



**CASE STUDY**

# Infovista’s Performance Insight Reduces OPEX and CAPEX of State-of-the-art IP Backhaul Network

## About Ooredoo

Launched in 2002, Ooredoo Tunisia, formerly known as Tunisiana was the first private telecoms provider to operate in Tunisia. With over 6 million subscribers, Ooredoo Tunisia is the national leader in mobile telephony with a market share of 56%. This tremendous achievement was largely possible due to Ooredoo Tunisia’s desire for innovation and commitment towards service quality.

Ooredoo Tunisia’s innovation history extends for a decade. Mobile Value Added Services (VAS) for both Prepaid and Postpaid subscribers were inaccessible for Tunisians until Ooredoo Tunisia redefined the mobile experience by introducing services such as Internet Browsing Bundles, Corporate Push Email, Missed Call Alerts, Please Call Me, E-Top Up/e-Voucher, Credit Transfer and USSD Top-up.

In 2009, Ooredoo Tunisia carried its first mobile phone call over a Gigabit Ethernet-powered IP/MPLS core network. The next year, the company broke even newer grounds in the Tunisian market by deploying the first hybrid -based microwave access link. More recently and as part of their commitment to deliver the best 3G services, the company has focused their engineering efforts in deploying a Backhaul aggregation infrastructure to an outstanding 10 GbE.

This gigantic on-going network transformation towards a full packet-based transport infrastructure

### BENEFITS SUMMARY

- **Accurately prioritize capital investments and reduce OPEX with better visibility into actual infrastructure and services utilization**
- **Control CAPEX by proactively enabling the validation of equipment vendor requirements**
- **Proactively validate that third-party providers and equipment vendors are meeting SLAs**
- **Accelerate the time-to-market of the new NGN IP-based transport infrastructure**

has certainly not lacked a set of business and technical challenges that Ooredoo Tunisia’s management and engineering teams have had to solve with the help of its technology partners.



**THE CHALLENGES**

In May 2012, Ooredoo Tunisia was finally granted new telecom licenses enabling the company to deploy and operate 3G/WCDMA and fixed-line networks. Rather than sitting comfortably waiting for the auction date, Ooredoo Tunisia has spent enormous capital and human effort in planning, deploying, testing and assuring what is to become the best 3G and fixed-line services that Tunisians are to experience. During the critical planning phase Ooredoo Tunisia got to work in order to find an answer to the following question:

**HOW CAN WE BUILD, THE FASTEST, MOST RELIABLE, MOST EFFICIENT AND COST EFFECTIVE 3G AND FIXED LINE NETWORKS IN THE SHORTEST AMOUNT OF TIME?**

**The Fastest:** How can we assure every subscriber receives the most responsive 3G and fixed broadband experience?

**Most Reliable:** How can we guarantee the highest service availability of the market in the shortest amount of time?

**Most Efficient:** How can we optimize the deployment and management process while ensuring the optimal utilization of our networks? – Operational Efficiency reducing OPEX.

**Cost Effective:** How can we prioritize and assure the efficient use of our infrastructure capital and operational investments? – Controlling CAPEX.

In the quest of finding answers to these questions, Ooredoo Tunisia decided to give Infovista the opportunity to prove its capabilities in a live trial environment. After testing the solution for a few weeks, Ooredoo Tunisia was convinced that Infovista could provide some of the CRITICAL answers to the aforementioned challenges.

**VistaInsight® for Networks is a unique platform that gives us the perfect balance between flexibility and openness. This allows us to develop any kind of indicator and report critical for assuring the right-sizing and troubleshooting all NGN services running in our network.**

Anis Dilou, Senior IP Engineer

Ooredoo Tunisia’s engineering team was able to proactively avoid a service disruption scenario caused by a high packet drop rate detected at one of their main MGWs. With VistaInsight for Networks, they were able to get the right utilization insight to apply corrective measures to resolve this issue.

**GUARANTEEING THE FASTEST END-USER EXPERIENCE BY ASSURING E2E IP TRANSPORT PERFORMANCE**

In order to assure a responsive mobile and fixed broadband experience, every transport element across the service delivery path must be operating at its optimal performance. For this reason, Ooredoo Tunisia decided to deploy VistaInsight® for Networks (VIN) and VistaLink® for Alcatel 5620 SAM.

These modules allow Ooredoo Tunisia’s engineers to measure the E2E delay, throughput and utilization of



IP backhaul connections by means of consolidating 5620SAM performance metrics with Cisco IP-SLA measurements in Infovista’s service oriented dashboards.

**GUARANTEEING HIGH SERVICE AVAILABILITY BY ASSURING A RESILIENT IP TRANSPORT INFRASTRUCTURE AND INTEGRATING PERFORMANCE AND FAULT MANAGEMENT.**

Ensuring services availability requires a combination of a resilient network infrastructure, a proactive performance monitoring process, and an intelligent alerting engine able to seamlessly interoperate with fault management platforms in order to predict and avoid service disruptions.

Ooredoo Tunisia was one of the first mobile operators in the world to deploy a Point-to-Multi-Point (PMP) topology between their Mobile Gateways (MGW) and their Mobile Softswitch Solutions (MSS). This unique pool architecture allows Ooredoo Tunisia to assure the highest levels of service availability by giving each MSS the ability to route traffic to any available MGW. One downside to this meshed topology is the additional performance management requirements derived from the need to manually monitor the additional connections between each MSS and each MGWs.

With Vistalnsight for Networks, Ooredoo Tunisia has been able to proactively monitor the availability, load, and saturation of these additional logical connections and interfaces responsible for carrying signalling for Mc from each MSS to each MGWs. In addition, Vistalnsight for Networks has allowed Ooredoo Tunisia to rapidly consolidate and extend the basic performance measurement capabilities provided by equipment Network Management Systems (NMS). With Infovista’s advanced performance metrics and forecast-driven alerting engine, Ooredoo Tunisia is now able to more effectively detect, validate, and

troubleshoot potential service disrupting patterns before end users are affected. – A feature not available in most NMS.

Finally, a key strategy for reducing network downtime has been the close integration between Vistalnsight for Networks and Ooredoo Tunisia’s fault management platform. Vistalnsight for Networks’s open northbound interfaces automatically forwards service and infrastructure-level utilization alerts that allows the Network Operations Centre (NOC) to detect and localize E2E disruptions in real-time.

**MEASURING ACTUAL NETWORK UTILIZATION AND PERFORMANCE TO ENSURE EFFICIENT IP INFRASTRUCTURE ROLLOUTS AND OPTIMAL INVESTMENTS IN CAPEX AND OPEX**

Before Infovista, Ooredoo Tunisia relied heavily on CLI commands, NMS extracts and excel spreadsheets to measure the performance and estimate the utilization of its routing and switching infrastructure. This was evidently a very inefficient and time-consuming process that required manual effort for each equipment type and vendor. This process also left Ooredoo Tunisia’s engineers without any insight into historical performance trends critical for accurate IP network planning and dimensioning.

**“ One the greatest benefits of Infovista’s platform is its flexibility and ability to easily adapt and scale at the same pace as our network evolves. ”**

Ali Rebai,  
IP Services Engineering Manager



**ENSURING AN EFFICIENT IP INFRASTRUCTURE DEPLOYMENT**

**ASSURING TRANSPORT'S NETWORK SUITABILITY TO CARRY ABIS OVER IP**

Ooredoo Tunisia is one of the first mobile operators in Tunisia to deploy a fiber based IP/MPLS backhaul aggregation network. This means that Ooredoo Tunisia has already started migrating its circuit-switched TDM connectivity towards “3G-friendly” and cost-efficient IP transport. In order to assure the same CoS and QoS of its existing legacy backhaul network, Ooredoo Tunisia decided to extend its Vistalnsight for Networks platform with Infovista’s VL-SAM module.

Infovista’s out-of-the-box support for Alcatel 5620 SAM and Cisco IP-SLAs has given Ooredoo Tunisia a consolidated vendor-independent view of the network as well as additional performance metrics, needed to assure IP backhauling requirements such as <15ms E2E delay from cell-site (BTS) to BSC for Abis over IP.

This holistic level of performance visibility has improved Ooredoo Tunisia’s operational efficiency by freeing specialized resources from routine performance monitoring tasks. It has also contributed in reducing the time-to-market of this critical OPEX reduction project. In addition Vistalnsight for Networks’ performance insight has empowered engineers to more accurately validate new IP infrastructure acceptance tests as well as the network’s suitability to meet the SLAs attached to new equipment deployment requirements.

Ooredoo Tunisia’s transport team was recently able to proof-wrong one of their equipment suppliers who suggested a new fiber ring was needed in order to meet a 5ms latency requirement between three Intelligent Network (IN) platforms. With Vistalnsight for Networks dashboards, engineers were able to extract E2E measurements to **PROOF** that the current infrastructure could handle the suggested delay requirements, saving the operator’s CAPEX and OPEX.

**ENSURING OPTIMAL INVESTMENTS IN CAPEX AND OPEX THROUGH ACTUAL VISIBILITY INTO INFRASTRUCTURE UTILIZATION**

Ooredoo Tunisia is undergoing a big network transformation project from the mobile access through the backhaul and the IP Core. In such network upgrades, it is critical for service providers to deeply understand the actual traffic loads on each segment of the network. Only this level of visibility can provide the necessary insight to eliminate the risks of over-provisioning costly non-required network capacity.

Vistalnsight for Networks is equipped with a powerful traffic analytics engine that provides accurate measurements of service and infrastructure utilization. Vistalnsight for Networks is not only capable of reporting on the current load of each CPU, memory, Interface, LSPs, VPN, Pseudowire, router or switch; It is also capable of “learning” over time to produce advanced utilization metrics that enable a “current vs. future view” of the network load.





**REDEFINING NETWORK PLANNING PROCESS**

With this functionality, Ooredoo Tunisia’s engineers have been able to improve the accuracy of the network planning and capacity expansion approval processes. Prior to implementing VistaInsight for Networks, Ooredoo Tunisia’s planning process relied on three components to prioritize their CAPEX investments.

- Internal stakeholders’ bandwidth request predictions
- IP Planning team’s traffic matrixes
- A third-party network planning tool

The key problem Ooredoo Tunisia faced with this approach was that of finding the “real truth” between the internal stakeholders requests (i.e What they think they need) versus what the transport’s team traffic matrixes forecasted. This discrepancy many times led to the transport team taking the “safe-butcostly” approach of over commissioning the new infrastructure to reduce the risk of poor QoE.

With Infovista, Ooredoo Tunisia is now able to automatically feed the planning tool with actual snapshots of real infrastructure utilization. These “snapshots” take into consideration important traffic pattern characteristics such as 95% percentile indicators to reduce the miss-leading impact that traffic peaks can cause in accurately dimensioning the network.

The implementation of this new process has translated into tremendous CAPEX and OPEX benefits for Ooredoo Tunisia. The following are a few of the many examples:

**MICROWAVE SPECTRUM OPEX SAVINGS**

Ooredoo Tunisia’s backhaul access architecture relies heavily on P2P Microwave links. According to Monica Paoli from Senza Fili Consulting, P2P

**VistaInsight for Networks’ actual network utilization insights have allowed us to better prioritize CAPEX and reduce OPEX by being able to plan and dimension our networks more accurately.**

Sami Landoulsi,  
Head of Transport Networks

Recently, Ooredoo Tunisia’s transport team was able to demonstrate this benefit when a request for additional backhaul capacity came from the RAN engineering department, who claimed the need to upgrade the cell-site’s backhaul capacity from 12 Mbps to 30 Mbps. After analyzing this requirement via VistaInsight for Networks, Ooredoo Tunisia’s transport team quickly was able to demonstrate to the RAN team that the actual traffic load on those connections was only 9 Mbps and that an upgrade was then not required at that point in time eliminating the need for unnecessary capacity. When put in context of more than 1500 BTS-BSC connections, this represents major savings.

Spectrum licenses can account for as much as 12% of microwave connections yearly OPEX. This means that operators that are not thorough in analyzing actual traffic loads can very easily deploy unnecessary



additional bandwidth which of course translates into an increase in both CAPEX (equipment cost) and OPEX from additional spectrum licenses, deployment, and maintenance costs.

By having visibility of the actual utilization from the cell sites to the core, Ooredoo Tunisia has been able to accurately dimension their next-generation packet-based microwave infrastructure. This “right-sizing” process is drastically influencing the equipment and

spectrum cost, as the transport network engineering is now able to fully leverage the bandwidth flexibility features of packet microwave technology.

These examples illustrate the changes in Ooredoo Tunisia’s network planning practices. Before Infovista, such request would have likely been fulfilled at the wrong priority, putting a lot of pressure into other projects, which indeed required a bandwidth expansion.

## SUMMARY

The level of performance visibility that Infovista has provided to Ooredoo Tunisia has brought a new level of control over the planning, deployment, and operational phases of their next generation transport networks. From the IP/MPLS core, through the IP backhaul and packet microwave access networks, Ooredoo Tunisia is now able to guarantee the integrity of the IP infrastructure and more importantly, better prioritize capital expenditures and reduce operational expenses through a centralized performance

assurance practice. For sure there will be additional challenges ahead before finding all the answers to building the fastest, most reliable, most efficient and cost effective 3G and fixed-Line networks Tunisians have ever experienced. However, Ooredoo Tunisia has already conducted major steps towards reaching this goal. Ooredoo Tunisia’s relentless quest for excellence, admirable desire to innovate, and Infovista’s support will make this happen sooner rather than later.

## About Infovista

Infovista, the leader in modern network performance, provides complete visibility and unprecedented control to deliver brilliant experiences and maximum value with your network and applications. At the core of our approach are data and analytics, to give you real-time insights and make critical business decisions. Infovista offers a comprehensive line of solutions from radio network to enterprise to device throughout the lifecycle of your network. No other provider has this completeness of vision. Network operators worldwide depend on Infovista to deliver on the potential of their networks and applications to exceed user expectations every day. Know your network with Infovista.