WHITE PAPER

Improve your subscribers' experience

Accelerate time to issue resolution

VITRIA®

Contents

Customer experience has become the single most important differentiator in the Telecom industry.

No one needs to tell a Telecom provider that it is much less expensive to retain an existing customer that it is to acquire a new one. Bain reports that companies that excel in customer experience grow revenue 4 to 8% above their market because of earned loyalty attributed to a superior experience. And, this earned loyalty turns customers into promoters with 6 to 14 times that of defectors.[1]

To improve your subscribers experience, we believe Telcos need to direct more of their focus to the Incident life cycle, accelerating time to issue resolution. Telco subscribers -

- Expect that their subscription services and devices will work all the time
- And, when they don't, they expect to be able to fix the problem themselves...FAST
- If they absolutely need to chat or call someone, they don't want to spend any time discussing or analyzing the problem. They just want it fixed.

Telecom leaders will gain and retain competitive market advantage by

- Proactively preventing availability and performance issues from occurring,
- Accelerating time to issue resolution, and
- Engaging the subscriber, where needed, before they are seriously impacted by quality issues.

To achieve these results requires the application of a complete analytics solutions on disparate high-volume data in real time in order to automate remedial action, reduce the complexity of root cause analysis, and provide live monitoring of key quality indicators. And the deployment of any analytic solution must be capable of seamless deployment and integration into the current incident response and resolution process.

This paper will specifically address how Telcos can reduce the time from the service incidents to issue resolution by accelerating each phase of the incident lifecycle using of an effective analytics solution.

Accelerating the Incident Lifecycle

Advanced, intelligent analytics applied at every stage of the incident life cycle can deliver an exponential reduction in the time from the incident to quality restoration and issue resolution.

Phases of the Incident Lifecycle Phases

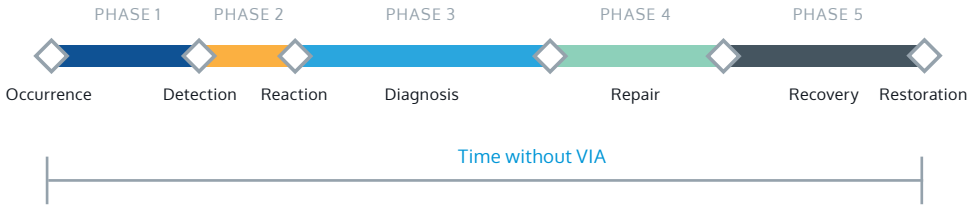
Described in the table that follows are common challenges that impact each phase of the incident life cycle.

INCIDENT LIFECYCLE PHASE	COMMON CHALLENGES THAT EXTEND CYCLE TIME
Occurrence to Detection	Nuanced issues which are harder to detect increase overall incident duration
Detection to Reaction	False positives overwhelm operations draining their productivity and delaying reaction time to real issues Lack of integration across systems introduces redundancy with multiple efforts underway to tackle the same or related issues across the same population base
Diagnosis	Complex human analysis often across multiple data sets and disciplines needed to determine root cause extends cycle time Visualization tools, machine learning algorithms, and predictive analytics often is lacking or not well integrated into diagnostic processes
Repair	Often entails workarounds to reduce immediate incident impact and manual repairs to resolve the issue Visualization tools, machine learning algorithms, and predictive analytics are often lacking or not well integrated into diagnostic processes
Recovery	Incident impact may be felt during recovery requiring monitoring through full restoration to provide recovery assurance

The Analytics Solution

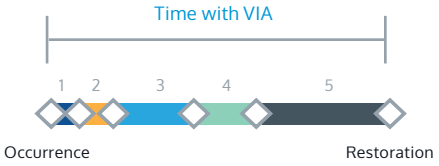
VIA by Vitria is a real time complete analytics solution that provides Telecom providers the ability to transform streaming data into actions that improve the customer experience. Gaining insight, using visualizations, and then acting improves service delivery, sustains service availability, and reduces time to service after an interruption - delighting customers and increasing employee productivity. VIA can keep pace with streaming data, deliver reliable insights and real-time automated responses. Operations rely on VIA for agile analytics, a simple way to create purpose built analytic processes including descriptive, predictive, prescriptive analyses and machine learning. The VIA platform includes the scale, flexibility, and speed needed for real-time. Telcos can keep pace with streaming and dynamic data to take the actions needed to provide better customer experiences.

VIA can accelerate each stage of the incident life cycle to improve service levels and the customer experience.



Challenges in each stage

1. Undetected occurrences
2. Overwhelmed by noise
3. Complex human diagnosis
4. Manual repair and workaround
5. Delayed recovery assurance



VIA reduces the duration of each stage of the cycle

1. Analyzes granular event populations in real-time to detect nuanced issues
2. Reduces false positives through advanced anomaly detection and alerting
3. Automates root cause analysis through machine-learning
4. Initiates repair and/or workarounds through 3rd party system integration
5. Monitors incident impact in real-time to assure incident restoration

"Systems that use advanced anomaly detection are more effective than those that use simpler techniques. They can detect subtle anomalies that might otherwise escape notice."
– Gartner

Phase One: Occurrence to Detection

VIA supports more rapid, real-time detection of nuanced issues which are more difficult to find. This speeds the time between incident occurrence and detection. VIA's capability to ingest streaming and batch data, implement contextual analysis, create dynamic populations, and detect anomalies enables this acceleration.

Real Time and Batch Data Ingestion

VIA is able to ingest multiple streaming events from disparate sources such as device log files, network telemetry scores, and incidents with a proven ability to scale beyond one million events per second. VIA also ingests reference data for subscribers, devices, behavior, health and network topology. Its scale-out architecture leverages existing data lakes and data warehouses for persistent storage. In addition, new event types and reference attributes can be easily added to the data architecture for solution customization and to allow for modifications to be made over time.

Contextual Awareness through Descriptive Analytics

VIA enriches incident event data with subscriber reference data in real time to allow for contextual analysis and situational intelligence. VIA's ability to blend analytics across time frames in real time is not found in any other analytics solution. VIA's descriptive analytics includes Key Performance Indicators (KPIs) and baselines, statistical summaries, multidimensional analysis, pattern matching, anomaly detection, trend analysis, and behavioral analytics.

Dynamic Populations

Change management is a large part of the Network Operations Center's (NOC) responsibility, with 10s or even 100s of events occurring daily. Understanding the impact of these changes on customer experience is a necessity since they can have unintended negative consequences. However, some changes are rolled out slowly, are part of a bigger initiative, or are done only when authorized by the subscriber (such as updating device operating systems). In order to properly monitor the impact, operators must have a solution that detects such attribute changes dynamically, and automates the associated monitoring and Key Performance Indicator (KPI) analysis. VIA detects attribute-to-entity association changes, and creates dynamic populations of entities impacted by these changes. These dynamic populations are then monitored and analyzed to ensure the expected customer experience improvements.

Anomaly detection

Quite often, time-series baselines are actually made up of groups of small anomalies. For example, if an operator has a baseline of 100 connection failures, perhaps 50 of those connection failures can actually be eliminated from the baseline of their root cause analysis if properly diagnosed. The first step in this diagnosis is detecting anomalous attributes associated to such events. VIA detects anomalies in granular entity populations in order to uncover previously undetected issues (false negatives). Machine learning is applied in order to optimize window-detection size and baselines based on entity type and population size. This advanced method of anomaly detection helps operators reduce their event baselines thereby improving service and the customer experience.

Phase Two: Detection to Reaction

To reduce the number of false positives and the resulting time absorbed in their evaluations, VIA leverages a combination of advanced anomaly detection and machine learning to deliver a single intelligent alert. VIA also integrates with downstream systems to eliminate redundancy by interrogating downstream systems to check for existing alerts on the same population base.

Intelligent Alerting

Using machine learning, detected anomalies are reanalyzed for both time-based and parent/child redundancy. The resulting correlated anomalies are grouped into a single anomaly alert, which is continuously reanalyzed as new data is made available.

Integration

VIA integrates with incident management systems, such as Remedy and ServiceNow, as well as other downstream systems like Customer Relationship Management (CRM), provisioning, billing and contact management. Integration with these downstream systems enables checks on existing incidents or alerts on the same population in order to avoid redundancy. All necessary information, such as affected population, entity IDs, and event metadata, is passed through Application Programming Interfaces (APIs) so that organizations can maintain their investment in existing tools and technology.

Through its integration and intelligent alerting functions, VIA provides timelier, more intelligent and complete analytics to existing workflows.

Phase Three: Reaction to Diagnosis

Through improved visualization tools, machine learning, alarm correlation, and predictive analytics, VIA accelerates the determination of root cause and prioritizes actions to minimize impact.

Attribute Analysis

Through machine learning, VIA identifies the potentially impacted entities to help narrow down the root cause. Analyzing the association of attributes-to-events across a given time-series detects over-indexed representations of attributes. This identifies the potentially impacted entities and helps narrow down the root cause.

Triage User Interface

VIA provides an intuitive and customizable single pane of glass that allows the user to analyze ad hoc filtered data sets across multiple dimensions such as time, attribute(s), entity and event. Drill-down capabilities provide easy access to granular data. Export functionality and 3rd party integration to tools such as Slack are also available.

Alarm Correlation

NOCs are instrumented with Network Management Systems (NMS) and Element Management Systems (EMS). These systems generate tons of alarms, but many are ignored as analysts become numb to the 'noise'. Through correlation and suppression, the noise can be filtered out so that focus can be placed on the real issues.

VIA correlates alarms from 3rd party Operations Support Systems, and associates them with detected anomalies. This correlation aides in root cause analysis through reduction of alarm and alert noise.

Situational Intelligence

VIA enriches entity profiles with situational key performance and quality indicators from 3rd party Operations Support Systems. This added intelligence provides powerful metadata for machine-learned and automated root cause analysis.

Predictive Analytics

VIA predicts the impact of detected anomalies (events, entities, attributes), correlated alarms, and enriched key performance and quality indicators (KPI/KQI) in order to prioritize actions and minimize such impact.

Phase Four: Shorten Repair Time

VIA can shorten the time to repair through its prescriptive analytics and integration with third party systems to automate prescribed actions and workarounds.

Prescriptive analytics

Based on previous actions and predicted outcomes, VIA can prescribe actions to initiate repairs and/or workarounds. Machine learning is applied to historical incident data in order to determine possible remedial actions that can be automated or presented as options. Workarounds to quickly stem the issue impact can also prescribed.

Integration

VIA integrates with 3rd party systems to support the automation of prescribed actions and workarounds. All necessary information, such as affected population, entity IDs, and event metadata is passed via APIs.

Phase Five: Monitoring to Assure Incident Restoration

VIA's visualization enables you to monitor the incident impact and restoration in real time. Integration with 3rd party systems enables workarounds to be removed and recovery information to be recorded.

Real-time visualization

VIA provides an intuitive and customizable incident command center that shows the real-time incident impact. The visual command center displays Key Performance Indicators, provides situational awareness, and enables interactions to analyze faults, take actions and implement problem resolution. Interim actions can be taken directly from the UI or automated based on customized thresholds.

Integration

VIA integrates with 3rd party systems to remove any workarounds and restore normal functionality once the incident has proven to be recovered. All necessary information, such as affected population, entity IDs, and event metadata, is passed via APIs.

Summary

The extent and duration of service incidents has a tremendous impact on the customer experience. Subscribers do not want explanations for problems and incidents. They want speedy recovery. Telecommunication providers need to focus on accelerating service incident resolution time.

By leveraging a complete analytics solution, each phase of the incident lifecycle can be reduced. VIA by Vitria delivers the analytics needed in real time to automate remedial action, reduce the complexity of root cause analysis, and provide live monitoring of key quality indicators. Implementation of VIA enables Telecommunication providers to dramatically reduce the time from incident to resolution and improve their subscriber experiences.

[1] Dialing up customer experience in telecommunications, client results story, Bain & Company http://www.bain.com/about/client-results/dialing-up-customer-experience-in-telecommunications.aspx#3

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About Vitria Technology

Vitria VIA IoT Analytics Platform empowers enterprise and industrial customers to analyze faster, act smarter, and achieve better outcomes in their IoT and business operations. The company has a history of success in streaming analytics, business process management, enterprise application integration, and operational intelligence.

Vitria is now a leading player in the rapidly growing IoT (Internet of Things) analytics market. Customers include Fortune 500 companies and enterprises across a wide range of industries, including finance, manufacturing, telecommunications, utilities, retail and more. For more information, visit www.vitria.com.