- Any-Topology Protection
- Multi-Path E2E Protection

TT's MBB network is IPv6 Ready

- The solution IPv6 has been implemented at the EPC Core level to test the internet connectivity
- IP pool IPv6 and ip pool ipv4 was created on CloudUGW Side to test the ipv4v6 dual stack

Test Result dual ipv4v6

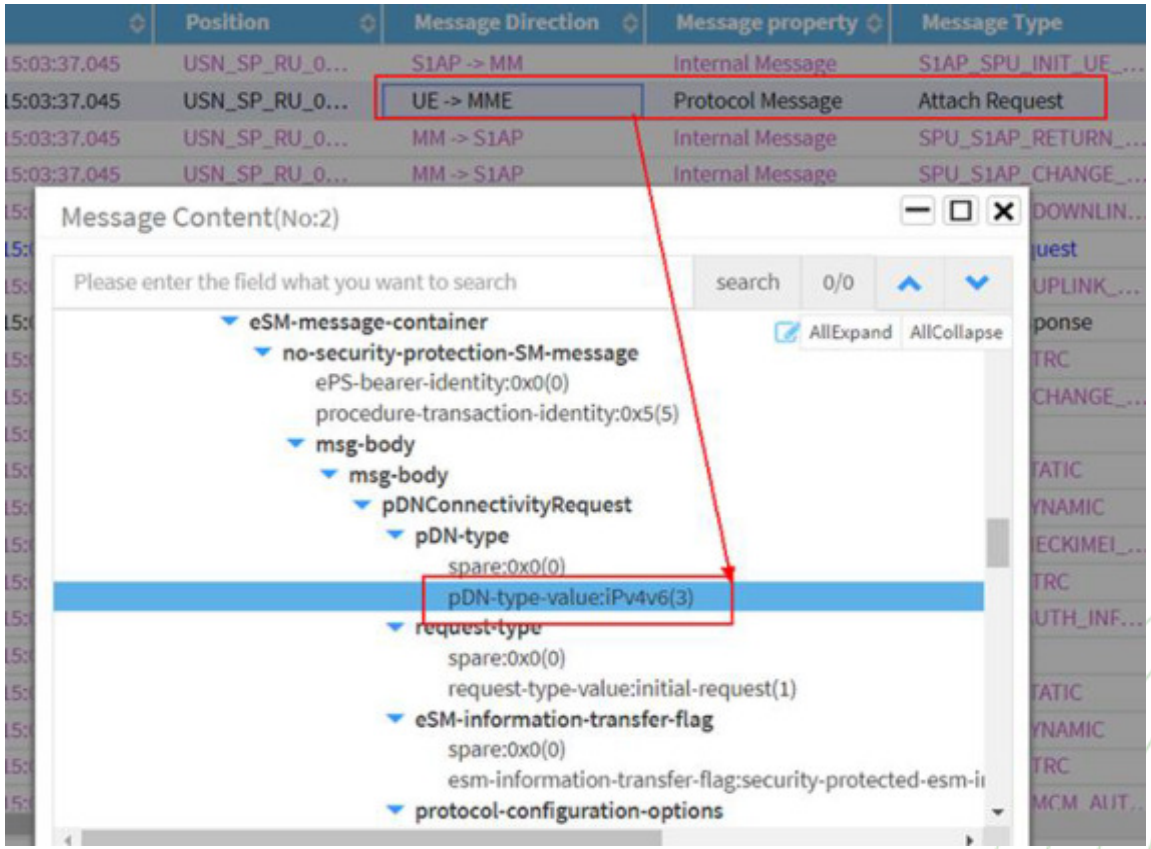


Test Result with only ipv6

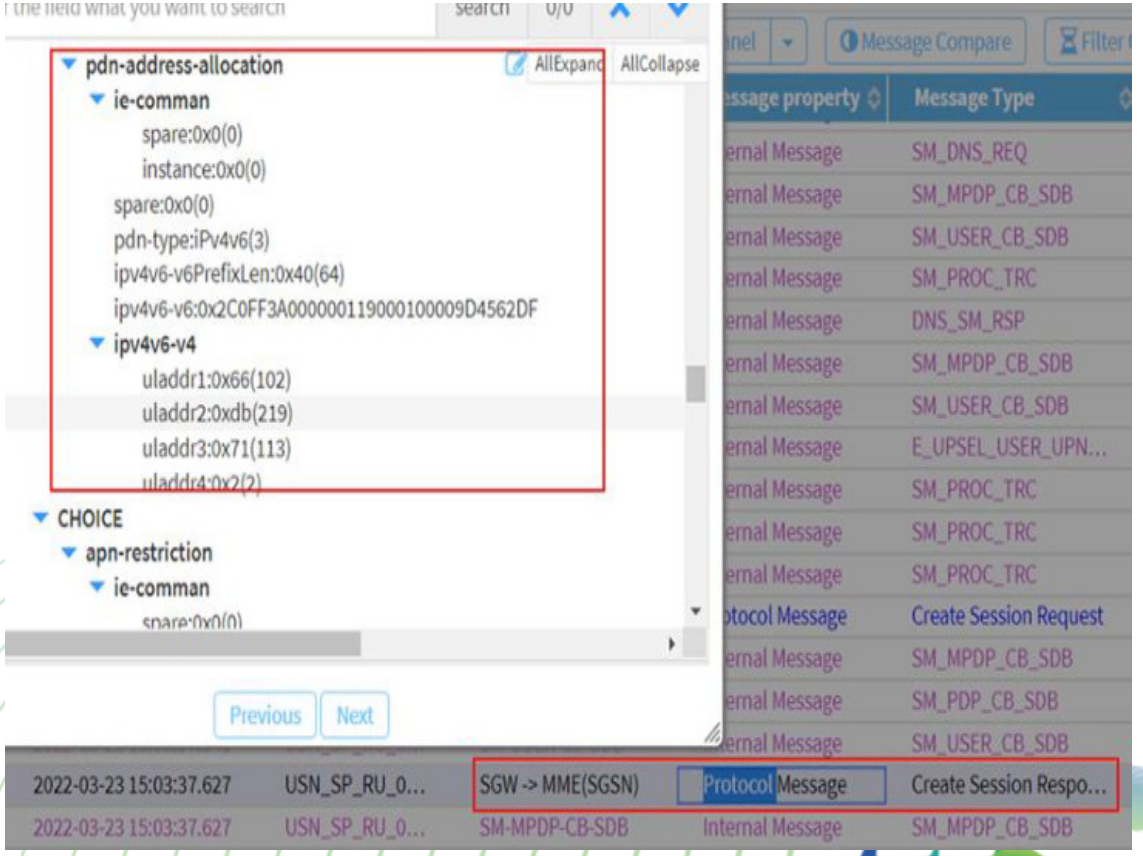

```
Pdpcontext info
---------------
PDP Context Info  =
PDP context on RU UGW_SP_RU_0084
------------------------------
                              IMSI  =  605020814070264
                              IMEI  =  861348049337450
                          UGW Role  =  S+PGW
                       EPS Bearer ID  =  5
                     Default Bearer  =  Yes
                          PDP type  =  IPv4v6
                 IPv4 Address type  =  UGW ALLOC IP ADDRESS
                 IPv6 Address type  =  UGW ALLOC IP ADDRESS
                  IPv4 PDP address  =  102.219.113.7
                  IPv6 PDP address  =  2c0f:f3a0:0:11d:1:0:9d4b:9768
            IPv4Redundancy Flag  =  false
            IPv6Redundancy Flag  =  false
    IPv4 Frame Router Redundancy Flag  =  false
                          MSISDN  =  21695986716
                        APN name  =  ipv6.tn
```

TT deploy MBB IPv6 dual stack successfully

Capture Trace from CloudUSN
UE smartphone request IPv4/ipv6



CloudUGW allocated to the UE
dual ipv4 and ipv6



IPv6 Enhanced, Key Enabler to Intelligent IP Networks

Massive IP Address

Flexible Programmability

Service-driven network
Traffic engineering
Service automation

Protocol Simplification

E2E cross-domain orchestration
IGP/BGP only
Native IP VPN

Ultra-High Reliability

Always-on services
TI-LFA, mirror SID

Elastic Scalability

Unlimited network scale
Route summarization, BSID

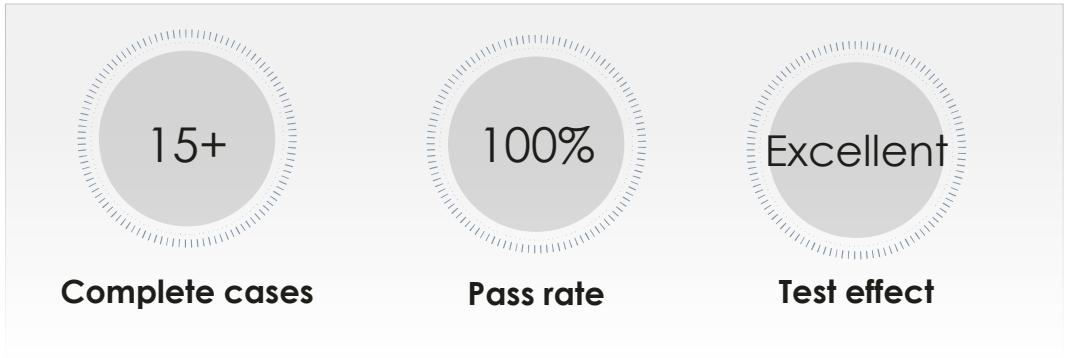
Keeps innovating and making practices based on IPv6; is the cornerstone for smart connections in the 5G and cloud era.

SRv6 is ready for large-scale deployment, Interoperability Test Success

Interop Test in JAN, 2023@ IOH, Indonesia

NO	Cat.	Interop Test Cases	Result
1	SRv6 Protocol	ISISv6 Control Plane Establishment	PASS
2		ISISv6 Forwarding	PASS
3		SRv6 OAM	PASS
4		SRv6 MP-BGP Overlay Establishment	PASS
5		SRv6 Policy uSID Explicit Path Establishment	PASS
6	Services	SRv6 L3VPNv4/v6 Data Plane Services Interop	PASS
7		SRv6 L3VPNv4/v6 Services Interop with SRv6 Policy Explicit Path	PASS
8		BGP IPv4 Establishment through SRv6 EVPN Single Home	PASS
9		SRv6 EVPN Single Home Data Plane Services Interop	PASS
10		SRv6 EVPN ELAN Single Home Services Interop with SRv6 Policy Explicit Path	PASS
11		SRv6 4PE/6PE Services Interop	PASS
12		SRv6 EVPN VPWS over SRv6 BE	PASS
13		SRv6 EVPN VPWS Interop with SRv6 uSID Explicit Path	PASS
14		SRv6 TI-LFA	PASS
15		SRV6 EVPN ELAN Multi-homing/Single-Active scenario	PASS

SRv6 Interoperability Test Success



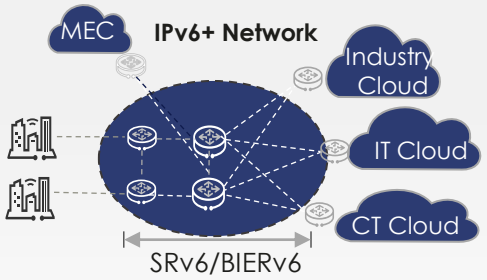
SRv6 Brings Great Value to Customer's Network

41% ↓
Transmission overhead reduce

35% ↑
Forwarding efficiency improve

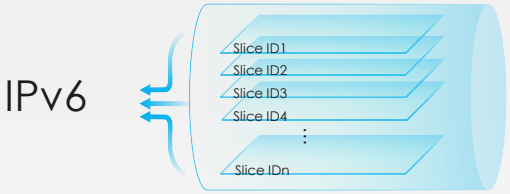
TT IPv6 will Accelerate SRv6 deployment process

Expanding 2B and cloud service coverage on IPv6 Enhance networks



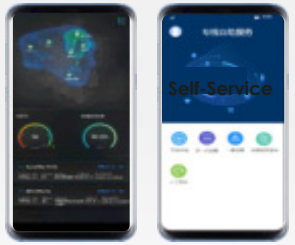
- Cloud-network synergy
- Deployed new sites closer to users.

Deploy IPv6 Enhanced (slicing & SRv6) on whole IP network



- **Deterministic** network computing experience
- **5G and Gigabit Access** Ready

Provide slicing leased line services for government and enterprise



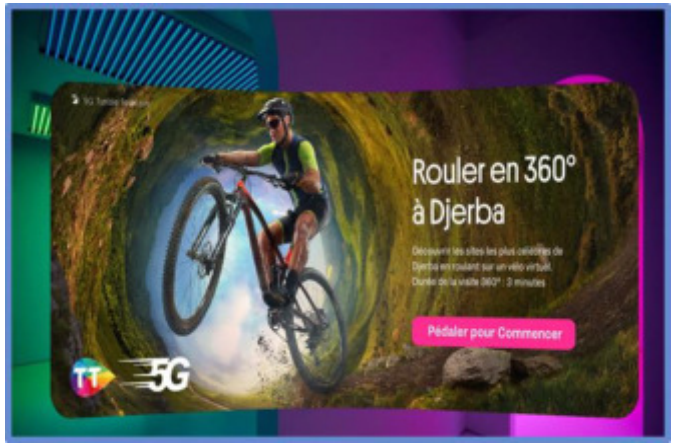
- Quick service provisioning
- Provide more value-added services

TT award-winning

Projet National Mobile ID

Projet National IPv6

5G Exhibitions SIF



TT Meilleur Réseau Mobile

TT partenaire de l'inclusion numérique

FO de TT produit de l'année

MERCI

Tunisie Telecom