



Highlights

- IBM® Power Systems™ Healthcare Solution Editions are competitively priced and configured specifically for the needs of Epic environments
 - Scalability: IBM POWER8™ servers are optimized specifically for Epic workloads, and have demonstrated a new high-water mark for performance on Epic workloads
 - Simplicity: With POWER8, most organizations can run their entire Epic workload using a simpler, more reliable symmetric multiprocessing (SMP) configuration
 - Reliability: POWER8 has a number of RAS improvements over previous IBM servers, including error avoidance and self-healing capabilities, and is part of an IBM server family that has consistently demonstrated industry-leading reliability
 - POWER8 integrates with IBM Flash Storage technology to create the ideal platform for running Epic workloads
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Epic and IBM POWER8

High scalability for healthcare workloads

The widespread adoption and optimization of electronic health records (EHRs) in recent years is forcing many healthcare organizations to rethink their IT infrastructures. As healthcare networks grow larger and more complex, hardware systems that may have worked fine in the past are now being stretched to their limits.

IBM Power Systems has an extensive track record of providing the server infrastructure needed to support EHRs. For over 10 years, IBM has collaborated with Epic, a leading healthcare software vendor, to help customers better manage their healthcare environments. Now, healthcare customers can take advantage of POWER8, the most high-performance Power Systems offering yet.

The new POWER8 Healthcare Solution Editions are well positioned to help healthcare organizations manage the new generation of healthcare requirements, offering the scalability, simplicity, and reliability that today's Epic workloads demand. The Healthcare Solution Editions are an important symbol of IBM's dedication to helping our customers succeed, as demonstrated by our #1 ranking in the IDC Health Insights HealthTech Rankings Enterprise Top 25.¹

To further your Epic environment, integrating IBM Flash Storage technology with POWER8 Healthcare Solution Editions helps create an even stronger platform for running Epic workloads.

Power Systems Solution Editions for Healthcare

With IBM Power Systems Solution Editions for Healthcare, organizations can take advantage of Power Systems configurations built specifically for the needs of healthcare.



The Solution Editions are priced to compete, and come prepackaged with IBM software, making them quick and simple to deploy. In addition, they are all configured to meet the documented requirements of Epic solutions, helping your Epic environment run to its full potential.

The Power Systems Solution Editions for Healthcare include:

- POWER S824
- POWER E850C
- POWER E880C

POWER8 architecture optimized for Epic

IBM POWER8 engineers worked with Epic, as well as InterSystems, the developer of Caché (the Epic operational database) to develop enhancements to the POWER8 architecture that were specifically designed to optimize Epic workloads. As a result, POWER8 platforms offer unsurpassed scalability for Epic deployments, and provide excellent configuration flexibility and system growth potential.

Here are a few examples of enhancements the IBM team developed specifically to handle Epic workloads better:

- Balanced processor speed and inter-processor communications bandwidth
- Reduced the maximum number of “hops” required for communication between any two processors
- Increased both memory capacity and memory bandwidth
- Collaborated with InterSystems to enhance the design of Caché for faster processing

Scalability

Epic implementations range from small hospitals to fully integrated regional healthcare networks that serve millions of patients. Naturally, as integrated healthcare networks continue to grow larger, scalability—both in the amount of data stored and the number of concurrent users that can be served—is a top priority.

POWER8 represents a giant step forward for what healthcare users can accomplish with their Epic workloads, as the POWER8 architecture has set a new high-water mark for power and scalability.

Epic measures application scalability using a metric known as Global References per second (GRefs), which represents the number of times per second that the database is referenced. Epic rates platforms based on the number of GRefs they can perform without degradation of response time. Recent test results demonstrate the increased power and scalability of POWER8 for Epic workloads. As the table below shows, POWER8 servers can achieve a similar level of scalability as POWER7® servers while using fewer cores, resulting in a per-core performance increase of 33 percent. On a system level, POWER8 systems achieved a level of scalability more than three times that of POWER7 systems.

Machine type	POWER7+ 780 (32 cores)	POWER8 S824 (24 cores)	POWER8 E850C (48 cores)	POWER8 E880C (80 cores)
SMP GRefs	3.3 million	3.6 million	6.9 million	13.5 million
ECP GRefs	7 million	N/A	N/A	18 million

Simplicity

The POWER8 advantage is about much more than just good benchmark results. These high scalability numbers can translate to concrete—and immediate—business advantages for healthcare organizations. With the higher levels of scalability offered by POWER8, large healthcare organizations may now be able to cut down on complexity by deploying a more straightforward, cost-effective Epic implementation.

The Epic application can be deployed using one of two different topologies:

SMP: Symmetric multiprocessing, where users access the database directly, without any intermediary processes.

ECP: Enterprise Caché Protocol, where an application server acts as an intermediary, offloading some of the processing from the main production database. ECP is used for environments that have a very large number of concurrent Epic users, and therefore need very high levels of scalability. Offloading processing to application servers allows these environments to achieve the level of scalability needed to serve many Epic users at once.

Although ECP is an effective method of serving many concurrent Epic users, it also creates more complexity and cost, due to the need for additional servers and the increased licensing costs those servers bring.

POWER8's increased scalability helps healthcare organizations avoid complex ECP arrangements, allowing them to operate a simpler SMP configuration. This added simplicity will leave them well positioned to succeed in the era of demanding Epic workloads.

Finally, Power Systems offerings are backward compatible, meaning that migrating from POWER7 to POWER8 is very straightforward.

Reliability

IBM POWER8 servers are specifically designed with reliability, availability and serviceability in mind. POWER8 systems incorporate more cores, as well as threading and cache capacity enhancements. This increased capacity can improve overall server reliability by doing more work per processor socket.

When compared to POWER7 servers, POWER8 features a more integrated design that also contributes to greater reliability. A number of components that were located outside the processor in POWER7 have now been integrated into the POWER8 design, resulting in fewer separate modules. POWER8 also includes numerous advancements in RAS design and technology, such as increased soft error avoidance, self-healing capabilities, and error recovery and mitigation.

To learn more about POWER8's RAS improvements, [read the POWER RAS white paper](#).

The reliability of IBM server hardware has also been recognized by industry analysts. In the 2017 Reliability Survey from Information Technology Intelligence Consulting², IBM servers were named the most reliable for the ninth year in a row. By polling C-level executives and IT managers from over 750 organizations, ITIC found that 61 percent of IBM servers provided 99.999 percent uptime, the highest of any vendor.

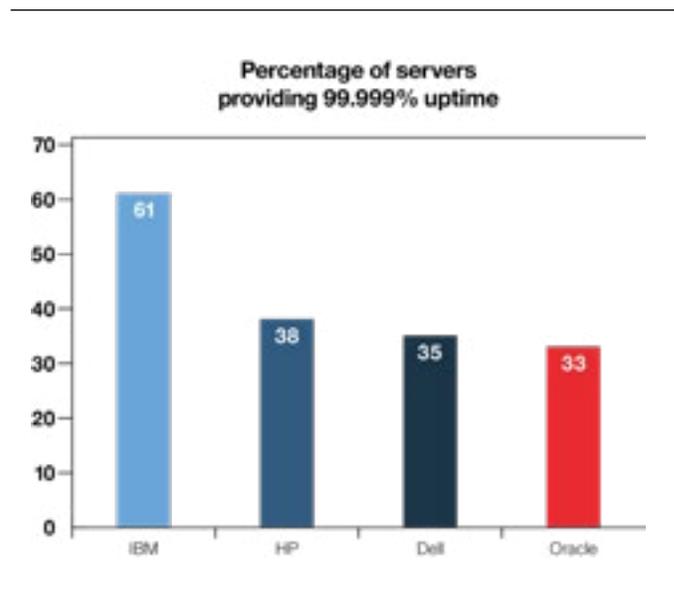


Table 1: IBM clients experience the highest level of 99.999% uptime of any vendor.

The same ITIC survey also recognized IBM POWER for its security, which is another key aspect in ensuring reliability. Survey respondents using Power Systems averaged only four successful security penetrations between 2015 and 2017, making it the most secure mainstream server platform.

In addition, Power Systems users can take advantage of Custom Technical Support (CTS) from IBM to supplement their basic hardware and software support. CTS can help increase reliability by providing rapid response to problems, as well as proactive support to prevent problems before they occur.

Finally, IBM PowerHA® SystemMirror for AIX can help Power Systems users experience 24/7 availability during all outage types, including software maintenance. With industry-exclusive features such as automated resource-optimized high availability and simplified management on a single pane of glass, PowerHA gives IT administrators everything they need to feel confident their Power Systems environment will be available when its needed.



Integration with IBM Flash Storage

In order to get the best results possible for Epic workloads, healthcare organizations can use POWER8 servers together with offerings from the IBM Flash Storage portfolio, including IBM FlashSystem®. IBM Flash Storage and Power Systems complement one another to form the ideal platform for running Epic workloads.

IBM Flash Storage offers extreme performance, ultra-low latency, macro efficiency and enterprise-grade reliability. Together, all of these characteristics can help healthcare organizations address the data challenges associated with Epic application environments, making Flash Storage offerings ideal complements for POWER8. When a configuration including a FlashSystem storage unit and a POWER8 server was tested as part of an Epic benchmark, the results demonstrated that the combination was 11 times faster than a combination using equivalent disk-based storage, and provided a read latency that was 20 times lower than Epic's recommendations.

To learn more about how IBM Flash Storage can help you get the best results from your Epic solutions, [read the IBM Flash Storage for Epic solution brief](#).

About IBM healthcare solutions

With more than 8,000 employees dedicated to healthcare, including more than 60 medical doctors and 350 healthcare professionals, IBM has completed more than 3,000 successful healthcare transformation initiatives, ranging from small hospitals to national healthcare projects. IBM holds more than 600 patents in the life sciences, healthcare and medical device fields. We have been an active participant with governments working to lay the foundations of a 21st century healthcare system. Together with our healthcare clients and partners, IBM is redefining value and success in healthcare to help build a smarter healthcare industry.

For more information

To learn more about IBM Power Systems, please contact your IBM representative or IBM Business Partner or visit ibm.com/power.

To learn more about IBM's work in healthcare, visit ibm.com/industries/healthcare.

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1 IDC, "IDC Health Insights Announces Winners of the 2017 HealthTech Rankings Top 50 & Enterprise Top 25." (http://www.idc.com/prodserv/insights/#health-healthtech_rankings)

2 Information Technology Intelligence Consulting, "ITIC 2017 Global Server Hardware Server OS Reliability Results: IBM Power Systems Results Summary." June 2017. (<https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=POL03276USEN>)



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