Delivering IBM Z AIOps with higher value and lower cost

A competitive perspective

Good managers empower their teams with tools that can help them excel at their jobs. The adoption of hybrid cloud brings benefits to IT organizations by enabling IT teams to innovate with agility, create better customer experiences, fuel business growth, and build competitive advantage. However, managing hybrid applications can be a challenge for IT operation teams who need to sift through terabytes of data being generated by often siloed and disparate data sources. Therefore, leading IT organizations are turning to Artificial Intelligence for IT Operations (AIOps) to help improve IT operational resiliency and the productivity of their teams.

AIOps is essential for the smooth running of IT organizations, ensuring mission critical processes are available to run today's businesses. These processes are often implemented in applications that span a multi-hybrid cloud environment including both on and off premise infrastructure. Complexity of the implementation of these applications create challenges to ensure client Line of Business (LoB) Key Performance Indicators (KPIs) can be met. Examples may include client retention, increased market share, increased revenue and on time delivery. In order to achieve these LoB KPIs, AIOps strives to improve operational KPIs such as Mean Time to Detect IT Issues, Mean Time to Identify IT Issues, Mean Time to Isolate, Mean Time to Repair and Mean time Resolve in order to meet the Service Level Agreements (SLAs) of the business applications. This paper positions IBM's offerings to improve IBM Z® AIOps cost and value over its competitors.

Why IBM Z

IBM Z continue to run many of the key mission critical applications to achieve LoB KPIs. For example, 67 of the top Fortune 100 companies, 45 of the world's top 50 banks, eight of the top 10 insurers, four of the top five airlines, and eight of the top ten retailers all rely on IBM Z to deliver value to client's businesses. In doing so, many clients continue to modernize these applications by integrating them with capabilities across private and public cloud environments. Clients continue to enjoy many of the benefits provided by the mainframe including:

- Superior Reliability, Availability and Serviceability (RAS) characteristics including five 9s of hardware uptime
- Modern DevOps tools for on platform applications as well as integrating applications from other parts of the hybrid cloud infrastructure

- Advanced AIOps capabilities allowing for predictive and intelligent solutions to ensure application uptime meeting business Service Level Agreements (SLAs).
- Superior Total Cost of Ownership (TCO) and Cost per Transaction. For example, some companies report that IBM Z represents 10%-30% of their total IT costs yet house up to 70% of their enterprise data assets. [1]

Optimizing TCO with IBM Z

Clients continue to be challenged with demands for producing more value with smaller investments in their IT. There are many considerations as to what infrastructure a new application should be placed, or if an existing application should remain on its current infrastructure versus moving. These considerations may include current investment, data gravity (where most data reside), proximity to other applications for better performance, RAS characteristics, skills, and cost.

IBM Z is often judged as being more expensive than other options such as on-prem x86 or public cloud. This perception can often be countered with an analysis of the details. If one only considers commodity hardware with open-source software in a production only environment, then clearly IBM Z will not be cost competitive. However, if all factors are considered then the total cost of ownership for IBM Z can be very competitive. Consider the following four dimensions:

1. Line Items: Hardware, Software, People, Network, Storage and Facilities. Software should consider the cost of the OS, middleware, AIOps and DevOps and management. People costs includes operations and management. Network costs includes network adapters, routers, switches, network software and network management. Storage includes hardware, software and people to manage. Facilities includes energy and floor space.
2. Environments: Production, Development, Test, Quality Assurance, High Availability, Disaster Recovery. A typical IBM Z environment only requires two physical servers, one for production/dev/test and one for disaster recovery. A typical distributed environment may have between four to six different sets of physical hardware. For example, distributed dev/test is rarely run on the same physical server as production.
3. Time: Transaction growth, server upgrades, and migration costs.
4. Non-functional requirements: SLA and RAS requirements.

An analysis across all four dimensions may show IBM Z to be cost competitive with other infrastructures.

[1] IBM IT Economics Engagements with clients

There are several strategies to ensure Z operational expenses (OPEX) are well optimized. Here are a few:

- zIIP processors: The System z Integration Information Processors (zIIPs) are used to run a subset of the work that is run on General Processors (GPs). At a hardware level zIIPs and GPs are the same. Execution of software instructions running on zIIPs are not reported for accounting purposes and therefore are not billed to the client. Some examples of software include some database (Db2®), Java™ applications and middleware implemented in Java. IBM takes advantage of zIIP processing across its portfolio. Most Independent Software Vendors (ISVs) also take advantage of zIIPs. Some ISVs do not exploit this feature.
- Workload pricing: In many cases, clients can take advantage of workload pricing with IBM Software which allow the client to be charged for software for CPU running in a specific logical partition (LPAR). Some ISVs charge for the full capacity of the physical box even if the software is only running on a subset of the machines LPARs.
- Tailor Fit Pricing (TFP): Traditional Z implementations have been tuned over time to run at near 100% CPU utilization over the course of a day. Organizations have employed strategies to maintain this constant utilization to hold down software costs. Software is usually charged by the four-hour rolling average of peak utilization within a month. In some cases, artificial business processes are implemented as to when applications can be run in order to maintain high constant CPU utilization rates keeping utilization spikes as small as possible to keep software costs down. With the advent of mobile computing the arrival rate of transactions has become more unpredictable creating more "spiky" CPU utilization profiles driving up software costs. The public cloud has introduced the idea of "pay for use." The IBM Z platform has implemented a new set of Terms and Conditions whereby a client can commit to pay for a base amount of software use (constant over time) and then software and hardware charges based on spiky use above the base. This strategy allows the client to pay for software they know they can plan for in the base and gives them the flexibility to pay for the spikes in usage above the base at a much lower rate then before. Not all ISV software has implemented Tailor Fit Pricing. Clients may have to pay for ISV software for full capacity of the physical machine making the environment cost prohibitive. IBM is now implementing a similar offering for hardware.
- Some clients have reported a 40% savings over a five-year period when comparing the cost of IBM software to similar software with ISVs when moving to IBM.[2]

[2] IBM migration engagements

The journey to ZAOIps

Information Technology (IT) is the life blood of an enterprise delivering capabilities to lines of business that drive KPIs effecting a company's financial bottom line. Ensuring smooth running operations by reducing or eliminating IT inefficiencies is the main goal of AIOps. As customers adopt hybrid cloud solutions, challenges magnify, and operational complexity increases. Avoiding one severe outage can save a client up to $100K.

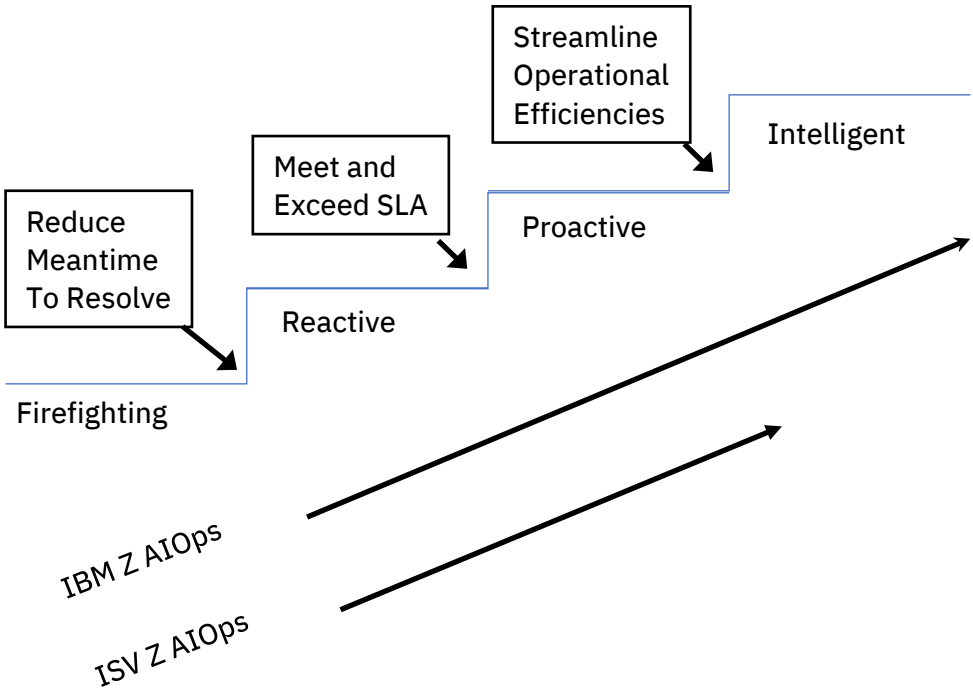
Conversations with clients have revealed their readiness can be described in four steps on the AIOps journey.

- Firefighting: An example of IT organizations at this level would be one that often only learn of issues when informed by end users, or when SLAs are not met. Highest skilled people are called in to troubleshoot the root cause taking them away from their normal responsibilities.

- Reactive: An organization that has tools and processes in place to identify potential issues, but often only become aware of those issues once they are significant and impactful. Full impact to end users may be mitigated in some cases, but highly skilled people are still needed to troubleshoot problems in a war room environment.
- Proactive: At this level, comprehensive tools and processes are in place to provide full observability across all critical applications and provide real time notification of issues. Many issues can be addressed before they impact end users or SLAs. With extensive use of run books, less skilled employees can take action to resolve problems before they spiral out of control.
- Intelligent: Market leading AIOps solutions are in place, fully integrated across the entire hybrid application solution. Patterns of normal behavior are modelled, and Machine Learning is used to identify deviations from normal workload patterns. Silos are eliminated and events and data can be correlated across the entire busines application. Automation is deployed extensively, so any issues can swiftly be resolved at the press of a button rather than having to rely on manual commands. Impacts to end users are largely eliminated and highly skilled people are free to focus on driving innovation and delivering business value.

Moving through the steps in this journey can be difficult for clients without the proper tools. Applications are increasingly hybrid, complex and often include the mainframe. Clients frequently have a blind spot to data on the mainframe and/or don't have the tools to effectively correlate mainframe data with other operational data on different platforms. With limited staff, organizations struggle to sift through terabytes of data in real-time to identify an issue before it results in an outage. However, using tools provided by IBM, enterprises can bring the benefits of AIOps to the mainframe and

enable proactive incident management and response. Z AIOps portfolio analyzes data and anomalies and integrates with leading enterprise AIOps solutions for rapid incident resolution without manual investigation.



At every step in the AIOps journey there are three areas to be considered.

- Detect: The ability to monitor hybrid infrastructure and applications and detect issues and anomalies.
- Decide: The ability to quickly analyze issues and anomalies to isolate problems and identify root causes.
- Act: The ability to respond quickly to issues and anomalies and thus reduce impact on customers with improved resiliency.

IBM Z AIOps solutions are uniquely positioned to carry a client through the journey to Intelligent operations across Detect, Decide and Act. For example, tools are available so that a granular view of IBM Z can be included in a cross-platform application view instead of Z just being one large "black box." Problems detected on the IBM Z can be isolated by an operator and directed to the specific area within the Z community with root cause. Additionally, our IBM solution provides unique machine learning software to perform predictive analysis to help avoid issues before they happen thus saving downtime as well as people time investigating root causes of incidents.

"The mainframe must be central to an AIOps adoption effort not because it is somehow more important than the rest of the stack, but simply because it is an essential element of most business-critical workflows." - Intellyx: Accelerating AIOps on the Mainframe

Summary and call to action

IBM Z continues to be a strategic platform for clients with mission critical applications. When considering all the dimensions of TCO the Z platform is cost competitive with its infrastructure alternatives. Taking advantage of IBM's cost optimization methods continue to drive down costs on the Z platform. Not all software ISVs do this.

Additionally, IBM Z AIOps is uniquely positioned to help clients move up the AIOps value chain to "Intelligent" operations thereby reducing the number and length of incidents driving down operational costs and insuring business operations are available to increase revenue for the company.

To learn more about IBM Z AIOps navigate to http://ibm.biz/AIOpsCommunity to join AIOps on IBM Z Community. Click here participate in a no cost assessment determining where your company is on the AIOps Journey.

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