

Observability For Integration MESH



“MESH signifies Integration platforms for Messaging, Event Processing & Streaming deployed across Hybrid Cloud to power Enterprise Applications.”

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M Messaging

E Event Processing

S Streaming *across...*

H Hybrid Cloud

Executive Summary

This paper highlights the challenges that IT professionals face when building and managing applications and integrations across complex IT landscapes, referred to as MESH infrastructures. In today's complex IT environment, businesses rely heavily on MESH infrastructures as they build new applications and features to help them adapt to ever-changing customer engagement models. This shift in development requirements introduces the need for an expansion of monitoring and management capabilities to support these new MESH-based applications.

For example, IT professionals who work with these diverse infrastructures face unique challenges, such as fragmented sets of tools, increased overhead, and increased costs, which lead to a lack of visibility and control, longer resolution times, missed SLAs, and ultimately poor customer experience. Current monitoring platforms such as application performance monitoring solutions focus almost exclusively on the applications themselves, providing limited support for monitoring and managing the integration layer that ties application functionality together.

This paper describes how this shift impacts different roles in an organization, such as shared services, application owners, enterprise architects, and application developers, and introduces meshIQ, a unique platform that provides a comprehensive set of capabilities that enable application and integration DevOps professionals to minimize the risks of unstable applications that put organizations at the risk of outages, missed SLAs and poor customer experiences.

“meshIQ delivers observability and management for the Integration MESH; deliver a single pane of glass to manage and monitor complex integration infrastructure.”

Integration Complexity— A Challenge for IT and Business

IT professionals such as developers, architects and DevOps specialists who build and manage applications and integrations today typically do so across complex IT landscapes. In fact, many applications are built using middleware technologies such as **Messaging**, **Event** processing and high-speed data **Streaming** platforms, and they are being deployed across complex **Hybrid** cloud infrastructures. This paper defines this type of IT infrastructure as a MESH and illustrates how IT professionals who are developing and managing applications and integrations across these diverse MESH infrastructures face unique challenges.

MESH infrastructures are critical to both IT and business professionals in our rapidly evolving market. From a business perspective, companies must keep up with evolving customer engagement models. Companies are being forced to compete through the rapid development and deployment of new features or even new applications. And customers are becoming more demanding, requiring improved, user-friendly engagement models, in turn pushing the need for even more capabilities that require a foundation of old and new applications, with improved customer experience.

From an IT perspective, companies, especially mature companies that have grown over time, will have a mixture of computing platforms. This is a situation that IT teams must live with, given the risks of standardizing and migrating existing applications. Some legacy systems or secure systems will continue to run on premises, some applications will run on public cloud platforms. And nearly all companies will maintain a combination of applications across hybrid environments. Plus, every company will likely have a portfolio of different messaging, event processing and streaming systems in deployment, in many cases deeply embedded across their application portfolios.

“More than just a monitoring tool, meshIQ is a unique observability platform.”



Challenges in MESH Infrastructures

Companies will face tremendous challenges as they develop, deploy, and operate applications in the MESH. Some of the biggest challenges include:

- **Fragmented Tools**

Middleware vendors may offer their own monitoring tools and utilities, making it difficult to standardize and centralize monitoring across the enterprise. These utilities are not designed for general use. They are custom fit for the vendor's technology and may rely on different protocols, data formats, and APIs. This siloed approach often makes the monitoring and management of MESH applications difficult and time consuming.

This incompatibility of tools can pose a significant challenge for organizations who are building middleware applications in MESH environments, making it difficult for organizations to standardize and centralize monitoring across the enterprise. This incompatibility of monitoring tools can also limit the ability of organizations to automate and streamline monitoring and deployment processes, making it exceedingly difficult to correlate performance and availability data across multiple middleware systems.

- **Management Overhead**

Monitoring and managing multiple middleware systems can increase the overall management overhead. This is because the use of different tools and technologies for each system can require administrators to become proficient in multiple tools and technologies, which can be time-consuming and costly. This increased management overhead can result in reduced efficiency and increased costs for the organization, as administrators are required to manage multiple systems, each with its own set of monitoring and management tools.

The complexity of managing multiple middleware systems can also lead to increased risk of errors and increased downtime, as administrators struggle to keep up with the demands of managing multiple systems. This lack of standardization can result in a fragmented monitoring landscape, where different teams are using different tools and technologies, leading to increased management overhead and reduced visibility into the performance and availability of middleware systems.

- **Increased Cost**

Using each vendor's systems middleware tools to monitor and manage their platforms can be expensive. Each vendor may require separate tools and licenses, leading to increased costs for the organization. These costs can quickly add up, especially if the organization has many middleware systems from multiple vendors. This scenario is increasingly common as companies are acquired and companies choose to adopt and integrate with the acquired companies' systems rather than rip and replace them.

Additionally, the cost of training and supporting administrators to use multiple monitoring tools and technologies can also add significant costs, putting increased pressure on IT budgets, and making it difficult for organizations to justify the investment in monitoring multiple middleware systems.

The result of these challenges is that there is no single way to monitor, manage and deliver DevOps across multiple MESH environments using the vendor provided tools. Each vendor provides a solution or a tool for managing and monitoring their middleware technology, but these vendors do not offer a single way to monitor and manage the multi-vendor MESH environments. meshIQ offers a unique solution that crosses vendor boundaries and enables Developers to build across MESH and Ops to monitor it.



“meshIQ provides a single pane of glass to manage and monitor complex MESH landscapes.”

QM_A IP-172-31-47-88 2 910 Unix M6-WMQ Agent-managed MQ Node 00:03:46

QM_B IP-168-11-08-10 2 910 Unix M6-WMQ Agent-managed MQ Node 00:02:37

What is the impact of this fragmentation?

The impact of the fragmentation of tools for organizations today is a lack of visibility and control leading to longer resolution times, missed SLAs, and poor customer experience. There are many roles that are impacted by this fragmentation of monitoring and management tools for all the middleware MESH platforms. The impacts will vary by roles and responsibility, driven by individual responsibilities, agendas, priorities, budgets, and other constraints.

A few examples of impacts based on roles include:

- **Shared Services:**

Many organizations have dedicated shared services individuals or teams for common use cases such as application integration. Shared services professionals require reliable application integration processes, as well as management and control of middleware platforms and systems. Multiple platforms will require these individuals to learn multiple technologies and tools, adding complexity and overhead, as well as budget demands, resulting in inefficiencies and potential mistakes.

- **Application Owners and Enterprise Architects:**

Application owners, as well as enterprise architects who are ensuring technologies are compatible and complementary across the organization, need to ensure that there are no failures across these complex MESH environments leading to potential outages (MTBF), poor processes or performance problems due to lack of transparency, monitoring and manageability across complex environments built with multiple middleware technologies.

- **Application Developers:**

Application developers must ensure the quality of application releases. This means they must have the proper tooling for DEV, QA & UAT testing. However, relying on the vendors' tools for this functionality is impossible because no vendor provides end-to-end monitoring and management capabilities across the MESH.

- **Application Support:**

Professionals tasked with supporting applications need to ensure that they can provide fast mean time to recovery (MTTR), as well as the ability to look across diverse systems and technologies to identify the root cause of any application issues.

*“Industry first
observability platform
for Integration
messaging, event
processing,
streaming platforms
deployed across
Hybrid Cloud.”*

Solution

To overcome these complexities, organizations should carefully evaluate their middleware requirements and seek vendors with comprehensive monitoring capabilities.

In this whitepaper we are introducing meshIQ, the industry's first purpose-built observability platform for messaging, events, and streaming across hybrid cloud infrastructures.

meshIQ provides a single pane of glass to manage and monitor complex MESH landscapes, significantly reducing the risks to application stability and performance. Unlike traditional application performance monitoring solutions, meshIQ uniquely provides observability and management capabilities for every middleware platform on the market, from modern Kafka-based streaming to legacy messaging technologies such as IBM MQ, across cloud and on-premises environments.

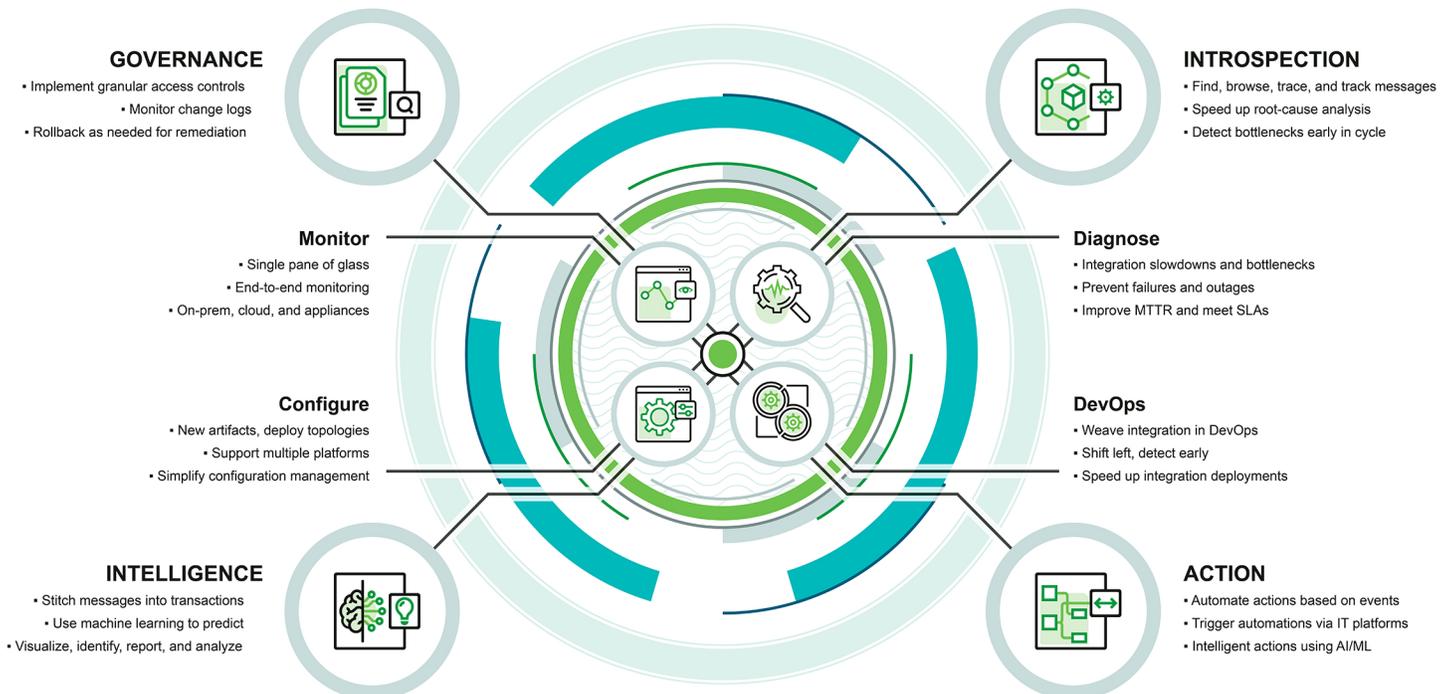


Figure 1. meshIQ Platform Capability Matrix

“meshIQ platform’s capabilities go beyond observability. It delivers DevOps tooling and Management for diverse MESH platforms.”

Capabilities of meshIQ

meshIQ provides a single pane of glass for observability. It delivers a comprehensive set of capabilities that enable application and integration DevOps professionals to build and manage applications across MESH environments, minimizing the risks of unstable applications that put organizations at the risk of outages, missed SLAs and poor customer experience by helping to speed up mean time to resolution (MTTR) and improving mean time between failures (MTBF), ultimately improving application SLAs and customer experience.

More than just a monitoring tool, meshIQ is a unique observability platform. There are many tools that deliver observability at the application level. Vendors typically provide a custom approach for monitoring and managing their tools or platforms. But meshIQ is the only platform that delivers observability in the MESH, delivering more observability capabilities than any other middleware monitoring solution, including in cross-platform configurations.

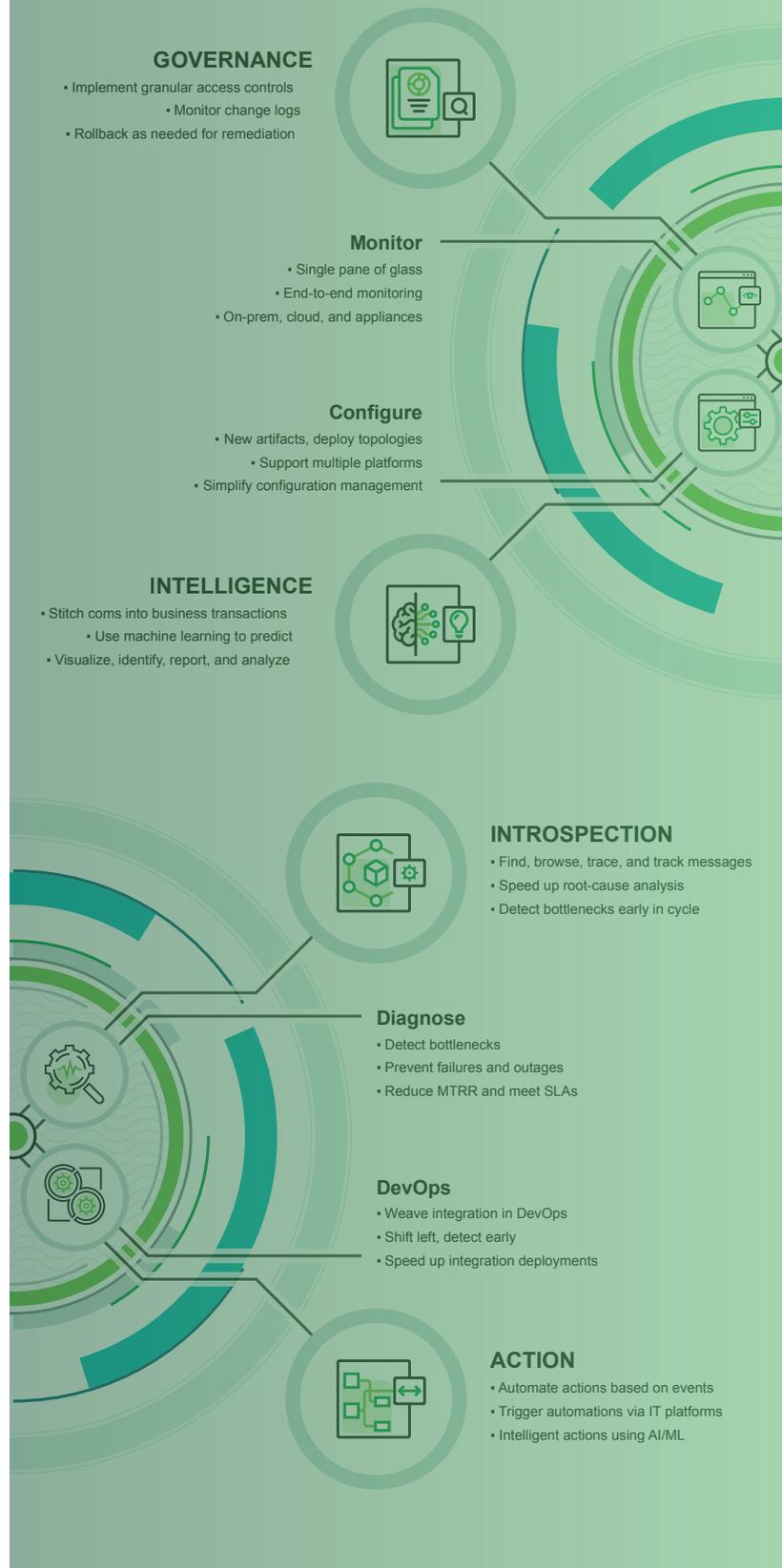
Additionally, it enables deployment, DevOps, data extraction for AI/ML, and the ability to initiate actions in real time. It also enables you to detect bottlenecks, prevent failures and outages, and improve mean time to recovery.

Plus, meshIQ offers a great way to weave together integration MESH technologies with your DevOps strategy, enabling “shift-left” and “detect-early” practices to speed up integration deployments.

In this section we will explore these capabilities.

The core capabilities of meshIQ, include:

- Governance
- Introspection
- Intelligence
- Action



Governance

When building applications and integrations across complex, hybrid environments, being able to properly apply governance is essential. Given the number of moving pieces, companies can put themselves at risk both in terms of product quality and stability, but also in terms of legal compliance. Application DevOps professionals must apply granular access controls to data and functionality across multiple systems, with full visibility across multiple vendors' change logs to ensure reportability in environments with regulatory compliance requirements. Additionally, DevOps professionals must be able to easily rollback updates for remediation.

To support these requirements, meshIQ offers several monitoring capabilities including:

- Single pane of glass visibility across diverse, hybrid systems and platforms
- End-to-end monitoring
- Support for on premises and cloud platforms, as well as for appliances

“meshIQ is deployed for a wide range of our banking apps and is something we use widely to manage our modern and legacy MESH infrastructure and it is fully integrated into our Event management lifecycle and our ticketing system ServiceNow.”

–Director IT

The screenshot displays the meshIQ Role Management interface. At the top, there is a navigation bar with the meshIQ logo, 'Security Manager', 'Export Data', 'Import Data', and 'Audit Report'. The user is logged in as 'Admin'. Below the navigation bar, the 'Role Management' section is active, showing a table of permissions for various roles across different system components.

Role	Administrator	Agent	EMS Admin	Message Admin	Message Browser	Operator
Kafka	All	None	None	Partial	Partial	Partial
+ Kafka Topic	All	None	None	Partial	Partial	Partial
+ Kafka Partition	All	None	None	All	Partial	Partial
+ Kafka Broker	All	None	None	Partial	None	Partial
+ Kafka Consumer	All	None	None	All	None	Partial
+ Kafka Connect Instance	All	None	None	All	None	All
+ Kafka Connect	All	None	None	All	None	Partial
+ Kafka Connect Task	All	None	None	All	None	Partial
+ Kafka Connect Plugin	All	None	None	All	None	Partial
+ Kafka Replicator	All	None	None	All	None	All
+ Kafka Schema Registry	All	None	None	All	None	Partial
+ Kafka Schema Registry Subject	All	None	None	All	None	Partial
+ Kafka Schema Registry Subject Version	All	None	None	All	None	Partial
+ Kafka Ksql Instance	All	None	None	All	None	Partial
IBM	All	Partial	Partial	Partial	Partial	Partial
+ Queue Manager	All	Partial	Partial	Partial	Partial	Partial
+ Channel	All	Partial	Partial	Partial	Partial	Partial
+ Process	All	None	None	None	None	Partial
+ Node	All	Partial	Partial	Partial	Partial	Partial
+ Queue	All	None	Partial	Partial	Partial	Partial

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Introspection

Not only must developers provide controls over MESH infrastructures, but they must also be able to centrally introspect the data that events that flow through their applications. This data introspect makes it possible for companies to stitch together messages and events into business transactions.

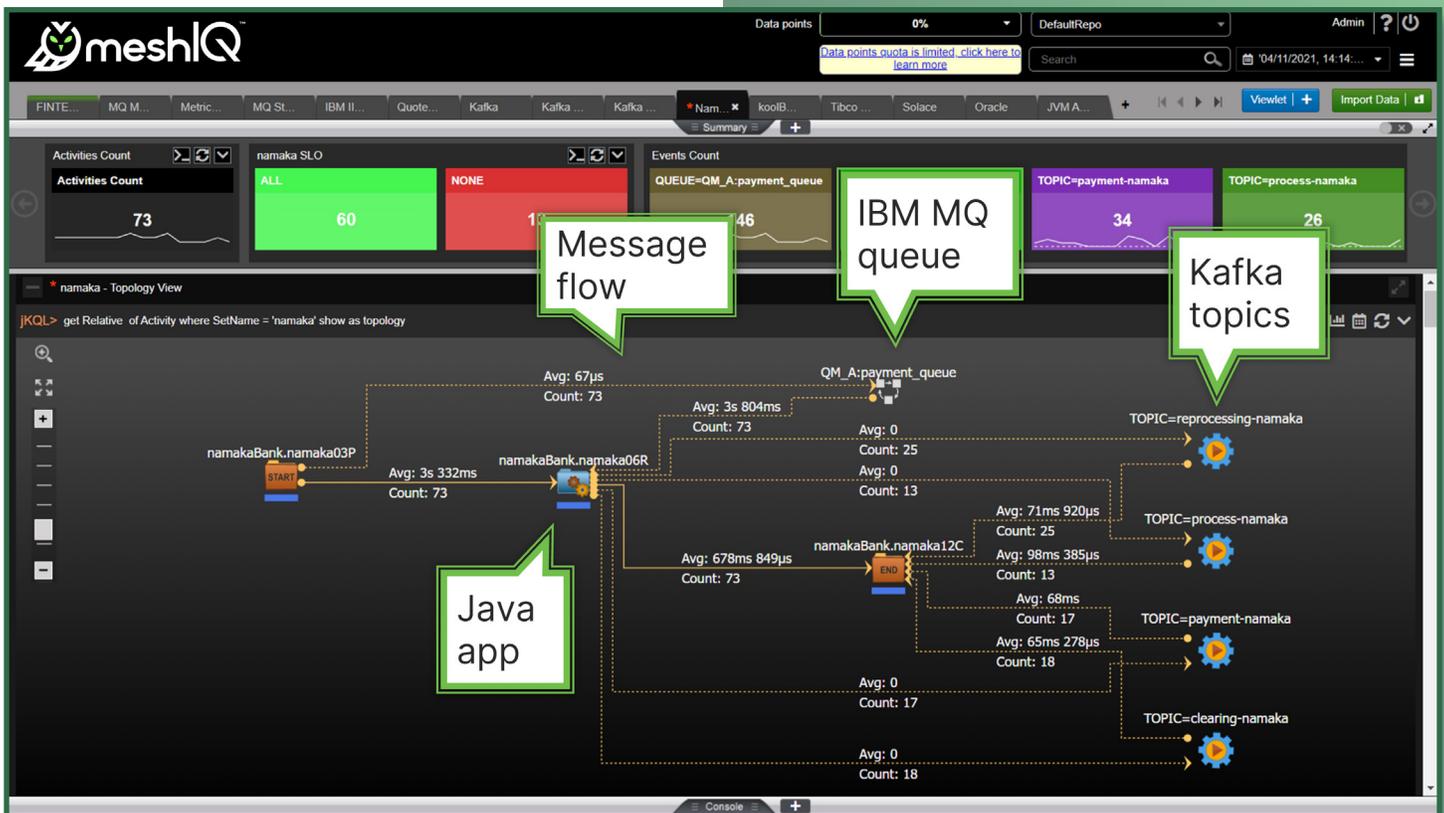
It also enables the data to be used with artificial intelligence and machine learning systems to better predict bottlenecks and outages which could drive poor customer experience. Finally, introspection supports the ability to visualize, identify, report, and analyze the data running through applications and integrations.

To enable introspection, meshIQ offers multiple diagnostic capabilities including:

- The ability to detect bottlenecks
- The ability to identify and prevent failures and outages
- The ability to reduce MTTR and meet SLAs

“We selected the meshIQ solution for its unique ability to manage and monitor our diversified middleware environment according to the highest standards of quality and availability. We started off by MQ and IIB infrastructure and later in added Kafka in 2017.”

-VP IT Ops



Intelligence

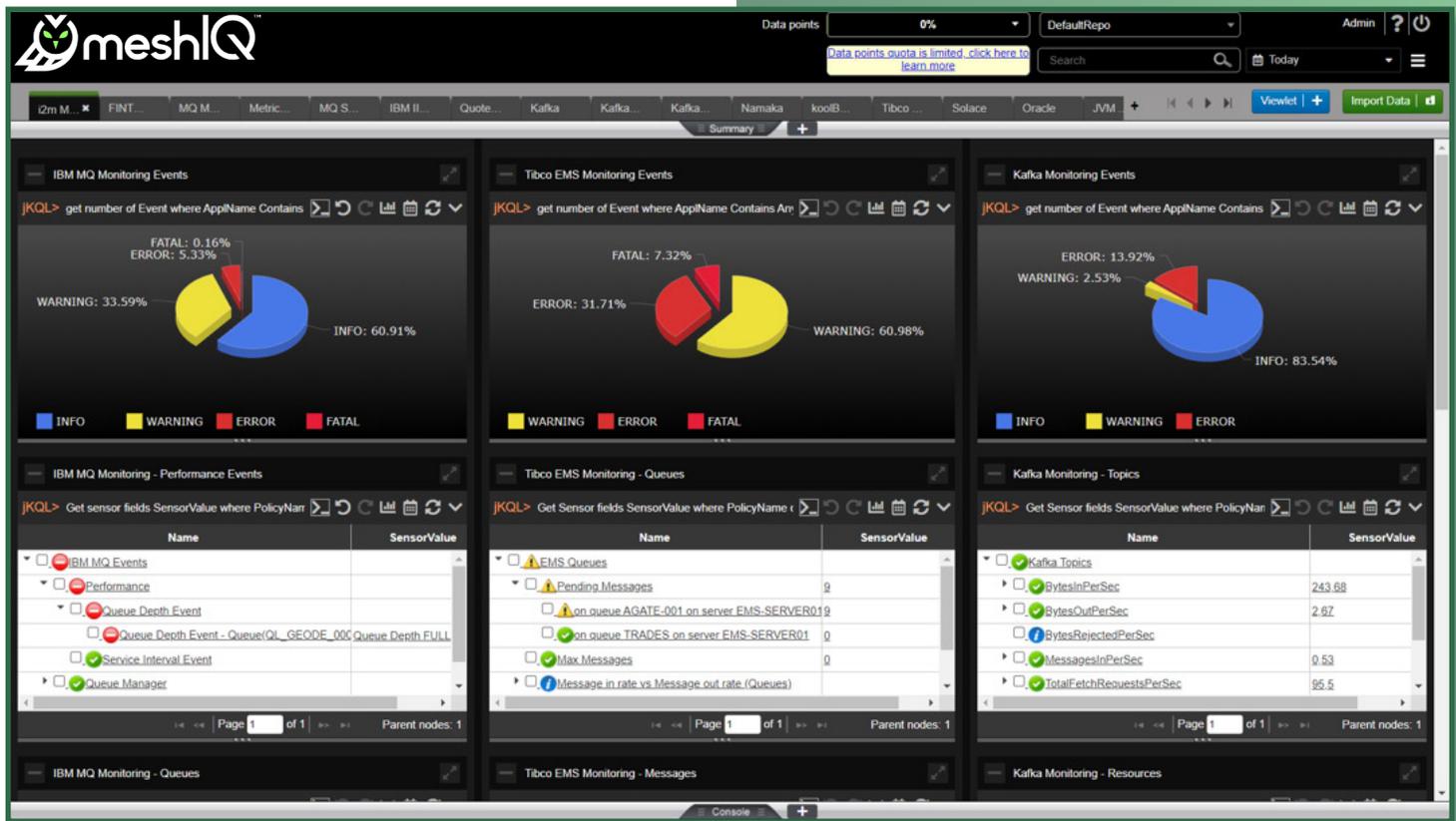
DevOps professionals benefit from tools that offer built-in intelligence, simplifying the configuration and deployment of complex applications. meshIQ offers the ability to find, browse, trace and track messages across the MESH. It also speeds up root cause analysis when things do not go as planned and offers unique abilities to detect bottlenecks early in the cycle.

To enable intelligence, meshIQ offers configuration capabilities including:

- The ability to deploy new artifacts and topologies
- Support for multiple vendor platforms
- Simplified configuration management

“meshIQ platform has saved the Black Friday for us many times over. We initially adopted the platform as Integration issues between apps were resulting in lost orders and causing pricing inconsistencies. Very soon we realized that the benefits extended to Support savings as well.”

–VP, Shared Services



Action

For application developers, being able to visualize and identify data and events across complex environments is not enough. When working with multiple vendors' products and platforms, developers may be forced to custom build integrations to weave together diverse integration points. To achieve efficiency and reduce the risk of point-to-point integrations, meshIQ offers

several capabilities to automate actions through the MESH. These capabilities include the ability to automate actions based on events, to trigger automations via different IT platforms, and to introduce intelligent actions using AI/ML tools.

To support the automation of actions, meshIQ offers several DevOps capabilities including:

- The ability to weave integrations into DevOps tool chains
- The ability to “shift-left” and “detect-early” for improved efficiency
- Enhanced configuration abilities to speed up integration deployments



Risks of Fractured Approaches in MESH Environments

It is possible to manually build and deploy applications and integration in MESH infrastructures today. But just because it is possible, that does not mean that it is practical or efficient. In fact, there are several risks today when building MESH applications without meshIQ, including:

- **Multiple observability tools:**

The MESH is not one thing. It is a combination of technologies deployed in different combinations across your hybrid cloud infrastructure. This means you will require multiple monitoring tools, which in turn increases the costs, adds complexity, and limits end-to-end visibility across your environment. Your applications will be exceedingly difficult to troubleshoot and fix, introducing higher risk of outages and poor customer experience.

- **Cross platform governance:**

Applications build across MESH infrastructures require diverse roles and users, increase the complexity of change control, and introduce potential deployment issues, which may be impossible to roll back across the multiple systems and platforms.

- **Including Mesh in DevOps Chain:**

Manually introducing multiple systems and platforms into the MESH adds extensive coding requirements, introduces interoperability challenges across application and platform versions, and ultimately makes it difficult, if not impossible, to safely maintain and upgrade the application.

- **Impossible to act in time:**

When things do not go well, you need to troubleshoot. But without a single plane of glass view into your MESH, troubleshooting across all the products and platforms will be a nightmare. Identifying and fixing errors will take longer, increasing risk for companies increasingly committed to uptime SLAs of .99999. Missing these SLAs can come with steep penalties of usage credits or refunds, poor SLAs, and poor customer satisfaction.

“We take availability very seriously, especially for provisioning, this is very critical to us.. In the past, we had a dip in customer ratings and satisfaction due to critical infrastructure issues resulting during provisioning and post provisioning, meshIQ resolved them for us.”

–Sr. Director IT

Conclusion

The paper discusses the challenges faced by IT professionals when managing applications and integrations in MESH infrastructures, which are crucial for businesses to adapt to changing customer engagement models. The fragmented tools, increased overhead, and costs of managing MESH environments can lead to longer resolution times, missed SLAs, and poor customer experience. To help businesses address these challenges, meshIQ provides a single pane of glass for observability. It provides a comprehensive set of capabilities to minimize the risks of unstable applications, improve application SLAs and drive better customer experiences.

To learn more about how meshIQ can help your organization reduce complexity, overhead and unnecessary costs while improving the customer experience, schedule a conversation with one of our experts at <https://www.meshiq.com/contact-us/>, or visit us at www.meshiq.com.

