



Wateen Telecom – Case Study

An AdvOSS Solution Deployment – Case Study

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About Wateen

Wateen Telecom is a converged communication services provider that fulfills connectivity requirements for organizations and individuals in Pakistan. Wateen Telecom delivers complete solutions for Internet, Voice, Multimedia and Enterprise Solutions that make it the most comprehensive provider in the region. An Abu Dhabi Group venture, Wateen's vision is to take Pakistan into the digital revolution of the 21st Century and to make Pakistan a regional communications hub, connecting the East with the West and Central Asia with the Middle East.

Wateen began its operations in Pakistan in 2007, with the deployment of the largest fiber optic network in the country. Moreover, Wateen is the world's first company to commercially roll out a WiMAX network on a nationwide scale. Wateen currently services over 250,000 WiMAX subscribers, provides enterprise solutions and data services to over 200 leading organizations and its wired (HFC/GPON) network reaches over 15,000 households.

Billing and Charging:

Previous Solution:

Rating Engine by HighDeal, Charging & AAA Server by JNETX, Provisioning by Motorola, VOMS by InfoZech.

Till June 2010, Wateen was using multi-vendor Billing & OSS Solution, comprised of different products and the whole turnkey platform was provided by its main vendor Motorola Solutions. This included the Rating Engine from Highdeals (SAP Charging & Billing Product for Telecoms), Charging Engine from JNETX (An Amdocs Products), Voucher Management from Infozech and Motorola Provisioning System.

Reasons for change:

OPEX & Maintenance costs: Operational costs of the full solution were quite higher and Wateen's management decided to reduce them.

Network Outages: Network outages were frequent due to many Pre-integrated components at core from different vendors.

Flexibility in customizing the solution according to the changing business requirements was low.

Proposed Solution:

AdvOSS Converged Billing was first time introduced in Wateen's network in July 2010. At that time it replaced its complete IN & Online Charging System for its overall WiMax services which was provided by Motorola's Partners.

Next Generation Converged IN & Charging Solution Provided by AdvOSS incorporates Real time Convergent Charging & Rating, Unified Voucher Management System, Prepaid calling card and ANI platform, Interactive Voice Response for customer self-care, AAA, CPE and network elements provisioning, customer self-care portal with hot-lining support, and various other add-on modules & features specially designed to meet the needs of emerging providers such as Wateen.

AdvOSS Converged Billing Solution was recently up-graded to support Wateen's relaunch. Wateen's re-launch includes introduction of innovative Products & Packages which will further strengthen its position as a country's leading WiMAX Operator. Wateen's new products portfolio is unmatched by any other WiMAX/Broadband Operator in the region. The upgraded AdvOSS solution for Wateen re-launch include three new key products: AdvOSS-AAA built on AdvOSS's flagship Service Delivery Platform (SDP) that enables extensible and customizable AAA application workflows, AdvOSS HSS (Home Subscriber Server) that enables Wateen to differentiate Quality of Service and Experience for users based on service offerings, and a PCRF framework compliant AdvOSS-Policy Server for evaluation of complex and advanced policy rules for service delivery and charging.

Administrative & CSR Portals:

Previous Solution:

Administration Interface by Highdeal & Jnetx
CSR Portal were part of Wateen's in-house CRM

Reasons for Change:

- Administrator & CSR GUI was not user friendly and detailed use case cases were not fully covered

Proposed Solution:

AdvOSS deployed administration and CSR portals for Wateen. AdvOSS Admin portal enables quick and easy definition of Product Catalogs with Service Offerings and Plans as per the Service Provider's business requirements. Furthermore extensive use cases are also covered now in both Admin & CSR portals. The AdvOSS customer management provides powerful subscriber creation and active subscriber management features. The features available empower the CSR and operations personnel to perform the customer care related functions, and manage daily operations in a highly convenient and efficient manner.

Self-care & Hot-lining Portal:

Previous Solution:

Wateen in house CRM System

Reasons for Change:

- Flexibility & Customizability in Customer Dashboard
- Missing Auto-login functionality
- Performance issues

Proposed Solution:

AdvOSS Self-care and Hot-lining Portal. AdvOSS Self-care and Hot-lining Portal enable Wateen to provide much needed Auto-login functionality to its customer while being redirected to the Hot-lining/Self-care Portal. Detailed Customer Dashboard is also provided by AdvOSS as part of the Self-care. It enables Wateen to offer various Self service options to their Customers so that they can check their Status, Balance & Account info, Recharge through Vouchers and more.

Calling Cards:

Previous Solution:

Originally an IN by Nortel

Reasons for change:

- Stability
- Maintenance cost
- Functionality, Support

Proposed Solution:

Replaced by AdvOSS solution in 2007 and then upgraded to latest AdvOSS Calling Card solution in 2010.

In 2007, Calling Cards market was hot and Wateen used to be a leading Calling Operator in the region and was also offering the services through different Resellers and brands. However it was facing stiff challenges in managing its IN platform due to maintenance costs, support and other related issues. AdvOSS Proposed its full Prepaid Calling Cards Management & ANI platform in collaboration with its local partner IPhonica. this solution has now been upgraded to the latest Calling Card Platform built on AdvOSS-SDP and its prepaid rating and charging has been merged with the converged billing and rating provided by AdvOSS-IN. AdvOSS Calling Cards solution addresses the concerns of Wateen related to its Prepaid Calling Cards IN, enabling it to focus on expanding its Calling Cards business, a status it maintains, relying on AdvOSS Solution.

Wi-Max AAA (Network Access level)

Previous Solution:

Free Radius providing EAP-TLS encapsulated in RADIUS

Reasons for change:

Stability: Stability of the platform was a big concern to Wateen, due to frequent outages & crashes of AAA server under heavy load of traffic at peak timings. Furthermore, Wateen felt it difficult having the capability to modify the solution with new planned deployments of Wi-MAX NWG 1.3 and above compliant ASN-GW in its access networks.

Proposed Solution:

AdvOSS Wi-Max Radius Server with AAA Applications. AdvOSS AAA is a Carrier Grade high performance & scalable Server that provides Authentication, Authorization and Accounting over Radius. The project includes the replacement of Free-Radius with AdvOSS AAA Server in Wateen's network with following key features:

- Implementation of EAP TLS for device authentication using RADIUS
- Interworking with Motorola CAPC for device authentication
- The implementation will be compliant with:
 - RFC 5216 (EAP TLS)
 - RFC 3748 (EAP)
 - RFC 3579 (RADIUS EAP)
 - RFC 5281 (EAP TTLS)

AdvOSS AAA Server is highly scalable and is capable of scaling in terms of the number of subscribers, the number of EAP based authentication requests, and the number of AAA transactions by adding more hardware resources to the running system, without significantly disturbing the deployed solution. Performance enhancement and scalability can be achieved by merely adding more hardware; It does not require major re-engineering of the solution in terms of development effort.

Furthermore, the capability to create and customize AAA workflows enables the solution to easily upgrade without any major upgrade of the software release when new network elements such as a Wi-MAX compliant ASN-GW are added into the network.

Please note that AdvOSS AAA server already supports all WiMAX-forum specified attributes and their formats in its core RADIUS stack.

Subscriber Management

Previous Solution:

Broadhop SUM (Subscriber Management)

Reasons for change:

Capacity, Simplicity of call flows

Proposed Solution:

AdvOSS HSS (Home Subscriber Server).

AdvOSS HSS is the repository that maintains the information about all the Service Profiles for users. It is also the main repository for all Subscriber data e.g. authentication credentials, network identifiers and the subscriptions of those subscribers to different services.

Wateen uses both, Captive-Portal based (username-password) authentication, as well as MAC based authentication for its subscribers in different categories. Newly deployed HSS provided by can handle both Portal based and MAC based subscribers of Wateen and consist of the following software components:

- Web-based captive portal for username/password entry and blocking of un-authenticated customers
- RADIUS based front-end AAA application. This application performs AAA for the user, communicates with captive portal, communicates and provisions different service delivering network elements such as Cisco ISG, Cisco SCE and returns subscriber profile for bandwidth management in reply to authentication requests.
- This application also sends Change of Authorization (CoA) to its clients in response to triggers from different sources, including start and Interim Accounting workflows. The purpose of the CoA is to send any information to network elements delivering the services in order to enforce some defined policy for subscribers.
- An HSS application to store and serve subscriber data. It has a local database for storing subscriber profiles and subscription information. This database is a slave to the master AdvOSS IN database and replicates subscriber profiles and service management data from its master database.
- Since the local database will be built using automatic replication from AdvOSS Billing database, there is no need for separate provisioning of subscriber data on the HSS database.

Policy and Charging Control / Bandwidth Management

Previous Solution:

None

Proposed Solution:

AdvOSS Policy Server, Updated AAA Applications.

AdvOSS Policy Server is a platform that enables CSPs to exercise service control and charging rules as per their business requirements and defined policies. It enables Wateen to implement the following important business use cases and policies.

- **Time of day /Day of Week policies:** Using which Service provider such as Wateen can introduce different policies to reduce bandwidth available to a subscriber at peak times on selected non-premium plans, while the provider may want to increase bandwidth on non-peak times / weekends.
- **Access aware control & charging:** For implementing different policies may be required based on access method used by customer (e.g. WiMax, Wifi, HFC, CDMA etc). A Service Provider may want to offer specific volume caps associated with a particular access method, which are only consumed when subscriber is using that access method(s) e.g. one could give a package where volume is deducted from the cap if user is on Wi-fi and volume is not deducted from the cap if same user is on Wi-Max.
- **Origin Aware Control & Charging:** Service Providers may have roaming arrangements within network and out of network and charge extra for access out of home network. Similarly, access from some specific locations may need to be given priority because of premium or VIP users etc.
- **Access Number Aware Control & Charging:** In case of voice services a Service Provider may charge extra for toll free numbers or premium 0900 numbers
- **Policy based bandwidth and service control:** WiMax delivers high speed data access and bandwidth enabling a CSP to offer a diverse range of rich multimedia and real time multiple services. This has resulted in subscribers demanding and consuming more bandwidth than ever before. A dynamic Policy based bandwidth control and management system is therefore needed which can change subscriber's bandwidth dynamically or enforce a policy in real time. This may be needed to address various important policy related bandwidth use cases as mentioned below.
 - Bandwidth Caps management using dynamic policies
 - Fair Usage policy for subscribers on unlimited plans
 - Bandwidth on demand and service level modifications through policy control

DPI Based Service Control

Previous Solution:

None

Proposed Solution

Cisco SCE with AdvOSS HSS and Policy Server.

Wateen is in the process of deploying a Deep Packet Inspection (DPI) based service control and policy enforcement device in the network, the Cisco SCE (Service Control Engine), along with

its local Subscriber Manager (SCE-SM). AdvOSS HSS will store profile definitions that will be expanded by the SCE to provide differentiated service experience to individual subscribers using DPI techniques. AdvOSS-AAA workflows will provision SCE-SM in real-time after evaluation of policy rules defined AdvOSS-Policy server to modify user experience according to service offerings and other factors mentioned above regarding policy rules.

Complete integration of SCE with AdvOSS-AAA workflows, working in conjunction with AdvOSS-HSS and Policy server shall be required.

NWG 1.5 Compliant

Previous Solution:

None

Proposed Solution:

Tellabs Wi-Chorus ASN with AdvOSS CSN.

Wateen is in the process of introducing a Wi-MAX-forum NWG-1.3 ASN-Gateway (ASN-GW) from Tellabs (previously Wi-Chorus) in its network. AdvOSS-AAA will integrate with the said ASN-GW to provide Authentication, prepaid Authorization and Accounting of subscribers in unified Access and service plane AAA scenario as proposed by Wi-MAX forum. this will involve integration with ASN-GW via Wi-MAX compliant RADIUS attributes and packets, COA, RADIUS-Disconnect etc. Complete AAA workflows will be specified for this integration that may involve AdvOSS-HSS and policy server, along with hot-lining portal for voucher recharge.

Previous Solution:

None

Proposed Solution:

Port Provisioning of GPON ONT and OLTs.

Wateen laid their fiber optic network using Huawei equipment. They had detailed requirements of provisioning port on OLTs and ONTs for data, voice and IPTV services. AdvOSS enhanced its provided OSS and especially the included AdvOSS Provisioning Engine to support provisioning of Huawei equipment. The complete API is based on SOAP requests. The project was successfully delivered and running in production since June 2015.