

Allot Analytics Solutions

Allot ClearSee



Providing Breakthrough Network
Business Intelligence

**Insightful Analytics and Superior Data Source
For Data Network Service Providers**



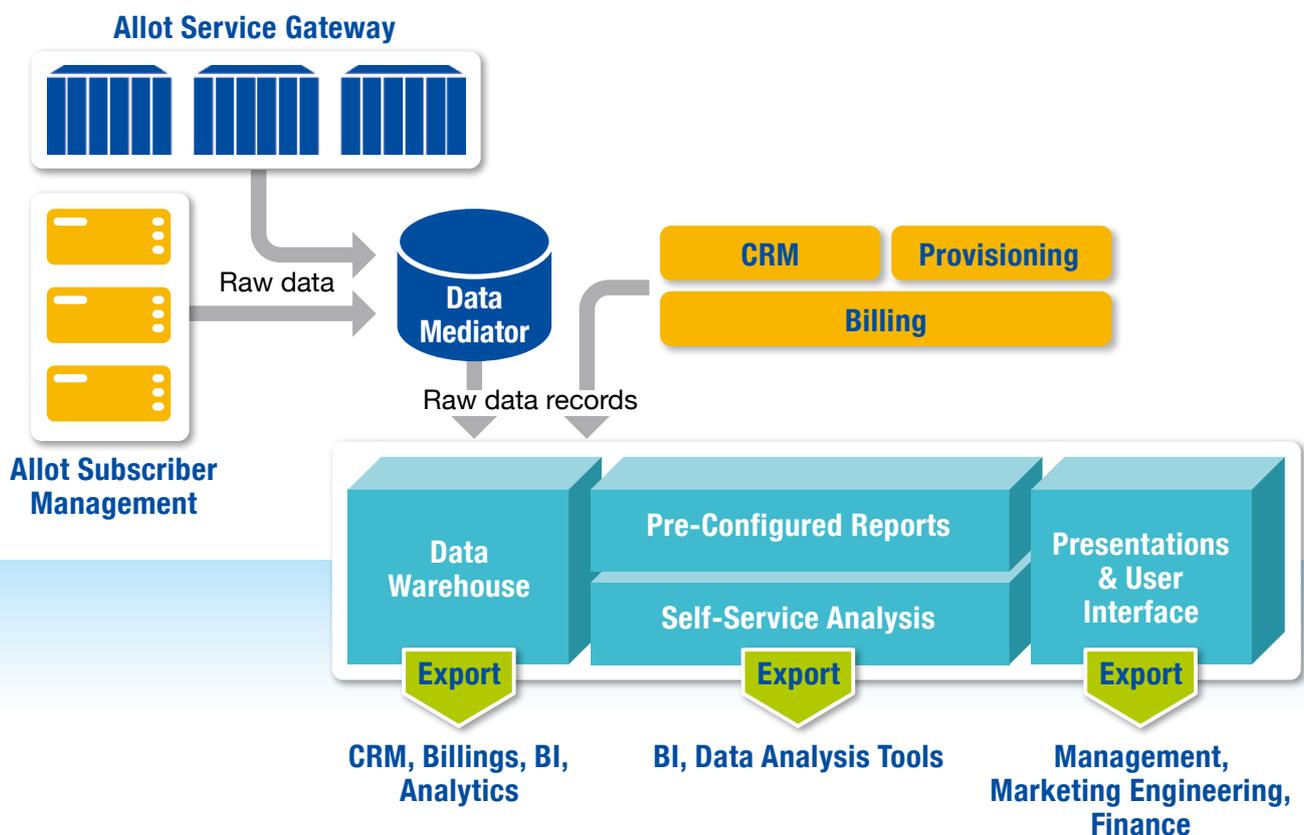
Driving Customer Satisfaction and Service Profitability

Allot ClearSee is a breakthrough solution for data analytics in mobile and fixed broadband networks and large enterprises. Allot ClearSee allows digital lifestyle providers to capture a rich variety of application, subscriber, device and QoE data from their own networks and to turn that source data into the valuable business intelligence they need to drive subscriber satisfaction and service profitability.

Allot ClearSee features a self-service approach to data analysis and an exceptionally rich data source:

 **Allot ClearSee Analytics** turns big data into meaningful information for the decision-makers in your organization. Its self-service approach allows network operators to synthesize and analyze large varieties and volumes of data with extreme efficiency. Tools include a full complement of report dashboards for mining Network, Application, Subscriber, Device and Quality of Experience data, plus a dedicated Self-Service module for exploring fresh perspectives and gaining deeper insight.

 **Allot ClearSee Data Source** extracts a rich variety of raw data from the network and from operator business systems and loads it into a cutting-edge data warehouse where it is transformed into modeled business objects that are easy to understand and work with. This valuable source data can also be exported to external analytics tools and other business applications.



Allot ClearSee provides a breakthrough solution for network business intelligence

ClearSee Analytics

Deeper understanding.
Better business insight.

Allot ClearSee Analytics turns big data into meaningful business intelligence for the decision-makers in your organization. By transforming data into actionable, predictive insight through statistical analysis, Allot ClearSee empowers broadband service providers to operate their networks more efficiently and to get closer to their customers with more effective targeting.



Network & Operations experts gain insight from visual reports and analysis of network traffic, online activity, and unusual traffic volumes, along with information regarding the causes. For example, real-time reports can show which applications and devices are consuming the bandwidth in a chronically congested cell, while historical analysis can be used to identify traffic trends and the effects they will have on network performance over time. Daily or weekly reports showing bandwidth consumption, usage volumes, Video and HTTP QoE, signaling traffic, average bitrates, sessions opened, and other vital statistics enable operators to identify problematic areas and better plan around them.



Marketing professionals gain the ability to quantify and characterize subscriber activity to assist with customer segmentation and service planning. For example, analysis of subscriber-application-device usage can be used to target customers most likely to respond to a service plan upgrade, thereby improving response rates and increasing customer lifetime value. Likewise analyzing video QoE for top apps per subscriber can be used to identify at-risk customers and to develop appropriate action plans to retain them. Using the system's flexible self-service approach, marketers can build their own analyses, manipulate parameters on the fly, explore what-if scenarios and extrapolate future trends.



Executive Management gain from a consolidated view of their network business provided by report dashboards that summarize the key performance indicators they want to track. For example, subscriber usage statistics together with data from CRM and billing systems can be analyzed to examine ARPU from certain demographics or to track the adoption and performance of newly launched services in different locations. Web-based dashboards can be viewed on multiple devices from any location.

Powerful Self-Service Approach to Analytics

The self-service approach of Allot ClearSee provides a full complement of web-based tools for manipulating and analyzing large varieties and volumes of data with extreme ease and efficiency. Tools include a dedicated Self-Service module plus preset Reporting Dashboards. The web-based application is accessible from any browser on any device, and its intuitive GUI features:

- Interactive report generation and predictive modeling
- Rich variety data metrics and attributes that are relevant to your business
- Simple drag & drop functionality to manipulate metrics/attributes within reports
- Powerful drill-down and drill-through to reveal data associations and detailed metrics
- Instant visual feedback
- Ability to integrate data from multiple departments to gain different perspectives and greater accuracy

Interactive Dashboards

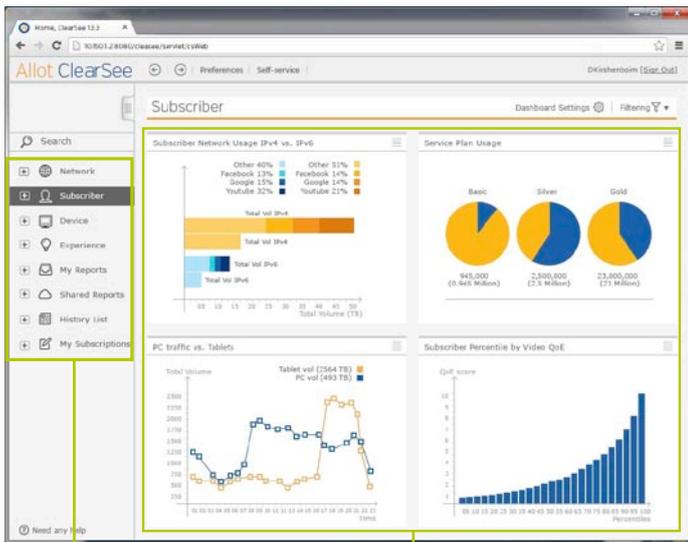
Allot ClearSee reporting dashboards make easy for stakeholders at all levels to understand and to visualize what the data is telling them. Reports in the dashboard are interrelated and interactive. Drilling down or changing the data fields of one report, instantly updates and refreshes the display of the other reports in the dashboard. In addition, individual reports and dashboards are easily customized by the user. Reporting dashboards are organized into four analytics domains that are of interest to every network operator – Network, Subscriber, Device, and Experience.

Analytics Domains	Reporting Dashboards
Network	Real-time health, Congestion analysis, Busy Hour, Peak Period, Application usage/popularity, Signaling analysis, and more
Subscriber	App usage, Device usage, Content consumed, Tethering usage, Video and VoIP usage, QoE metrics, and more
Device	Data volume, App usage, Model vs. Model, 3G vs 4G, and more
Experience	Top content, Top consumers, Top publishers, Video and HTTP QoE per app/sub/device, and more

Self-Service Data Mining

Allot ClearSee Self-Service is a powerful business intelligence tool that makes it easy for operations, engineering and marketing experts to mine the data that is relevant to them. With Allot ClearSee, you aren't limited to a predefined set of reports or a specific way to analyze data. As new requirements arise, or new data presents itself, the Self Service analytics module helps you model your questions and find answers to complex business problems such as discovering new market and service opportunities before the competition, or gaining insight on how to dramatically improve customer satisfaction and retention rates.

ClearSee Data Source



Intuitive Navigation

Interactive Dashboard

While the Self-Service module is easy enough for anyone to use, it provides an excellent tool for experienced analysts who for the first time have access to source data that is more varied, detailed and accurate than ever before. Custom, ad hoc analyses and reports can be built without the need for software development or upgrade. Changes and what-if scenarios can be tested on the fly. This approach helps the operator find answers to specific questions, explore possible courses of action, and often discover problems and opportunities that were not anticipated.

Multiple Ways to Share

Dashboard and Self-Service reports may be shared with others via the GUI, and exported in a variety of formats, including Excel (plain text or with formatting), HTML, CSV file, and simple plain text. Moreover, report history lists and personal subscriptions keep relevant information available and easy to access.

Tight Security

Data privacy and integrity is a top concern for network operators. Allot ClearSee provides robust security settings that allow administrators to control access to the applications as well as use/view privileges to the data and to the different analytics tools. The system administrator controls the following security settings:

- Access Authentication controls login permissions
- Functional Privileges control the ClearSee functions that each user/group may use
- Object Permissions control the business objects that each user/group may use
- Data Security filters control which data each user/group may access or view
- Database Security controls direct access to the Allot ClearSee Data Warehouse

Broad Data Collection

Allot ClearSee collects raw data in real time from data plane elements in the network, including Allot Service Gateway and Allot NetEnforcer platforms, as well as control plane elements, including Allot Subscriber Management Platform. This raw data can be further enriched offline by data feeds from operator CRM, BSS and other business systems. Allot ClearSee system is built to handle large volumes and variety of data coming in at very high velocities.

High-Resolution Data Records

As raw data is collected, it is processed into high-resolution data records detailing HTTP, Video, VoIP, Instant Messaging, Session, Subscriber, Policy activity and IP flow statistics.

CONV	Application Flow Record	Flow statistics from real-time IP application flows, providing a complete view of network, subscriber, application, and device activity.
HDR	HTTP Data Record	Web usage statistics based on HTTP, HTTPS, SPDY transaction level data extracted from web traffic.
VDR	Video Data Record	Video session quality metrics such as number/duration of stalls, response time, and overall QoE, as well as video attributes including format, duration, resolution, name, domain, etc.
SDR	Session Data Record	Session statistics that detail subscriber behavior in the control plane, such as log-in/out, AAA, location and many other metrics.
UDR	User Data Record	Subscriber-application usage metrics.
VC	VC Policy Record	Usage statistics based on classification of traffic by Allot in-line platforms. Provides statistics per Allot hierarchical policy elements.
CDR	Chat Data Records	Usage data from OTT VoIP and Instant Messaging applications, including minutes-of-use.

Ultimately, these raw data records are loaded into the Allot ClearSee data warehouse where they are transformed into modeled data objects. The frequency and triggers for raw data export are configurable parameters set according to operator requirements. In case of disconnect during raw data transfer, Allot ClearSee stores all data files until connection is re-established and transfer can resume.

Data Privacy

Allot ClearSee performs obfuscation and encryption of raw data records in compliance with data privacy regulations.

Turning big data into usable data

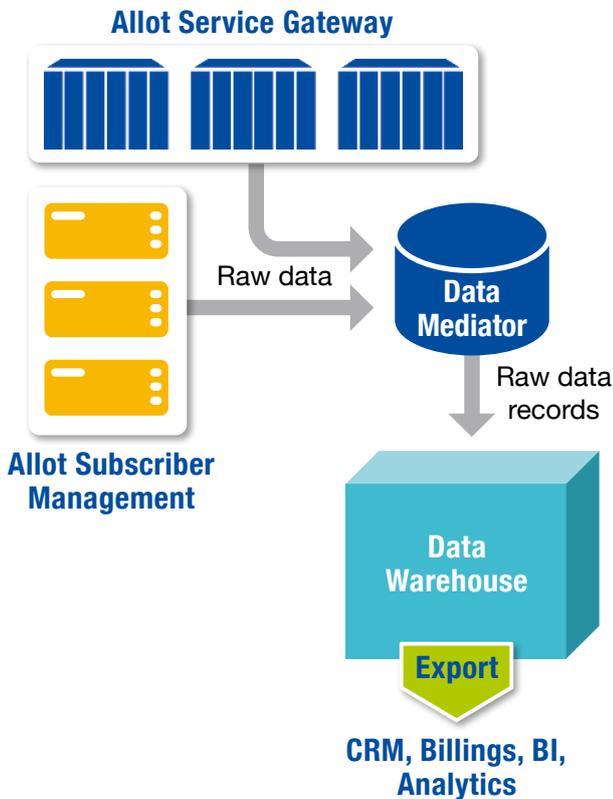
Cutting-Edge Data Warehouse

Allot ClearSee employs a cutting-edge data warehouse designed for fast look-up, processing, and export. The data warehouse features a columnar structure and uses massive parallel processing (MPP) to handle big data with extreme efficiency. In addition, Allot optimization algorithms reduce the warehouse storage space required without losing information. Its modular node architecture is designed for seamless capacity expansion and data synchronization, which allows the data warehouse to scale both up (add more instances of a function within a node) and out (add more nodes) in both virtualized and non-virtualized environments.

Efficient Source Data Export

Allot ClearSee Data Warehouse efficiently exports modeled source data in standard formats or in customized file formats to external analytics applications and to other business intelligence systems. Export and refresh frequency is a configurable parameter. Likewise, as modeled data is loaded into the warehouse, it becomes immediately available for analysis via the preset reports and the Self-Service module in the Allot ClearSee Analytics system.

Raw data records may be exported directly from the Allot ClearSee data mediator when this type of data source is required.



Raw data records collected from data plane and control plane elements are transformed into modeled data by Allot ClearSee and stored in a purpose-built big data warehouse.

Rich Modeled Data

In the Allot ClearSee system, modeled data is represented in the form of semantic business objects (dimensions and metrics) that are intuitively understood and relevant to different stakeholders. They also enable fast and easy integration of modeled data into a variety of analytics and business systems that treat data very differently.

For example, all the streaming video records generated by a single subscriber over a day or month can be represented by a business object called “popular video sites” which includes metrics detailing video volume consumed, total minutes watched, stalls, response time, and overall QoE for each of the subscriber’s popular sites.

In the warehouse, various calculations on the data add valuable metrics to the business objects. Likewise, data correlation algorithms create logical associations while optimization algorithms enable large volumes of data to be stored and easily retrieved. In addition, the open architecture of Allot’s data warehouse is designed to accept and load data feeds from CRM, ERP, OCS, OSS, BSS, and other operator systems, adding new dimensions to the data source.

Allot ClearSee software and hardware packages may be purchased in node configurations designed to support data analytics and data source for 100,000 subscribers, 1 million subscribers, and an unlimited number of subscribers. Allot ClearSee software may also be installed on operator equipment

that meets the following minimum requirements. Additionally, the software may be installed on virtual machines. Individual sizing and installation requirements should be verified with an Allot representative.

Basic Node for 100,000 Data Subscribers

This standalone configuration for Allot ClearSee provides a single server to host both the data warehouse and the business intelligence application for up to 100,000 subscribers.

Minimum Specifications for Allot ClearSee Basic Node	
Hardware	IBM x3550 M4 1U server 2 x Intel Xeon with 6 cores running at 2.0Ghz 64 GB RAM 2 TB of server storage via 2 x 146 GB and 6 x 300 GB disks Dual AC/DC 750W power supply 2 x 1 GE copper connectivity (extra link for redundancy)
Supported Operating System	CentOS Linux 6.4 64-bit x 86 (English only)

Enhanced Node for 1 Million Data Subscribers

This enhanced configuration for Allot ClearSee provides a single server to host both the data warehouse and the business intelligence application for up to 1 million subscribers.

Minimum Specifications for Allot ClearSee Enhanced Node	
Hardware	IBM x3650 M4 2U server 2 x Intel Xeon with 8 cores running at 2.0Ghz 128 GB RAM 7.3 TB of server storage via 2 x 146 GB and 12 x 600 GB disks Dual AC/DC 750W power supply 2 x 1 GE copper connectivity (extra link for redundancy)
Supported Operating System	CentOS Linux 6.4 64-bit x 86 (English only)

Cluster Node for Unlimited Data Subscribers

This cluster configuration for Allot ClearSee provides separate, expandable nodes to host the data warehouse and the business intelligence application respectively. Cluster nodes support many millions of subscribers with effectively unlimited scalability.

Minimum Specifications for Allot ClearSee Cluster Nodes	
Cluster Data Warehouse Hardware	IBM x3650 M4 2U server 2 x Intel Xeon with 8 cores running at 2.0Ghz 128 GB RAM 7.3 TB of server storage via 12 x 600 GB disks Dual AC/DC 750W power supply 2 x 1 GE copper connectivity and 2 x 10 GE SFP+connectivity (extra links for redundancy)
Cluster BI Server Hardware	IBM x 3550 M4 1U server 2 x Intel Xeon with 6 cores running at 2.0Ghz 64 GB RAM 1.2 TB of server storage via 4 x 300 GB disks Dual AC/DC 750W power supply 6 x 1 GE copper connectivity (extra links for redundancy and H/A)
Supported Operating System	CentOS Linux 6.4 64-bit x 86 (English only) for both

About Allot Communications

Allot Communications Ltd. (NASDAQ: ALLT) is a leading global provider of intelligent broadband solutions that put mobile, fixed and enterprise networks at the center of the digital lifestyle. Allot's DPI-based solutions identify and leverage the business intelligence in data networks, empowering operators to shape digital lifestyle experiences and to capitalize on the network traffic they generate. Allot's unique blend of innovative technology, proven know-how and collaborative approach to industry standards and partnerships enables service providers worldwide to elevate their role in the digital lifestyle ecosystem and to open the door to a wealth of new business opportunities For more information, please visit www.allot.com.

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