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WHITE PAPER

The Mainframe As a Key Platform for Big Data and Analytics - Executive Summary

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SITUATION OVERVIEW

As the evidence of the competitive edge enjoyed by organizations that rely on data-driven decision making mounts, big data and analytics (BDA) has become a top agenda item for a growing number of executives. At the same time, hype about big data technology capabilities and inflated promises of outcomes abound. These ignore real challenges faced by organizations of all sizes. Many organizations don't have the competency or maturity to address the range of technology, staffing, process, and data requirements involved in managing big data. Yet, there is a platform technology already commonly deployed that can address the needs of BDA; a platform technology that many IT organizations are already more than competent to manage.

When the subject of BDA comes up, most people do not think of the mainframe, yet it has built-in characteristics needed to deploy BDA technology in a well-managed environment — one that embodies many of the requirements of a cloud-ready system. System z has over 40 years of history in evolving virtualization, dynamic resource assignment, and multi-tenancy, all with security characteristics unmatched by distributed systems.

Big data deployments involving technology like Hadoop tend to grow data endlessly, yet are not used constantly. If they are deployed in discrete, separately managed clusters, however, those resources are tied up constantly, whether they are in use or not. Even commodity hardware costs money to keep running, and node failure is an ongoing fact of life with such clusters. Also, these systems, developed separately, each on its own cluster, share neither data nor resources, representing still greater inefficiency.

The mainframe system virtualizes its physical resources as part of its native operation. Physically, the mainframe is not a single computer but a network of computing components including a central processor with main memory, with channels that manage networks of storage and peripheral devices. The operating system uses symbolic names to enable users to dynamically deploy and redeploy virtual machines, disk volumes, and other resources, making the shared use of common physical resources among many projects a straightforward proposition. Multiple such systems may be blended together in a Sysplex environment.

In the mainframe environment, users can integrate data held in Hadoop with various NoSQL, DB2, and IMS databases in a common environment and analyze

that data using analytic mainframe software such as IBM Cognos and SPSS, ILOG, and IBM InfoSphere Warehouse.

FUTURE OUTLOOK

Custom-built platforms designed to support private cloud deployments for big data use cases, some from single vendors and others from combinations of vendors, will arise over the course of the next few years to compete with the System z in this regard. IDC expects this to become a market within the next five years. While many of these platforms will be quite robust, one must consider, if a mainframe is already in the datacenter, whether it makes more sense to take a chance on some new configuration or to deepen one's investment in what is known and has proven reliable for many years — a platform already familiar to the IT staff.

CHALLENGES AND OPPORTUNITIES

There is ongoing pressure in the executive suites of many enterprises to reduce the commitment to mainframe technology because of its perceived cost and dependence on an increasingly scarce talent pool. IBM will be challenged to demonstrate the value of System z (by means of both the arguments in this white paper and other supporting assertions) and to ensure that in the future the pool of talent qualified to manage such systems will increase while making the System z increasingly simple to manage, thereby requiring less specialized knowledge. If IBM can achieve these things, the opportunity for System z as a BDA platform is substantial.

CONCLUSION

While there is no one answer that is right for everyone when it comes to system configurations for big data management, it seems clear that for mainframe users, a powerful solution to at least part of this challenge is readily at hand. Mainframes have the expandability, adaptability, and reliability needed to address many of the challenges of big data applications.