### Datasheet

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# Flexible, Scalable, Real-time & Virtualization Ready platform capable of accepting any event or record format generated by any network.

In today's modern world digitalization is the essence of life and it all starts with cell phones being the face of data followed by other electronic gadgets accessing the internet. With everyday rising of technologies and services, Billions of records are generated daily at CSP's end.

It has eventually become a demanding task for the operators to manage all this data that can even lead to revenue leakage. The operators need a scalable and flexible solution that sits between the network elements and downstream systems. It must seamlessly manage the flow of data from various network elements to serving downstream systems such as Billing, BI and Analytics, Interconnect and Roaming, 3rd Party Databases. The solution should be able to manage the data with such caution that there is no loss, duplication or corruption of down flowing data records.

Considering the above scenario, dMediation is a highly flexible and scalable solution that effectively enables the operators to realize the true potential of the data produced by various network elements. dMediation is up and running in Tier-1 CSPs globally proving its worth. The flexible, modular, plug and play architecture caters to various network elements without much of customization and is capable of communicating intelligently with various modules, network elements and third party systems while maintaining revenue integrity and assurance.

dMediation has been designed to support end-to-end functionalities from collecting data generated from various network elements and distributing them to multiple downstream systems with both online and offline data collection capabilities. Compliant to 3GPP standards, dMediation also gives visibility into network traffic monitoring, enabling service providers to identify the source of leakage and revenue loss, recover lost revenue and manage relationships with other carriers to ensure future revenues.

dMediation is an open, convergent and 3GPP compliant online and offline solution that supports wireless communication and all IP-based networks such as 2G, 2.5G, 3G, 4G, LTE, VoLTE, FTTx, Broadband 4G, 5G, IoT and Wi-Fi. dMediation accepts huge volumes of call and event records, generated by various network elements in real-time to produce enriched records for downstream systems. dMediation solution provides a user-friendly graphical user interface in addition to its modular architecture. It enables CSP to maximise their returns on existing BSS/OSS systems as it integrates with legacy downstream system with ease and transfers information to the downstream system in the desired format.

### **Challenges Addressed**

dMediation solution addresses various challenges faced by the operators.

#### Single Platform for Multiple Services

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• xDSL	• PSTN	• GSM
• CDMA	• LTE	• IMS
• SMS	• VAS	<ul> <li>MMS</li> </ul>
• VoIP	• OTT	<ul> <li>MVNO</li> </ul>
<ul> <li>VoLTE</li> </ul>	<ul> <li>VoWi-FI</li> </ul>	<ul> <li>GPRS</li> </ul>
<ul> <li>Roaming</li> </ul>	<ul> <li>WiMAX</li> </ul>	• IoT

#### **Uniform & Error Free Data**

- Conversion to Standard Format
- Collection in Variety of Formats
- Alert and Notifications

#### Scalability

• Based on any custom KPIs

#### **New Technology Adaptation**

- VoLTE - Cloud - NFV

#### Ready-to-deploy DevOps framework built on Open Source tools

- Development Go Live
- Integration
- Testing

### Configuration

#### Integration with Other IT Devices • BSS/OSS

- Leading Network Elements
- Gateways
- Business Intelligence
- Analytical Tool Campaign Management System
- Regulatory Compliance Solution
- Revenue Assurance
- Fraud Management
- CGNAT

### What is dMediation?

dMediation is a highly flexible and scalable solution engineered to ingest any type of data, normalize data in a uniform format, transforms it in the desired format, distribute to any downstream system and analyze data for insights.



### **Functional Architecture**



In the modern era of software-as-a service, dMediation is also suitable for deployment on modern cloud platforms, obviating the need for servers and systems administration. Adapter library contains many prebuilt, tested and deployed adapters for integrating with service management components, enabling seamless integration with a wide array of network protocols and elements such as Diameter, GTP, Switch, WLAN, S-GW, P-GW, PCEF and many more. The architecture is also vender independent which can be supported by various vendors such as Cisco, Jupiter, Huawei, Fujistu, IBM, Ericsson, Nokia (NSN & Alactel Lucent), ZTE, A10, Affirmed, Alef and SUN. dMediation solution is built around the following key processes:

#### **Collection of Data**

- Online Collection: Proven Integration with all networks (LTE, 4G, 3G, 2.5G, 2G) with capability of receiving data packets from network nodes with high throughput using industry standards protocols.
- Offline Collection: Supports data file collection from external storage local server through FTP, SFTP and Database.
- IoT Collection: Messaging and communication is a critical aspect of next generation Internet-of-Things (IoT) systems. Application has been enabled to support adaptive communications in IoT systems based on MQTT and COAP protocols in mediation-based architecture.

#### Parsing

Parsing instance extract the raw data files using various file specific plug-ins and converts it into unified format. It also offers multi-plug in support by which it is possible to convert different file formats to unified format.

#### **Data Consolidation**

It is capable for correlation and aggregation or stitching of events generated from different network elements for unified processing, applying business rules, filtering using keys or custom logic. It supports In-File & Across-File Aggregation /consolidation. The event correlation/aggregation feature of the system has configurable parameters to provide the ability to scale horizontally and vertically.

#### **Reference Data Management**

It offers Look-Up table support which allows creating dynamic data table into database and execute dynamic policies . In order to simplify user input dynamic data to database, system allows adding and managing data table and look up data on the UI. Advanced Rule Based Configuration with auto suggest features help ease user inputs for configuring business rules.

#### **Auditing & Reporting**

Continuously monitoring the collected data packets/ data files, in order to prevent loss and duplication of CDR files/Packets by assigning the sequence number to each created files and maintaining File Statistics report on regular interval. Auditing capabilities include comprehensive end-toend audit trail for each CDR file as well as each CDR record in file.

#### **Error Handling**

dMediation has ability to correct a CDR in case of an error. It allows user to view on UI and manually or automatically correct the corrupted CDR, based on defined business rules, and feed it back to the input part of the mediation flow.

#### **Data & Files Archiving**

It offers data file archiving support at each processing stage with structured directories like directories for Yearly, Monthly, Daily files based on storage path specified dynamically.

#### Logging, Auditing and Troubleshooting

- Centralized Log Management & Monitoring capability for system logs. Also, required graphs, charts & dashboards can be configured for centralized log monitoring.
- Comprehensive audits of all activities performed on user interface. Moreover, SNMP Interface is supported to manage real time alerts and notifications. This in turn helps to notify users through Trap, E-mails, SMS for alerts that require immediate action.

#### **Duplicate Detection & Handling**

- Data Packet: Fully compliant with 3GPP RFC 32.295 to ensure the packets are received by Mediation/CGF Collector instance, only once, by following theGTP Prime protocol guideline as defined.
- Data File: Supports duplicate checking of collected data files to ensure package are processed only once via duplicate checking on key file parameters.
- Duplicate Record Detection: Supports detection of duplicated event records anywhere in the processing flow and raise alarms/notifications accordingly. The criteria for detecting duplicated events is flexible. Duplicate records can be within same file or across multiple files.

#### **Data Record Formation**

- Provides capability to define the business rules as per business processes that includes:
- Validate: Mark CDR as valid or invalid by ensuring the key data fields are within the acceptable range of values.
- Filter: Remove non-billing data before distribution to billing system
- Enrichment: Modify or Add information to the existing data, in order to prepare the message for the next operation or to store results from a previous operation
- Cloning: Allows creation of multiple copies to meet the requirements of different systems
- Segregate: based on service, circle, GSNs, as per business rule and many more.

#### **Comprehensive Dashboards**

dMediation solution is equipped with comprehensive dashboard that enables the operator to easily monitor ongoing processes through graphs depicting files and records as well a server health through graphs depicting sessions, request statistics and notify the abnormal behavior of the system by depicting defined threshold.

#### **Reports & Analytics**

dMediation solution provides MIS reports to monitor the system performance and its operations in real time.

The platform also supports end-to-end reconciliation by capturing meta data information i.e. File name, date, size, number of records etc. This can be used to improve the business intelligence by analyzing the set of consolidate data records.

#### **Data Distribution**

- dMediation supports industry standard encoding formats for the distribution of event records.
- dMediation solution provides the flexibility to distribute the processed CDRs to the multiple downstream systems such as 3rd Party Database, BI/Analytics, M2M, Interconnect/Roaming, Rating Database, File Storage, FTP/SFTP Driver, Local Storage & Distributed File System.
- Unique checksum algorithms and control file mechanism ensures files distributed to downstream systems are validated thereby eliminating scope of any error.

#### **Performance and Scalability**

- 20 Billion CDRs collected, processed and distributed per day & 300 Million CDRs collected, processed per hour. Moreover, dMediation is capable of zero touch and zero down time deployment as well as auto-healing and auto scaling based on custom parameters.
- dMediation solution offers mult-ipath, multi-plug-in, multidrivers and multi client supports that provide the capability to define N number of drivers/clients for reading and writing data files with capability of file formation and record formation by different plug-ins, as per business requirement.

#### **GUI Based Operations**

- A simple, responsive, easy-to-use, Intuitive interface with drag &-drop functionality that facilitates to manage, configure, administrate and drive all components of dMediation solution.
- Smart Organization of Content: Intelligent page design to achieve minimal scroll & click, maximum screen space, direct navigation links, collapsible panels & drag & drop facility.

- Dashboard Features added in Server, SI & Services: User can view server and service summary page that shows all important configurations.
- Minimum User Input: User have to provide minimum inputs as a result of system defaults, drop-down for selection & auto adjustment of dependent drop-downs.
- Centralized Web-based File Viewer: It allows all CDR files to be viewed on browser and allows modifications for erroneous CDRs as well.

#### **Encryption Based Security**

- Achieve 100% security compliance as per telecom industry standard.
- dMediation solution system is fully secured which is tested & verified for vulnerabilities
- The solution encrypts system Meta data, system configuration and processed data files which cannot be decrypted by any unauthorized user.

#### **Network Device wise Default Dictionary**

dMediation solution has in built default dictionaries available with pre configured attribute lists for all network devices of all leading vendors available in the market. These dictionaries can also be easily customized/modified according to operator's business requirements.

#### Redundancy

Provides all kind of redundancies viz. Geo Redundancy, Active-Active, and Active-Passive etc. It supports (1+1) redundancy to provide high availability assurance with auto-switchover between active node and standby node.

#### **Near Real-Time Processing**

Provides capability to complete end to end processes starting from data collection from network elements, followed by parsing, processing, CDRs formation and ending with the distribution, in near real-time.

#### **File Splitting and Merging**

Optimize the performance of subsequent processes, splitting larger files into smaller multiple files becomes a vital feature. Moreover, dMediation also allows merging number of files into one file to reduce the physical size whenever required.

### **Technologies Behind Solutions**



### **Platform Highlights**



### **Business Benefits to Service Provider**

#### **Reduced Cost and Time to Market**

Supports smooth and quick communication across all the modules, networks and systems. Providers can easily enhance their systems with off-the-shelf modules, cutting down costs and ensuring quick rollouts and rapid reaction to market movements.

#### **Builds Business Intelligence**

It unifies customer usage patterns from legacy network infrastructures, IP and mobile networks over a single platform and offers simplicity in collating data in a multiservice, multinetwork environment. As a repository of customer track record and usage patterns, dMediation possesses the business intelligence required to understand customer needs and defines fine layers of segmentation, enabling high levels of differentiation and targeting in the competitive market place.

#### **Prevents Revenue Leakage**

Transmits accurate information between the various network elements and OSS / BSS components. Prevents usage, rating, billing errors and revenue leakage.

#### **Flexibility and Scalability**

dMediation distributed architecture combines great flexibility to meet a variety of communication needs with high scalability required to meet sudden, massive upsurge in events where subscriber bases run in millions. The system can be placed centrally or can be distributed over multiple machines or nodes at multiple locations.

Moreover, dMediation is compliant with container native architecture & standards to achieve web-scale. This enables zero downtime deployments for application with smoother operations. It also provides Application support reliability with 99.999%.

#### **Vendor Independent**

dMediation is vendor-independent, thus capable of communicating with multi-vendor network elements easily.

#### **Open Platform**

An open standard-based, distributed software platform that is extremely modular. Adapter library contains many prebuilt, tested and deployed adapters for integrating with service management components, enabling seamless integration with a wide array of network and business systems

### **dMediation KPIs**



### **Technical Specifications**

3GPP Compliance	3GPP Standard - RFC 32.295 (GTP'), RFC 7633 (Diameter), RFC 2866 (RADIUS), MQTT, CoAP	
Network Support	2G, 2.5G, 3G, 4G/LTE, 5G, Wi-Fi, Fixedline/Broadband, IoT	
Network Elements	PGW, SGW, GGSN, SGSN, IMS, MSC / MSS , IN / OCS, IDL, PCC/PCRF, SMSC, VAS, etc.	
IP Support	IPv4, IPv6	
Protocols Support	FTP, SFTP, GTP', SNMP, TCP/IP, UDP, Diameter, Radius, MQTT, CoAP	
Monitoring and Management	GUI / WebUI, EMS, SNMP/NMS, CLI	
Hardware and OS Support	Oracle, Intel Xeon, Linux, Unix, Cent OS	
Preferred Platform Vendors	Cisco, Juniper, Huawei, Fujitsu, IBM, SUN, Ericsson, Comverse, ZTE, Affirmed, Mavenir, Google, Facebook, A10 & F5	
File System	NFS, GFS, Ext4	
Database Support	Oracle, MySQL, PostgreSQL	

Sterlite Technologies Limited (STL) is a global leader in end-to-end data network solutions.

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We design and deploy high-capacity converged fibre and wireless networks. With expertise ranging from optical fibre and cables, hyper-scale network design, and deployment and network software, we are the industry's leading integrated solutions provider for global data networks. We partner with global telecom companies, cloud companies, citizen networks and large enterprises to design, build and manage such cloud-native software-defined networks.

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STL has innovation at its core. With intense focus on end-to-end network solutions development, we conduct fundamental research in next-generation network applications at our Centres of Excellence. STL has strong global presence with next-gen optical preform, fibre and cable manufacturing facilities in India, Italy, China and Brazil and two software-development centres.