



## Highlights

**Better patient care management:** Supports the individual with the right programs and treatments throughout the full cycle of care including hospitalization, outpatient visits, physical therapy, laboratory testing and other medical interventions.

**Enhanced clinician mobility, collaboration and productivity:** Clinicians and associated staff can bring their own device (BYOD), get secure single sign-on to the clinical information system, direct output to nearest printers and deliver effective healthcare while roaming or remote.

**Validated and tested clinical information management solution:** Healthcare organizations can reduce the risks, costs and complexity of deploying solutions for clinical information systems including Electronic Medical Records (EMRs).

**Improved operational efficiency and flexibility:** Providers of all sizes can deliver faster and more efficient healthcare from multiple access devices located anywhere. Simple application and desktop management avoids expensive desktop refreshes and provides a reliable, secure and fully-integrated clinical information management solution.

**Patient information protection and compliance:** Policy-based access control, auditing, reporting, removing data from end points and centralizing Protected Health Information (PHI) help keep patient data and other sensitive content secure while facilitating compliance with industry regulations.

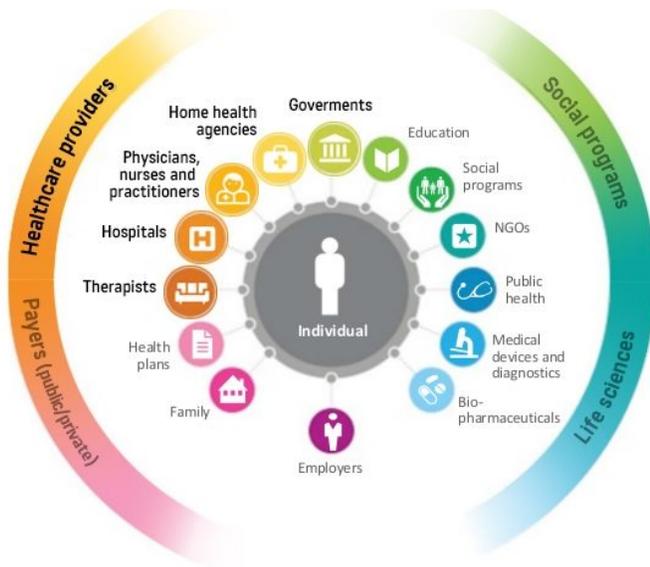
**Optimized for virtualization performance at lower costs:** Pre-built, fully-integrated systems with servers, storage and networking, all virtualized, and with streamlined IT administration through a single window.

**Lower storage costs with increased performance:** Cost savings with storage optimization software; simplified storage and networking by using the server RAM as primary storage to lower CAPEX and OPEX costs.

## Smarter Healthcare: Delivering better patient outcomes at lower cost

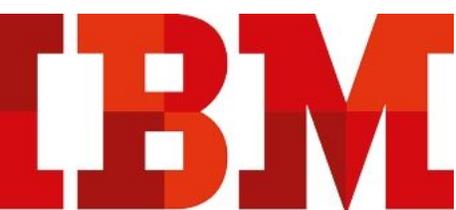
IBM, VMware, F5 Networks and Atlantis Computing provide secure, reliable, ubiquitous and fast access to clinical information

The healthcare industry is struggling as costs continue to skyrocket with little improvement in patient outcomes. All stakeholders in the healthcare ecosystem – providers, payers, governments, biopharmaceutical companies, medical device and diagnostic firms, employers, and other public health organizations – must collaborate in innovative ways to drive better outcomes for the individual patient. This requires a holistic patient-centric approach on prevention, early intervention, and clinical care management offered by healthcare industry providers (hospitals, physicians, nurses, therapists and other practitioners). This required collaboration will see a massive increase in data and information that needs to be available and accessible by all stakeholders.



Providers Collaborating for Better Patient Outcomes

Many providers are deploying patient-centric Electronic Medical Records (EMR) systems to contain these escalating clinical care management costs while driving greater clinician collaboration and productivity, all with the goal of better patient outcomes. EMR systems aggregate data around patients throughout their care lifecycle; use common data definitions for laboratory tests, diagnoses, treatments, and other interventions; and provide a consistent, comprehensive repository of all types of patient data including physician notes, chemotherapy orders, radiological images and other data. Prominent suppliers of EMR software include Epic, Cerner, Meditech and others.



# IBM Systems & Technology Group Solution Brief

## Enhancing Mobility, Collaboration and Productivity

Desktop virtualization provides a simple and cost-effective way to standardize EMR application delivery, quickly integrate new capabilities and enhance clinician and staff mobility.

Together IBM®, VMware®, F5 Networks® and Atlantis Computing® offer world-class solutions to help healthcare organizations implement, manage and scale a more cost-effective, centralized and virtualized clinical information system, including EMR.

**IBM SmartCloud® Desktop Infrastructure** offers robust, cost-effective, and manageable virtual desktop solutions for healthcare organizations:

- Lowers the total cost of ownership (TCO) over an extended period compared to traditional PCs
- Simplifies desktop administration, support and management
- Enhances security and compliance management
- Improves availability and reliability and supports disaster recovery
- Enables users to work anytime, anywhere quickly and easily, regardless of location or device
- Supports growth initiatives for mobility and flexible work locations



IBM SmartCloud Desktop Infrastructure +  
VMware + F5 Networks + Atlantis Computing

Key components of this infrastructure solution include:

- 2 VMware Horizon View™** is the leading virtual desktop infrastructure (VDI) platform. When implemented as VMware

AlwaysOn Point of Care™ Solution, a tested and validated solution design, the combination of IBM, VMware, F5 and Atlantis provide continuous access to Electronic Medical Record systems and patient data - solving the last mile in EMR delivery.

## Benefits for IT

- Tested and validated architectural design for nonstop access to clinical desktops and point-of-care applications
- Constant monitoring and load balancing to ensure 24/7 availability
- Reduced desktop and application management costs by delivering and managing them as centralized services.
- Improved regulatory compliance by removing all PHI from endpoint devices

## Benefits for Clinicians

- Streamlined workflows and mobility with access to patient information from any device, anytime, anywhere
- Support for the latest devices: iPads, laptops, tablets, desktops, thin and zero client devices
- “Tap and go” access through integration with Imprivata® and other healthcare single sign-on partners
- High-fidelity user experience for remote clinical imaging

- 1** The **F5® BIG-IP®** application suite from F5 Networks helps healthcare IT administrators to coordinate multiple systems and vendors to optimize application delivery and maintain a load balanced environment to ensure high performance and uptime. F5 is a VMware partner and combines its F5 BIG-IP solution with VMware Horizon View to address secure access, username persistence, load balancing, server health monitoring, and other challenges in Horizon View deployments. The BIG-IP system provides secure remote access from a variety of client devices, with endpoint inspection where appropriate, and a full range of authentication options. With the iApps® Template for VMware Horizon View, administrators can configure these features accurately with minimum effort.

- 3** **Atlantis ILIO™** storage optimization software with IBM PureFlex® System or IBM Flex System® and IBM Storwize® V7000 or IBM Flash System™ complements VMware Horizon View to simplify and automate the deployment of a robust infrastructure that supports thousands of virtual desktops and applications, while enabling high availability and disaster recovery. The solution delivers consistently better-than-PC performance as projects scale, while lowering storage CAPEX and OPEX costs by up to 90%.

By optimizing how virtual desktop and applications consume storage, Atlantis ILIO In-Memory Storage™ technology allows VMware instances to be run in IBM server RAM with user profiles stored on the IBM Storwize V7000 or IBM FlashSystem storage. It also provides predictably linear scalability, and can flexibly be used with VMware vSphere® as well as other major server hypervisors and any type of heterogeneous storage which can be virtualized and managed by the Storwize V7000.

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*"Extreme desktop performance that scales to thousands of users without the deployment risks – that's what your VDI deployment can get by leveraging Atlantis ILIO software with the IBM FlashSystem. Our benchmark testing shows you can achieve 14X better disk performance than a PC, microsecond latency and a 75% lower cost per desktop."*

**Seth Knox, Vice President of Products, Atlantis Computing.**

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**4 IBM PureFlex System and Flex System** offer built-in expertise and optimized solutions for clients businesses. The IBM PureFlex System is a pre-configured, pre-integrated IT infrastructure solution available in three configurations with x86 or POWER® processor-based compute nodes. Additional configuration options are available to meet your precise IT infrastructure needs. IBM Flex System offers a broad range of x86 and POWER compute nodes in an innovative chassis design that goes beyond blade servers with advanced networking and system management, to support extraordinary simplicity, flexibility and upgradability.

Healthcare providers can reduce risk with the built-in broad patterns of expertise and proven guidelines in systems management, applications and hardware maintenance. These expert integrated systems deliver capabilities that drive new levels of provider productivity and operational efficiencies.

**5 IBM Storwize V7000 and IBM Flex System V7000 Storage Node**, both members of the IBM Storwize family, are powerful block storage systems that combine hardware and software components to consolidate workloads into a single storage system for simplicity of management, reduced cost, highly scalable capacity, performance and high availability. By enabling storage virtualization, consolidation, data compression, automated tiering and solid-state disk (SSD) optimization for healthcare organizations of all sizes, these storage systems are designed to improve efficiency, application availability and resource utilization. The systems offer easy-to-use, efficient, and cost-effective management capabilities for both new and existing IBM and third party storage resources, and reduce floor space requirements and TCO for healthcare IT organizations.

The IBM Flex System V7000 Storage Node is available as an integrated component of IBM PureFlex and IBM Flex Systems. Functionally equivalent to Storwize V7000, Flex System V7000 seamlessly integrates into the IBM Flex System Manager™ (FSM) for ease of use and rapid deployment.

**5 IBM FlashSystem** storage systems provide high-performance, low-latency storage systems that:

- Improve business agility with scalable, extreme-performance flash technology that accelerates low latency, I/O-intensive applications, increasing storage utilization by 50%
- Easily integrate with existing infrastructure to maximize total cost of ownership and return on investment, and reducing software licensing costs by 38%

- Operate at peak efficiency with IBM MicroLatency™, high bandwidth, flexible connectivity and low wattage-all in a small footprint, reducing environmental costs by 74%
- Leverage high availability and hot-swappable components to lower mean time to repair
- Add comprehensive enterprise management features

### Why IBM?

Healthcare providers of all sizes benefit from significantly improved time-to-value with a highly customized solution:

- **Complete and integrated:** IBM PureFlex and Flex Systems bundle servers, networking, storage, optimization software and virtualization (including VDI through SmartCloud Desktop Infrastructure) into a comprehensive single-system solution that helps hospital systems add dynamic infrastructure that improves efficiency, total cost of ownership, time-to-value and utilization.
- **Flexible with workload-optimized capabilities:** The IBM PureFlex and Flex System compute nodes within take advantage of the full capabilities of IBM POWER and Intel® Xeon® processors. When the EMR operational database runs on POWER servers virtualized with PowerVM®, users benefit from unmatched levels of performance, scalability, resilience and reliability. If desired, this operational database can also run on Intel Xeon processors in the IBM PureFlex or Flex System.
- **Superior performance at lower risk:** IBM PureFlex and Flex Systems improve reliability with redundant hot swap disks, fans and power supplies, predictive failure analysis and lightpath diagnostics. They are also tested and optimized with IBM storage systems, including the Storwize V7000, the integrated Flex System V7000 and Flash Systems, and networks to offer a proven, interoperable foundation for EMR solutions, which helps reduce risk.
- **Easy to manage from one window:** The IBM Flex System Manager™ (FSM) is a high performance scalable systems management appliance with a preloaded software stack. It is a truly unique single management window for POWER and Intel Xeon processors as well as storage, networking and virtualization, significantly enhancing ease of management for healthcare organizations. It helps healthcare providers manage the smooth flow of data, protecting sensitive patient records while at the same time ensuring information is delivered efficiently with minimal disruption.
- **Optimized and pre-built in one system:** The IBM PureFlex and Flex System combine servers, storage and networking all in one single system, significantly reducing the TCO while meeting both technology and budget requirements for healthcare organizations. Performance and reliability are optimized system-wide to deliver the experience clinicians expect.

### Building on a Strong Partnership

With more than 10 years of close partnership and cooperation, VMware and IBM have developed a joint approach to virtualization and cloud computing that is designed to optimize the end-user experience, benefit the business and simplify the complex implementation and support of EMRs and other clinical systems.

## IBM Systems & Technology Group Solution Brief

IBM has been a leader in large-scale virtualization for four decades, building strong intellectual capital and experience as a trusted advisor. Atlantis Computing is recognized as an industry expert in desktop virtualization and storage, based on their success in designing and implementing some of world's largest desktop virtualization deployments. F5 Networks is a leading provider of Application Delivery Networking technology. By partnering with F5 Networks and Atlantis Computing, IBM and VMware are ready to help your organization address the ever increasing healthcare industry challenges of rising costs, regulatory changes and increased customer expectations by providing a flexible solution to manage and deliver clinical information and EMRs to:

- Deliver better patient care management
- Enhance clinician collaboration and productivity
- Improve provider operational efficiency and flexibility
- Optimize virtualization performance at lower costs
- Lower storage costs without compromising performance

Atlantis Computing, VMware, F5 Networks and IBM are **enhancing provider productivity and clinician and staff mobility and collaboration, to deliver higher quality of care throughout the healthcare ecosystem at lower cost.**

### For More Information

For more information about IBM Healthcare solutions, contact your IBM sales rep or visit:

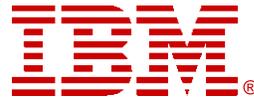
IBM Healthcare Solutions : [www.ibm.com/industries/healthcare](http://www.ibm.com/industries/healthcare)

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For more information about Atlantis Computing, please visit <http://www.atlantiscomputing.com/ibm>

To learn more about IBM SmartCloud Desktop Infrastructure using VMware on IBM PureFlex and IBM Flex System, see your IBM representative or IBM Business Partner, or visit: [www.redbooks.ibm.com/redpieces/abstracts/sg248184.html?Open](http://www.redbooks.ibm.com/redpieces/abstracts/sg248184.html?Open)



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