Linux on System z:

By Andrew Chapman

Five Reasons Why You Should Consider System z for the Cloud

As companies continue to rely on the cloud to deliver their more business-critical systems, they must consider how much they can trust this new paradigm. For a cloud solution to be robust enough to host the most important systems, it must be built on top of a virtualization stack that can deliver the necessary service levels.

You may have in-house, non-cloud solutions that provide five 9s uptime and adhere to the strictest levels of security, but when moved to the cloud, public or private, you may be concerned that you won't be able to get those same levels of service. This is especially true with the public cloud; for this reason, many companies are turning to internally hosted cloud solutions. The natural inclination is to push these solutions onto a sprawl of distributed servers, but in many cases, this isn't the optimal place to host them. In fact, System z could easily be the most optimal platform for your deployments. Consider these five key reasons why:

1. Even cloud solutions need robust platforms. If you're convinced that moving to the cloud is a good idea, and you're hosting your solutions in a private cloud, then you need to determine which platform provides the optimum environment for your various applications and evaluate business requirements related to reliability, cost, security and performance.

For more and more organizations, these cloud service requirements are leading straight to the mainframe. No system is more robust than the System z, and compliance teams will agree the mainframe offers unmatched security. When it comes to performance and scalability, System z outperforms everything else in the data center. Sometimes the mainframe isn't viewed as being the most cost-effective platform, but for Linux it absolutely can be.

2. It runs the same Linux you run on other platforms. There are many misconceptions about running Linux on the mainframe, the primary one being there's something special about that version of Linux. Organizations tend to think of the mainframe as a place to run only z/OS-based systems, but by leveraging Integrated Facility for Linux (IFL) processors, you can run the exact same Linux systems you run in your distributed environment. Both SUSE and RedHat have equivalent System z Linux distributions.

3. It can be an extremely cost-effective platform. Another misconception when looking at Linux is that the mainframe is expensive. This is based on the thought that adding work to the mainframe will increase those MIPS-related costs; however, you can use IFLs, which cost a fraction of a System z general purpose processor. In fact, the mainframe can often be more cost-effective than the same distributed environment—especially if you have high uptime requirements.

If you already own a mainframe, then there's a 60 percent chance it already has one or more IFLs installed, regardless of whether or not you're using them. IFLs sit in the existing mainframe chassis, so even if you must purchase an IFL, you won't be adding to your data center floor space, power consumption or cooling costs. Plus, you're already managing the hardware, security, networking, etc.

On top of the infrastructure savings, the savings in license costs can be even more significant. One such example is an insurance company that has indicated their total costs for hardware, software and support were up to 80 percent less than in a distributed environment. This is especially true for software that's licensed per core, such as Oracle.

One cost-savings approach we often see is server consolidation. This involves a company reducing its number of physical servers and using virtualization and load balancing to better utilize what resources they have. Typically, this also involves moving to a single vendor to gain better pricing leverage. If you take an extreme approach to this, you will have to find a platform that can host your mainframe-like applications and your distributed workloads; the truth is that the only platform capable of that is the mainframe. More typically, we'd expect to see companies move toward a single distributed platform plus the mainframe, but offloading work to Linux on System z can ease that transition.

4. Nothing virtualizes like a mainframe. So, we've established that we need a robust virtualization platform to support our cloud initiatives and the mainframe can run the same Linux operating system you run today. In comparison to a distributed environment, the mainframe has amazing resilience, can utilize its resources to a much higher level, is more secure and can cost significantly less to own.

A real-life example illustrates this: One company based in the Middle East was already running a mainframe replicated to a backup data center. The distributed team was told they needed to also add a backup data center for their business-critical Linux systems. To accommodate that many additional servers, they would have had to open a new backup data center, but instead they chose to simply move those x86-based Linux environments to System z. They inherited the mainframe's highly available environment, and saved millions of dollars and huge headaches.

5. If you need to communicate with z/OS, then it's unbeatable. Many companies make a great case to just run generic Linux applications on System z but if your Linux applications also need to communicate with the systems running on z/OS, then the value proposition becomes even clearer. If your Linux applications are running on an IFL and are communicating with systems on z/OS, such as DB2 or CICS transactions, then the network traffic never leaves the mainframe, which gives you superb performance and the ultimate in network security. Note that your Linux on System z environments can also communicate with other non-System z instances in the same way as a distributed system.

Accelerating System z in the Cloud

It's worth noting that in mainframe terms, Linux is a high-growth area. According to IBM, 50 percent of all mainframe capacity shipping today comes from specialty processors, mainly IFLs, and 50 percent of all new mainframe customers take delivery of mainframes that only contain IFLs. Application design tools that automate deployment of Linux applications to both x86 and System z can empower you to accelerate service delivery to the "best fit" platform, while also addressing the growing need for scalability, reliability and security across your enterprise. It's

Why System z for the Cloud?

Consider System z for the cloud because it's:

1. **Reliable.** Even cloud solutions need robust platforms.
2. **Flexible.** It runs the same Linux that you run on lesser platforms.
3. **Cost-effective.** It can be an extremely cost-effective platform.
4. **Virtualized.** Nothing virtualizes like a mainframe.
5. **z/OS-connected.** It's unbeatable if you need to communicate with z/OS.

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also valuable to have cross-platform tools that enable you to dynamically reconfigure resources across the enterprise for optimum cost and performance based on changing workloads and business requirements. Look for solutions that not only provide this platform flexibility, but have also been designed to fully leverage all the unique benefits of the mainframe, including ease of communicating with back-end z/OS systems.

The ability to programmatically drive the provisioning of Linux systems is an important factor. One key difference between a virtualized environment and the cloud is the ability to support a self-service front-end. Your Linux deployment and management solutions need the flexibility to be driven by external systems—to include provisioning, maintenance and de-provisioning the running system. You need the ability to not just clone a Linux environment but to change key aspects of your application and, even better, change attributes and resource usage of your application components.

The final part of the equation—the ability to de-provision a system at the end of its lifecycle—is possibly the most important and often overlooked step in the Linux management world. You should be able to programmatically stop execution of an environment or destroy it entirely, returning all resources to the central pool. Provisioning Linux environments is just part of the equation, but without the ability to easily catalog and quickly de-provision, you're actually contributing to the virtual server sprawl problem.

Cloud has become a critical part of many IT infrastructures and as such it needs a robust platform on which to run. System z will provide that platform in a cost-effective, secure and robust fashion. It really does behoove companies to look closely at the mainframe as part of their enterprise cloud strategy. **EE**

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