

Migrating IBM Power Systems to HPE Open Systems

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Hewlett Packard has several decades of experience in migrating mission-critical applications from IBM Power Systems to HP (and now HP Enterprise) open systems. HPE has demonstrated that the majority of such migrations result in a significantly less expensive operating environment – often by a factor exceeding 50%. At the same time, the new HPE open environments match or exceed the performance and availability attributes of the original Power Systems.

IBM Power Systems

IBM Power Systems run UNIX and Linux operating systems. Their UNIX operating system is AIX.

Compelling Reasons for Migrating from Power Systems

There are several pain points that are encouraging organizations to consider moving their mission-critical applications from IBM Power Systems to open systems.

Dwindling ISV Support

There is a diminishing number of ISVs that are supporting Power Systems. Even more telling, the number of ISVs that are supporting UNIX applications is shrinking every year. The Gartner Group predicts that by the year 2020, there will be a 70% reduction in applications running on UNIX. As time goes on, vendors may stop supporting their applications on UNIX. They may simply drop the applications or migrate them to Linux.

IBM claims that you can run Linux applications on Power Systems. However, Power Linux implementations are not binary compatible with mainstream Linux distributions on x86 platforms. Linux applications must be certified by the ISV before they can be run on Power Linux.

High Cost

By offering both x86 and cloud operating environments, HPE allows customers to maintain their mission-critical service-level agreements (SLAs) with vastly lower costs for software licensing, hardware support, and power consumption.

Of special importance is the cost of the Oracle database management system. Many of the applications being migrated use an Oracle database. Oracle charges twice as much per CPU for Power Systems than it does for x86 platforms. Furthermore, Oracle RAC (Real Application Cluster) costs \$11,500 on an x86 and \$23,000 per core on an IBM Power System.

Support for Cloud Computing

Moving workloads to a cloud environment requires defining a virtualized, standardized platform to deploy applications onto a wide range of public cloud-service providers. If workloads remain on Power Systems, then the only cloud-deployment option is a high-cost cloud from IBM. Since cloud computing requires a common set of software across all platforms, Power Systems cannot be brought readily into this flexible environment. Tools for publicly available clouds environments such as Microsoft's Hyper-V, ESX from VMware, and Xen from Citrix run on Linux and/or Windows, not Power Systems.

HPE's Approach to Migration

A fundamental requirement of migration is that the services provided by an application continue uninterrupted during and after the migration. Oftentimes, workloads for large applications can be migrated in a phased approach. One or more workloads are migrated, and this is repeated until all target workloads have been migrated to the new platform.

Who Does the Migration?

Is the migration performed by HPE, by the customer, or by a cooperative effort between the two? This is a decision that is to be determined for each migration. Often, several migrations must be planned and executed, and the mix of participants may vary with each.

It is common for clients to decide to have an experienced migration services vendor perform all aspects of a migration. This approach can reduce risk and provide a single point of ownership for the migration project. Migrating from Power Systems to open systems requires knowledge of many application environments, including online transaction processing, batch processing, and enterprise resource planning (ERP), all of which need to be accessed on-demand and cannot be down.

It becomes more complicated if the client wants to assign some of its IT personnel to the migration. The HPE approach lets the client decide the extent to which its staff participates in the migration.

Handling Application Changes During a Migration

In many cases, in addition to migrating from Power Systems to open systems, the client may want to upgrade its applications. This can involve changing third-party packages, replacing a custom application with a third-party application, or modifying a custom application.

In general, it is advisable to migrate the application first before changing it. This minimizes risk since there are no logic changes being made. Unless an application is no longer suitable for production, it is better to leave re-engineering until after the migration, since re-engineering will only extend the migration timeframe.

In-House Developed Code

A common high-risk area is the migration of in-house developed code that is older and mission critical. HPE has developed a portfolio of software tools that automates the migration of in-house code including C, Java, and scripts.

Clients will often decide to migrate in-house code if they have only a small number of applications or if the applications are not mission critical. If the customer decides to perform its own migrations from Power Systems to HPE open systems, then it must recompile the applications and run functional and system tests to identify errors and other issues. The HPE experience has been that recompiling Power C code on Linux will identify only about 25% of code changes that are needed. The rest are discovered during testing or, even worse, in production.

HPE has developed code analysis tools that reduce the time and effort of a manual review process. These tools identify the dependencies and required code changes of an application prior to migrating from Power Systems to open systems. It has been demonstrated that these tools can reduce testing time by as much as 70%. The tool set is especially appropriate to analyze mission-critical code since it reduces the likelihood of bugs showing up in a production environment.

ISV Applications

For packaged applications from vendors such as SAP, Oracle, and dozens of others, the vendor typically offers services to migrate the application to Linux on x86. However, a major application from a vendor typically uses many other services such as WebSphere, MQ, or SQL databases. The vendor doesn't necessarily offer services for these migrations. Not only must all of these services be migrated, but they must end up still working with each other after the migration.

HPE can manage the migration of the entire ecosystem – applications, application servers, middleware, databases, and other components. It has tools to support the migration of DB2 databases on Power Systems to other databases.

Superdome X

ISV applications that run on both Power Systems and Linux on x86 are easily migrated to HPE Linux systems such as the HPE Integrity ProLiant series.

The x86-based Superdome X supports industry standard operating environments like Linux and Windows, but draws upon decades of HPE's UNIX server experience, delivering levels of availability, processing power, and serviceability typically found only on UNIX platforms with proprietary processors. For example, a Superdome X can be divided into electronically isolated partitions called nPars. Each partition runs its own copy of the operating system and applications in isolation from the other partitions, making it an ideal environment for migrated workloads.

A comparison of costs of an IBM Power System and an equivalent Superdome X system shows a TCO (total cost of ownership) savings of 41%. This includes a 75% reduction in hardware costs, a 38% reduction in software costs, and a 30% reduction in software support costs. In addition, there are the substantial savings in Oracle licensing costs, as described earlier.

HPE's Methodology for Migration

HPE provides a set of four core migration services to ensure fast, predictable results for most mission-critical systems. These include:¹

Transformation Workshop and Platform Advisory Services

- What happens during a UNIX migration?
- What is the process to reduce risk?
- What are the migration options?
- Which is the best platform for the application workloads?

Migration Business Case Service

- Building a case to migrate for a specific application environment.
- Is the migration financially viable?
- Is the migration technically viable?

¹ Proven methods and results for successful IBM Power Systems migration, *HP White Paper*, 2016.

- Is the timeline valid?
- What are the risks and mitigation strategies?

Migration Design and Planning Service

- How to ensure a successful migration?
- Full scoping.
- Environment, application, code, and data analysis.
- Migration planning and timelines.
- Detailed implementation proposal and statement of work.

Migration Implementation Service

- Execute the migration plan.
- Migrate applications, code, and data.
- Product replacement.
- New infrastructure.
- Testing, rollout, and follow-on support.

Case Studies

Pharmacy Chain

A chain of pharmacies has separate operations for wholesale distribution and retail functions. It had long relied on SAP for ERP and customer relationship management (CRM) running on IBM DB2 under AIX on Power Systems.

The company moved to SAP HANA and off its legacy databases to reduce costs and to increase scalability and flexibility. They moved to a Superdome X with two nPars – one for the wholesale operations and one for the retail operations. Each has different requirements in terms of concurrent users and database size. Separating the environments made them easier to manage.

Manufacturing

A manufacturing customer migrated their SAP retail system with DB2 to Integrity Superdome X. They use one nPar as the production environment for their SAP ERP application. The other nPar is being used as a proof-of-concept for SAP HANA, which will eventually be moved to production.

RI-Solution

RI-Solution, located in Germany, has deployed two HPE Integrity Superdome X servers running Linux with three nPars in each of the Superdome servers to deploy their SAP applications. This allows RI-Solutions to consolidate and standardize its hardware infrastructure, contain costs, increase availability, simplify business processes, and improve the performance of its mission-critical SAP applications.

Summary

Hewlett Packard Enterprise has over three decades of experience migrating many types of complex workloads for enterprise customers. Through its diverse experience in delivering successful migrations including IBM Power Systems to open-standard platforms, HPE has learned what it takes to implement a successful migration and how to manage the inherent risks. It employs proven processes and unique migration tools for IBM Power System migrations to open systems. It has developed proven approaches

to maximize the ability of the target environment to deliver better results for the line of business while reducing costs, often by a factor exceeding 50%.