



## **Enabling the Next-Generation of IT Notification Capabilities**

*With the Addition of Enterprise Service Bus (ESB) Capabilities  
Industry-leading Systems Can Now Provide Notification-as-a-Service*

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## **Overview**

With today's enterprise IT organizations needing to provide real-time support for business operations within increasingly complex and globally-dispersed environments, assuring effective IT notification for event management and resolution has become a critical factor for success. However, the issues and implications reach far beyond the realm of IT itself. Interruptions in essential business operations for even short periods of time can cost businesses millions of dollars, put a organization's reputation at the risk, and create lasting negative impacts on their ability to compete in today's global marketplace.

Many businesses have already found that the investment in intelligent IT notification systems with multi-modal two-way communications and implementation flexibility can pay significant dividends in the form of enhanced uptime and continuity of operations.

This whitepaper will discuss the newest generation of intelligent IT notification systems that leverages innovative Enterprise Service Bus (ESB) functionality to streamline initial and ongoing integration with legacy applications, diverse platforms while meeting changing enterprise requirements. ESB greatly improves the users' ability to quickly set-up, modify and maintain event notification across a wide range of business functions by eliminating the need to individually create and maintain each application interface using a variety of programming methods. Another major benefit is that, by de-coupling the integration from the underlying applications, ESB also opens the door for more effective delivery of IT notification as a service. This allows enterprises to take maximum advantage of the growing trend toward Software as a Service (SaaS) and to leverage ongoing improvements in IT notification technologies, while minimizing operating costs and avoiding future forklift upgrades.

## **Challenges for IT Management**

An effective IT notification system fills the gap between IT systems and the human beings who must respond to any problems or issues that arise within those systems. As such, it provides the vital link between the precisely defined business rules of the application software and the inherently more chaotic world in which human beings are constantly on the move and juggling multiple demanding tasks.

This means that a modern IT notification system needs to do much more than just send out a one-way message and assume that it will be acted upon. It also needs to build in appropriate feedback and escalation mechanisms to optimize time-to-response and to assure conformance with organizations' Service Level Agreement (SLA) commitments.

### **Optimizing the Time and Deployment of Expert Staff**

One of the hard facts of life in today's globally-stretched but cost-constrained business environment is that companies have to get maximum results from limited investment in their expert staff. For example, global companies can achieve higher workforce

efficiency by leveraging their skilled human resources using the so-called “follow-the-sun” business models in which the resources for 24/7 support of operations are often spread throughout the world in different time zones. This means that the staff personnel needed to respond to an event that occurs in the middle of the night in London might actually be on-duty in Silicon Valley or in India. Therefore, a key objective for the IT event notification system would be to make sure that the most appropriate human resource with the right skill set is notified and actually responds to solve the problem in the shortest possible timeframe. Also, it is important to manage the initial notification and escalation processes in such a way as to avoid duplication of response or sub-optimization of limited resources.

### **Overcoming Mobility Issues**

Another challenge is the fact that the right people with the right skill set are rarely sitting in one place, waiting for a particular issue to arise so that they can respond quickly. Of course, from a management standpoint, most companies would not want to invest in the overstaffing required to make this a reality anyway. While a 24-hour Network Operations Center (NOC) with enough dedicated staff to handle any situation might be the most responsive solution, it certainly would be the most expensive. To get the most out of scarce resources, the IT notification system must be able to find people on the go, using a variety of communication methods such as mobile phones, pagers, SMS, emails, etc. It also needs to have built-in two-way feedback in order to know when a particular human resource has been contacted and to automatically document their acknowledgements and response plans.

### **Building in Timely Escalation**

The third major challenge is to keep in mind that the ultimate objective in using an IT event notification system is not just to cause a “notification” but instead it is to actually “solve the problem”. Rarely can the first person contacted accomplish this by themselves simply by flipping a switch. Therefore, an intelligent IT notification solution also has to include smoothly integrated mechanisms to support follow-on actions, such as escalation to higher-skilled staff or the creation of ad hoc response teams, while also facilitating collaboration and coordination between team members.

### **Cost-of-Ownership for Developing & Supporting In-house Solutions**

Finally, all of the above challenges must be addressed within the ever-tightening constraints of finite IT budgets and stark business realities. Because few businesses have the luxury of simply starting with a clean slate, most IT environments have grown and incrementally evolved over many years through the deployment of various standalone legacy applications for specific purposes, often requiring a myriad of operating system environments and platforms.

Trying to build a comprehensive IT notification system within such a “spaghetti mesh” of complexity is not only a daunting task for in-house staff to accomplish; it also can result in notification systems that are fragile and prone to breakdown. Obviously, you cannot rely on a primary notification system that lacks robustness to notify your IT personnel of IT related issues. . Furthermore, even if such an in-house system could be implemented,

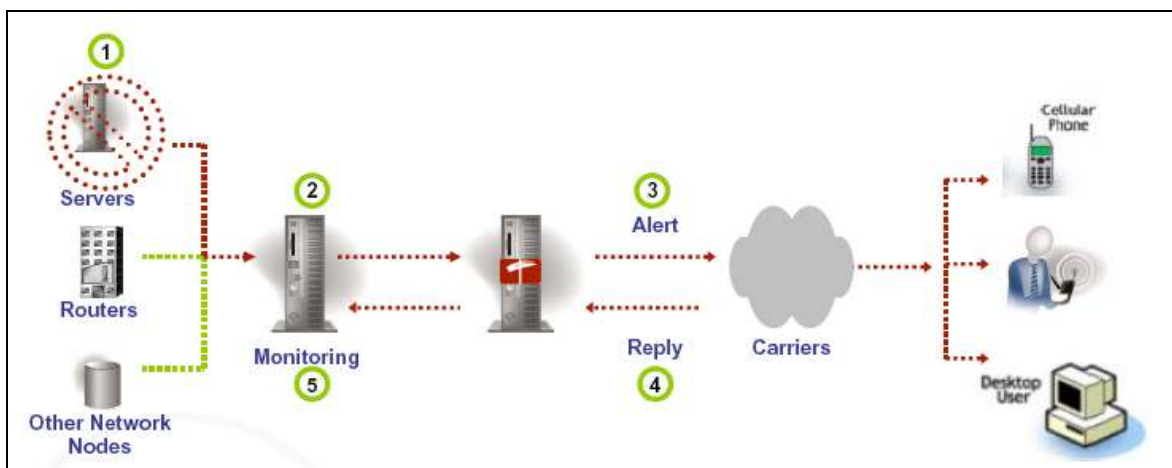
it is rarely well-documented and the core knowledge for supporting it remains in the heads of staff that could walk out the door at any time. Therefore experience has shown that the costs can be prohibitive for supporting and adapting in-house developed IT notification schemes to accommodate on-going changes in applications and/or business requirements.

## Evolution of IT Notification Systems

Over the past decade, the above challenges have been addressed through the evolution of commercial, industrial-grade IT notification systems. These types of systems provide the notification flexibility, features, robustness, scalability and deployment options that make them ideal for business enterprises, academic institutions and government organizations throughout the world.

### Structured Approach for Consistent Alert/Response Management

The core feature that distinguishes these commercial systems from home-grown, in-house schemes is the use of a robust, structured, end-to-end architecture for managing the entire alert/response information flow. As shown in the illustration below, this approach uses dedicated monitoring applications and automated notifications with bi-directional flow of “alert” and “reply” information to assure closed-loop management of the process.



### Leveraging Multi-modal Communications

These commercial-grade intelligent IT notification systems leverage a full spectrum of communications modalities to deliver both outbound alerts and inbound responses. Notifications can be launched via common web browsers, email devices, Command Line Interface (CLI), Web Services API, or telephony interfaces to mobile or landline handsets, pagers, SMS text messages, etc. Multi-modal support is available for a variety of communications protocols, including TAP, WCTP, SNPP, SMTP, TMEX, SMPP, VXML and others. Recipients can respond immediately on any two-way device (cell phones, Blackberries, iPhones, etc.) or can use call-back numbers to respond to alerts sent to one-way devices (fax machines or one-way pagers).

Multiple language support is also available, enabling individual users to set parameters for receiving messaging in their own preferred language, thereby enhancing communication across a multi-cultural, worldwide, and “follow-the-sun” support environments.

### **Built-in Escalation and Event Management Features**

The current state-of-the-art systems also include feature-rich delivery/response and escalation management capabilities. Multiple notifications can be issued simultaneously to pre-established or ad hoc groups with automatic logging of receipt/acknowledgements as well as actions and responses. Notifications and status updates can be quickly and easily edited on-the-fly and rerouted as necessary within groups, subgroups, ad hoc teams, and/or various management levels.

Relentless execution of escalation trees and schedule-driven escalation management enable the IT notification system to keep all relevant parties apprised of current status and to bring the most appropriate resources to focus on dynamically evolving situations. Defined service parameters and SLA commitments also can be pre-programmed into the system to provide look-ahead alerts, which can help to prevent emerging events from deteriorating to the point of SLA violations.

### **Performance, Flexibility and Scalability**

Today’s intelligent IT notification systems are capable of creating notifications in a matter of seconds and sending them to an unlimited number of recipients. Recipients are able to respond immediately and updates can be automatically served to other recipients to avoid duplication of effort and to coordinate actions within the responding team.

For maximum deployment flexibility, these systems are designed to interface with a full range of legacy platforms and operating systems as well as to import contact information from any database of record and/or data format. Users also can be authorized to update and maintain their own contact information through a portal using standard Web browsers and secure interfaces, thereby enhancing both maintainability and accuracy. Secure Socket Layer (SSL) support ensures protection of corporate data as well as maintaining privacy of individuals’ contact information.

Until recently, the typical deployment scenario has involved on-premises solutions provided and supported by major vendors. While this approach has delivered excellent value for many organizations, the characteristics of installed systems still present some issues, depending upon the objectives and requirements of specific corporate customers. These characteristics include:

- Capital expense associated with dedicated equipment
- High-touch requirements for installation, consultant services, firewall configuration, and maintenance by in-house staff
- Relatively long time-to-value for amortizing the initial investment

## **The Next Wave of Innovation**

The next wave of innovation is now providing enhanced solutions for those enterprise customers that need alternatives to in-house installation and maintenance of their IT notification systems. Through the use of an advanced Enterprise Service Bus (ESB) architecture, the IT notification system can be effectively “de-coupled” from the underlying individual applications and legacy platforms, thereby both improving maintainability and opening the door for new IT Notification-as-a-Service (NaaS) alternatives. This service approach can eliminate capital investment and shorten overall time-to-value for customers that prefer a hosted service model.

In addition, even for those customers that prefer to stay with an in-house installed-system because of security, control or policy issues, these new ESB capabilities can significantly streamline the creation and deployment of IT notification systems, as well as reducing the on-going costs of maintenance within a multi-faceted legacy application environment.

## **MIR3 ESB-enabled Solutions: Making it Reality**

### **De-Coupling the IT Notification System from Applications**

The Enterprise Service Bus approach begins with the fundamental concept of using a single standardized, feature-rich, visually driven interface for creating and deploying any IT notification system into a range of Information Technology Service Management (ITSM) environments as well as integrating with legacy applications within complex multi-platform settings.

By using a standardized ESB environment for creating and maintaining all application interfaces, the new-generation of IT notification systems significantly reduces overall complexity and cost of integration while also making it easier to manage inevitable future changes. This reduction of complexity also creates more robustness within the IT notification system and reduces the fragility and multiple points of failure associated with individually coded application interfaces.

### **A “Code-free” User Interface for Creating Integrations**

The ESB uses a simple code-free user interface to support the integration and orchestration of various IT processes. Behind each workflow object (activity) is a standardized, forms-based configuration dialog. Instead of writing code, the user simply completes the relevant information in the workflow object dialog. By creating these high level building blocks, users are able to visualize and build complete notification processes, without having to understand or even care about the lower level code used by the target applications. ESB eliminates the need for special skill sets (Java, Perl, C, etc.) and specialized knowledge about the underlying applications (internal process relationships, etc.). The resulting IT notification implementations not only can be better tailored to high-level strategic objectives; they are also inherently easier to maintain and self-documented. This also means that IT managers are not as dependent on the knowledge remaining in the head of the original creator when it comes to future updates.

## Out-of-the-Box Integration with Broad Range of Applications

The ESB architecture also allows for out-of-the-box integration with a wide range of industry-leading applications such as ERP, CRM, SFA, accounting systems, etc. Along with the capabilities for dynamic integration using simple point-and-click functionality, these out-of-the-box modules provide a complete set of pre-defined and highly-flexible building blocks for quickly creating and deploying virtually any IT event notification scenario.

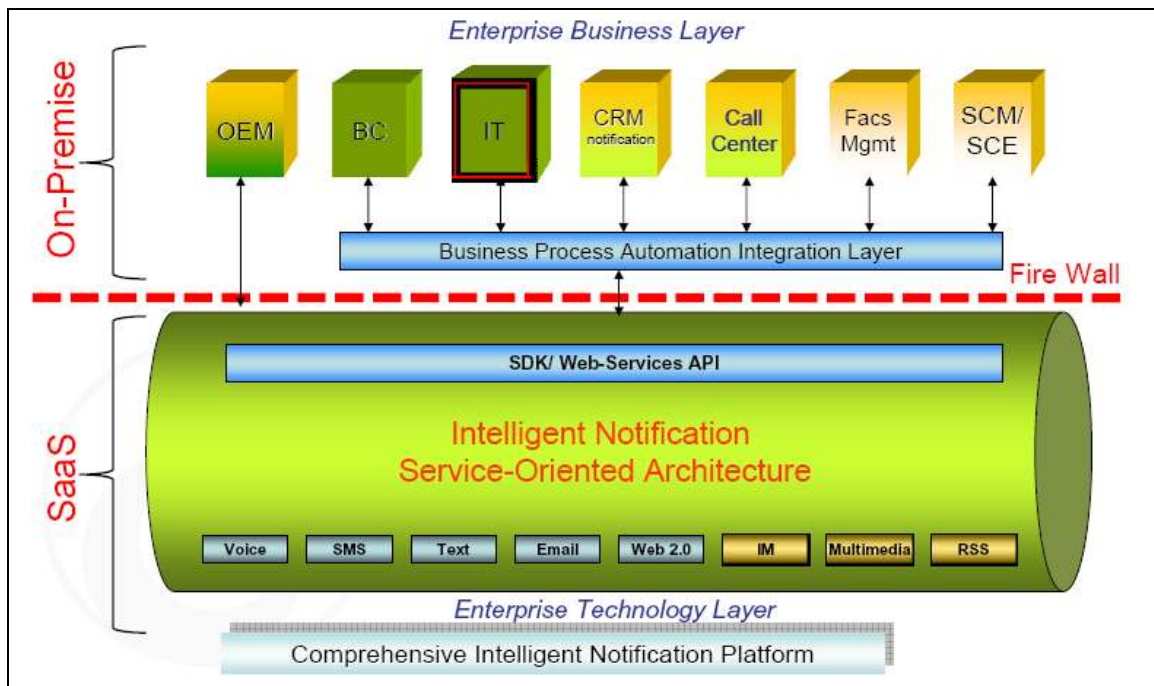
## Ability to Deliver SaaS Model: Hosted IT Event Notification

By ESB-enabling a proven, modern enterprise notification platforms offerings and decoupling the IT event notification from the legacy business environment, MIR3 has now made it possible to deploy Notification-as-a-Service.

This approach fits in with the overall industry trends toward using SaaS solutions and provides all of the inherent advantages that enterprise customers have come to expect from SaaS in other arenas. As previously mentioned, these inherent advantages include:

- Elimination CapEx for installed hardware and associated supplies expense
- Elimination of in-house maintenance requirements
- Faster time-to-value
- Lower overall cost-of-ownership
- Straight-forward access to on-going service enhancements

The illustration below provides an overview of the underlying functional segmentation that makes Notification-as-a-Service possible. The ESB-enabled business layer interface allows all of the existing or legacy applications to be effectively communicated through a single, unified Web-services API to the intelligent notification service.



Once the user has set up the code-less, dialog-based workflow objects, the on-premises legacy applications and the remotely-hosted notification service can seamlessly communicate, without the need for any custom coding or low-level integration.

ESB-enabled, high-level integration allows simple plug-and-play deployment of the notification service with a much higher level of architectural robustness. The intervening level of abstraction provided by the unified API/integration interface means the notification service does not have to be tied into individual business applications through a mesh of intertwined connections, private ports and protocols. In traditional legacy/client/server implementation models, the proliferation of these custom communications interfaces invariably adds to complexity, which makes the overall infrastructure more fragile and less secure. In contrast, the Notification-as-a-Service model enhances robustness and security by allowing all core application-specific activity to remain within the firewall and eliminating the complex “many-to-many” communications structure with exponentially more points-of-failure.

Deployed across a robust network of hosting facilities located throughout the world, the Notification-as-a-Service model also provides high-availability and multiple-redundancy, combined with global reach and local responsiveness.

Of course, as with any multi-faceted system implementation, the deployment of IT notification is not a “one-size-fits-all” proposition. Fortunately, the integration of Enterprise Service Bus capabilities with a proven intelligent notification platform provides IT decision-makers with a broadened set of options that can be deployed in a variety of ways. These alternatives can include:

- 1) a traditional installed-software model that is enhanced with the ESB-enabled development environment;
- 2) the SaaS model in which the comprehensive notification service is remotely hosted; or
- 3) a hybrid model in which some aspects are installed on-premises (application, contacts and notification template database) and some are remotely hosted (all communication infrastructure including telephony, email, SMS, etc.). In addition, the flexibility of the ESB-enabled plug-and-play architecture means an enterprise could even start with one deployment model and migrate to another as requirements change.

## **Summary**

Managing IT notification and problem resolution continues to be increasingly challenging and critical for enterprises of all sizes, academic institutions, government entities and other large organizations throughout the world. At all levels and in virtually all aspects of our work and personal lives, human beings are becoming more intertwined with and

interdependent upon a wide range of complex computing and communications environments.

More importantly, our expectations for flawless service and immediate response times have become unforgiving of any perceived problems—whether it be expecting ATMs to provide money, cell phone to provide dial-tone, or online leaders such as Amazon, eBay and Google to always be available at our fingertips. Worse yet, with today’s instantaneous flow of information and 24-hour media scrutiny, even the briefest of service disruptions or system malfunctions can do irreparable harm to a company’s global reputation.

Even though some degree of system downtime theoretically will always be a risk, most organizations have learned the value of proactive investments that can help to minimize how long systems are down and to correct problems before the impacts are felt by their external user communities. The new generation of intelligent IT event notification capabilities is designed to provide additional tools and alternatives for corporate decision-makers as they continue to pursue this ultimate goal of perceived 100 percent uptime and flawless service.