



## Challenges of Managing Complex, Converging Technologies

The continuously evolving and growing collection of network and IT devices, operating systems, servers, applications, routers, and switches in today's networks must operate as a cohesive entity with optimal performance in order to meet service provider and enterprise service level agreements. In addition, competitive pressures have increased the focus on customer experience and service assurance, making a unified, top-down approach essential.

However, most companies have deployed a myriad of tools, with separate user interfaces and event monitors, to collect millions of events, logs, and messages from their many devices, servers, and applications. As a result, operations staff are faced with a "swivel-chair" management problem as they attempt to make sense out of this "big data" event load. And they cannot take an integrated, end-to-end, cross-domain view of their network or services without costly manual analysis.

This situation reduces team productivity, lengthens mean time to recovery, increases costs, and negatively impacts customer satisfaction.

## The AssureNow Fault Management Advantage

The Monolith AssureNow™ solution takes a unified approach to IT infrastructure, business service, and customer experience management. Discovery, fault, performance, topology, and service management are integrated into a single scalable platform that provides operations and business teams with significant performance, scalability, and cost advantages over legacy and silo tool sets.

AssureNow Fault Management is a unified Manager of Managers that monitors the entire infrastructure from a single console, providing the foundation for a customer- and service-focused operations center. Monolith's industry-leading fault and event management system aggregates and correlates large volumes of fault and event information from infrastructure components as well as IT and element management systems. It can receive, process, and enrich events in any format at high scale, has a completely customizable rules engine, and provides advanced correlations.

Through the power of a single unified solution, Monolith Fault Management automates, streamlines, and unifies service management operations by consolidating disparate tools and avoiding silos. This significantly reduces operations costs and streamlines workflows. Monolith's unified approach enables proactive customer engagement and standardized, automated workflows. AssureNow Fault Management lowers the total cost of ownership, enables powerful new features, and reduces manual processes.

## AssureNow Fault Management Overview

AssureNow Fault Management simplifies infrastructure and service complexities by normalizing device, fault, performance, topology, service logic and rules, and component relationships in a single data repository. A unified presentation engine enables a proactive and role-based management model that encompasses infrastructure, business service, and customer experience in a single unified service assurance solution. This simplifies enterprise and telecommunications infrastructure management and, by consolidating disparate tools onto a single platform, significantly reduces operations costs and assures rapid delivery of applications and services, thereby improving customer satisfaction.

AssureNow Fault Management also provides multiple advanced correlations, for example using topologies or customer policies with run book automation, and performs out-of-the-box de-duplication.

Monolith provides the most flexible and scalable event, fault, and log management solution on the market, built with the latest web technologies, such as HTML5. The solution is low maintenance since it is built from single code base on a LAMP architecture and contains out-of-the-box automations that simplify administrative jobs.

Built on a Web 2.0 architecture for flexibility and ease of use, the system measurably improves operational efficiency for Network Operations Centers and IT Departments by reducing downtime, quickly isolating root cause problems, and suppressing child events.

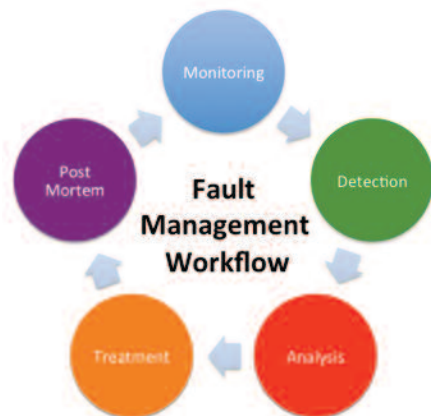


Figure 1: Fault and Event Management Workflow

### The Fault and Event Management Workflow

- **Monitoring:** Proactively & reactively collect & enrich large volumes of data from any technology, protocol, or feed and turn into Information
- **Detection:** Correlate, isolate cause from symptoms, and provide incident notification
- **Analysis:** Troubleshoot, test & verify, determine customer impact and notify, escalate
- **Treatment:** Resolution, remediation, notification
- **Post Mortem:** Prevent, process & policy reviews, reporting, risk vs. resource management

## Fault Monitoring

Monitoring is an essential task within a complex technology environment. Monitoring efforts track the health and performance of the infrastructure as a whole, its individual elements, and their many interconnections. It alerts administrators and other network operations staff to failures that have occurred in the performance chain.

AssureNow Fault Management reduces operations costs and improves staff productivity by efficiently gathering large volumes of event data from any device or domain, thereby eliminating the need for multiple monitoring tools.

Aggregators collect faults and events directly from devices using Syslog, traps, and TL1 and from element managers using CORBA, SOAP, XML, and other methods, as well as threshold alerts via availability and performance monitoring. Console agents collect configurations, including change management notifications, to initiate auditing and to provide custom auditing for issue detection.

The large volumes of monitored data are then prioritized and converted into useful information that can be used by Customer Relationship Management systems and customer contact staff, for example to determine the relationships between monitored data and customer name, circuit ID, and contact information.

Aggregator-based rules are used to monitor, collect, process, enrich, and normalize events. Because this occurs pre-insertion to the database, the speed and granularity by which organizations can perform filtering, enrichment, and priority-scoring is extensive and completely customizable.

## Fault Detection

AssureNow Fault Management lowers total cost of ownership by reducing the event stream and separating causes from symptoms. Monolith leverages the power of its unified database to maximize and automate on-the-fly, as well as through pre- and post-processing enrichment and correlation that simplify creation of custom correlation policies. Real-time event storage provides a higher level of performance than other marketplace solutions that rely on memory-based storage and database locking every five minutes.

AssureNow Fault Management contains more comprehensive correlation capabilities than any offering currently on the market. In addition to standard (e.g., de-duplication), simple (e.g., heartbeats), and cross-domain downstream suppression, Fault Management provides server, system, and application monitoring. It can map server-to-switch, server-to-server, application-to-server, and application-to-application relationships to provide unique correlation and display capabilities.

Monolith offers a wide variety of post-processing correlation capabilities that allow organizations to easily build custom correlation policies to meet a wide variety of needs including: event stacking to extrapolate network behavior based on related events; event threshold monitors that may identify suspicious behavior or intermittent problems; and heart-beating to monitor the existence or absence of events.

AssureNow Fault Management also includes a topology manager that provides integrated auto-discovery of physical, logical, and business inventory and their relationships. It also provides dynamic topology-based mapping, connectivity-based root cause analysis to provide downstream suppression, and rules-based stitching between Layers 2 and 3 to infer hierarchies. This custom stitching capability also allows integration with business logic data stores, such as provisioning information linking a device/port to a circuit ID. Integration with billing/CRM systems allows Monolith to link the circuit ID to a customer. With this hierarchy information, customer- and circuit-specific impacts can be determined.

The open architecture provides highly scalable, easily maintainable, fast discovery of any logical or physical hierarchy. It provides accurate and up-to-date network inventory, improves network availability and reliability through faster mean-time-to-repair, and improves operational efficiency via correlation and real-time displays. It provides a dynamic, real-time visibility to each network node and improves accuracy of inventory data to provide for more informed decision-making.

AssureNow Fault Management delivers operational efficiency, automates and streamlines workflow, utilizes artificial intelligence to deliver highly accurate problem diagnosis, and reduces mean-time-to-response and repair.

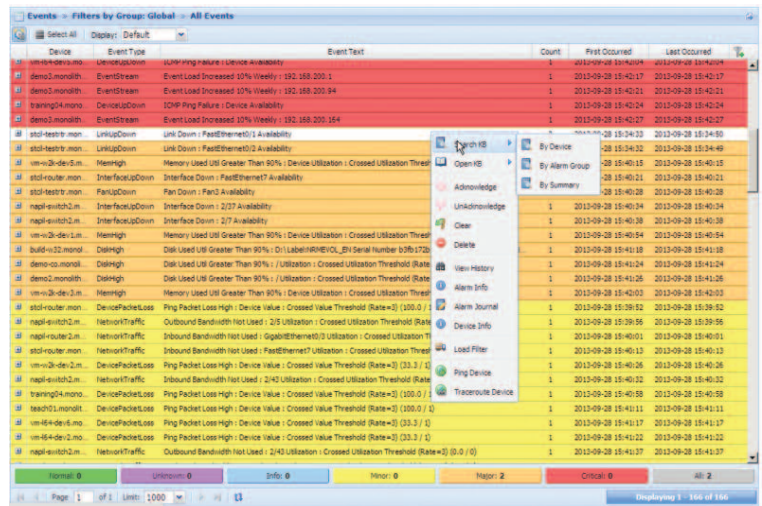


Figure 2: Event List with Right Click Actions

### AssureNow Fault Management Benefits

- Focus effort on root cause events, not symptoms
- Eliminate multiple tools and integration points
- Streamline management efforts
- Increase productivity and accuracy
- Reduce downtime
- Reduce cost of ownership
- Protect revenue and customer satisfaction levels

## Fault Analysis

AssureNow Fault Management advanced correlation enables organizations to rapidly isolate the root cause issue and eliminate associated noise. It provides downstream suppression of events, auto-correlation of parent/child relationships, and IP-based topology correlation, as well as customer-specific custom correlation models.

Best practices and intellectual property are stored in a knowledge base that enables the insights of experts to be propagated to less experienced staff or to be automated. With AssureNow Fault Management it is easy to troubleshoot manually, if desired, while analyzing faults.

Through automated customer impact analysis and notification software, business impact can be determined in real-time and alerts sent automatically regarding impact, duration, and fault resolution. When incidents are not resolved within established time windows, escalation can be initiated automatically.

Fault Management's powerful analysis capabilities speed accurate fault analysis and dramatically reduce troubleshooting time and effort.

## Fault Treatment

AssureNow Fault Management enables automated remediation policies to deal with ping failures and router and server health. It also provides notification when incidents are resolved and stores metrics for reporting.

Organizational productivity is improved and response times reduced through automated policy actions that are triggered by specific events versus relying on a manual process to be initiated by human operators. Business rules and states can be flexibly defined to align correlation efforts with standard operating procedures and automate event responses.

Fault Management also provides business logic discovery and auto-configuration of Service Level Management and Business Service Management service trees. This process, part of AssureNow Service Manager, integrates with billing and provisioning systems to access necessary information.

Integrated run book automation is key to providing unified Service Assurance workflows and increasing productivity. Typically, run book policies are created by administrators and applied without operations involvement. Monolith's patent-pending approach to run book automation is to integrate its run book engine with a knowledge base that enables policies to be invented, designed, documented, and associated without operational overhead. Knowledge base articles can include troubleshooting steps and operator-specific automation policies. Operators can add run book policy associations by simply editing the knowledge base article — no tickets, work requests, or meetings required!

Using the knowledge base as the communication vehicle results in simplified and agile fault treatment that adds value.

## Post Mortem

AssureNow Fault Management provides extensive reporting capabilities, including overall performance, such as how many outages occurred, how long the outages were, who was affected, mean-time-to-repair, and performance against service level agreements.

Causation reports are also available providing analysis of open issues and how often root cause was found. In addition, impact reports indicated which customers were affected and for how long.

Process and policy reviews enable the operator to determine whether faults can be prevented in the future and, if not, what policies, processes, and automation can be put in place to increase efficiency and customer satisfaction, and to reduce cost.

Further analysis can be made of the resources used, i.e., whether the quantity or quality involved was appropriately matched to business and technical risks.

These post-mortem reporting capabilities provide powerful facts in a nutshell that speed business and process analysis.

## About Monolith Software

Monolith AssureNow is a next generation, unified service assurance solution that unifies fault, performance, topology, and service level management in a single scalable software platform. Built from the ground up on a single codebase, the fully integrated and multi-tenant AssureNow solution uses an open and holistic approach for data collection, enrichment, and visualization and reporting. Leading telecommunications, managed service providers, and enterprises around the world use Monolith to unify and simplify their infrastructure management, consolidate disparate and legacy tools to significantly reduce operations costs and assure delivery of new services and enhance customer experience.

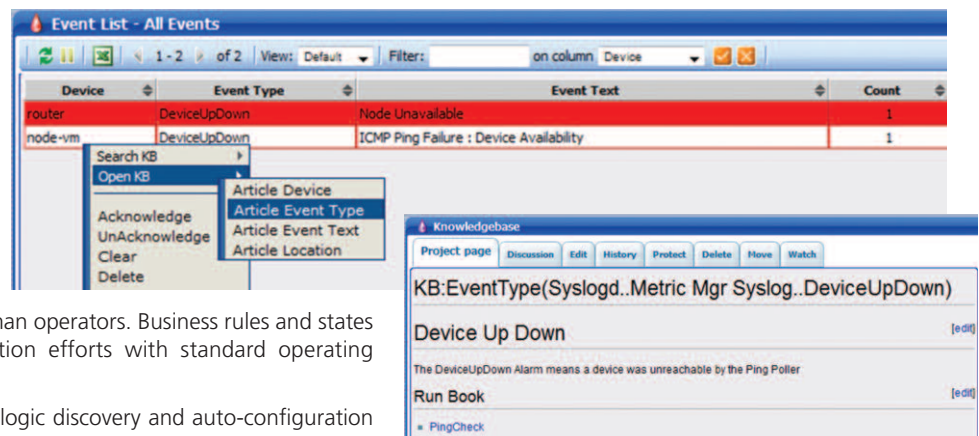


Figure 3: Integrated Run Book Automation