From RDBMS to Big Data Architecture in Telecommunication

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From Relational DataBase to Big Data Architecture
GSM Network Monitoring System

Monitoring System Dimensioning
- Number of NE
- Number of calls
- Number of SMSs
From Relational DataBase to Big Data Architecture
GSM, UMTS Network Monitoring System

Monitoring System Dimensioning
- Number of NE
- Number of calls
- Number of SMSs
- Packet Domain interface monitoring (Gb, IuPS, Gn, Gi)
- Core Domain interface monitoring (Iu-CS, Mc, A)
From Relational DataBase to Big Data Architecture
GSM, UMTS, LTE Network Monitoring System

Monitoring System Dimensioning
- Number of NE
- Number of calls
- Number of SMSs
- Packet Domain interface monitoring (Gb, IuPS, Gn, Gi)
- Core Domain interface monitoring (Iu-CS, Mc, A)
- EPC monitoring (S1, S1 - MME,S11)
From Relational DataBase to Big Data Architecture
Network Monitoring System - Legacy

<table>
<thead>
<tr>
<th>Data Loading</th>
<th>Data Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading performance measurements, network events coming from the network elements directly or from management system</td>
<td>Data processors which allows us to extract valuable information out of the incoming data in regular basis</td>
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<thead>
<tr>
<th>Data Storage</th>
<th>Data Visualization</th>
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<tbody>
<tr>
<td>Relational database for storing data coming from the network elements directly or management system.</td>
<td>Visualizing the extracted information to the user by showing reports, statistics, alarms.</td>
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From Relational Database to Big Data Architecture
Network Monitoring Ecosystem - Legacy

Data Visualization

Business Reporting Framework (Legacy)
SQL Adaptor

Data Processing
PL/SQL Jobs
SQL
SQL
Read

SQL-DB (RDBMS)
Aggregated Tables
RAW Tables

Data Storage

Data Loading
Data Broker
CSV
Binary

Data Storage

CSV
Binary
From Relational DataBase to Big Data Architecture
Network Monitoring System - Challenges

<table>
<thead>
<tr>
<th>Data Loading</th>
<th>Data Processing</th>
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<td><em>High performing solution for loading data-streams, log-files, events etc. coming from the network elements directly or from probes or from management system</em></td>
<td><em>A framework providing us with data processors which allows us to extract valuable information out of the flood of incoming data, either in real-time or in batch-mode</em></td>
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<td><em>NoSQL database for storage data beyond the limits of SQL databases. Data storage has to scale horizontally on commodity HW/elastic on cloud and not vertically</em></td>
<td><em>A framework for visualizing the extracted information to the user in form of reports, statistics, alarms, CDRs etc. in an acceptable timeframe</em></td>
</tr>
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</table>
From Relational DataBase to Big Data Architecture
Network Monitoring System - challenges to move data processing to storage

Legacy
- Application
- Data Processing
- Metadata Management

Emerging
- Application
- Data Processing
- Metadata Management

Next Generation
- Application
- Data Processing
- Metadata Management

Network
- Storage
- Storage Array (SAN, NAS)
- Storage

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From relational Database to Big Data Architecture
Network Monitoring Ecosystem - Emerging

Data Visualization

Business Reporting Framework (Legacy)

NoSQL Adaptor

Data Processing

SQL insert

SQL

SQL-DB
Aggregated Tables

NoSQL-DB
NoSQL Queries

Read (adapter)

Data Storage

RAW Tables

CSV

Data Loading

Data Broker

CSV

Binary

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From relational DataBase to Big Data Architecture
Network Monitoring Ecosystem – Next Generation

Data Visualization

Business Reporting Framework (Legacy)

Data Processing

Direct write /NoSQL Loader

NoSQL Adaptor

NoSQL-DB

NoSQL Adaptor

No SQL Queries

Aggregated Tables

RAW Tables

Data Storage

CSV

Data Loading

Data Broker

CSV

Binary

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