Maximize your electronic health records investment and improve patient care

A Configure Consulting white paper, sponsored by HP Software

Executive summary

More and more major healthcare providers have embraced and deployed electronic health records (EHR) systems in recent years to support their clinical, administrative, and operational functions. The EHR impacts every patient, clinician, administrator, and stakeholder throughout organizations that depend on these systems, which are used to schedule appointments, update charts, manage life-saving resources such as ambulances and operating rooms, share clinical information, coordinate logistics, and manage billing and reimbursement tasks. However, it is not the individual tasks that make EHRs so critical; rather, it's the collective impact they can have in the information-driven healthcare transformation that is taking place. EHRs serve as the basis for data-driven, more cost-effective healthcare decision-making that will undoubtedly improve outcomes while at the same time reduce the cost of care.

However, as with most relatively new yet disruptive technologies that affect large numbers of groups, users, and disciplines, EHR systems are fraught with significant, complex IT challenges. At the most basic level, IT teams are responsible for maintaining the integrity, accuracy, security, and performance of their EHR systems based on a variety of organizational demands and regulatory requirements. These IT personnel need to know where the issues are coming from in order to manage risk—all the while meeting compliance requirements such as those dictated by the Patient Protection and Affordable Care Act (PPACA) and Health Insurance Portability and Accountability Act (HIPAA) in the United States, and the Personal Information Protection and Electronic Documents Act (PIPEDA) in Canada. Poorly performing EHR systems can negatively impact the quality of patient experience and the organization's overall credibility, create costly operational inefficiencies, and raise the odds of violating compliance regulations.

Under pressure to improve transaction times and performance standards on critical EHR applications while adhering to compliance standards, IT administrators need the type of visibility that can provide them with clear analytics that detail their systems' availability, risks, and vulnerabilities.

This white paper will examine the many challenges healthcare organizations experience as they endeavor to strengthen their EHR systems' application integrity and improve the overall patient experience. It will also explain how the Configure Consulting EHR Performance and Stability Management package—combined with HP Software automation and management applications—can help EHR users monitor real-time application performance, automatically discover EHR infrastructure dependencies, and automate incident response for service-level management, risk management, and reduced mean-time-to-repair on EHR-related issues.

EHR systems and their many challenges

Electronic health records systems have been steadily adopted in recent years by healthcare organizations throughout the industry. EHRs electronically record patient health information, which includes such items as patient demographics, patient problems, medical history, medications, vital signs, immunizations, and laboratory data. They also support related activities such as quality management and the reporting of outcomes. Plus, these systems can be shared across healthcare organizations—extracting demographic information on medical protocol efficacy with the goal of reducing time and setting and/or justifying reimbursement rates—all with the goal of improving patient outcomes.

IT administrators responsible for managing EHR systems, however, face a range of challenges to ensure their multimillion-dollar systems function the way they're intended. EHR users frequently become frustrated with the number of high-severity incidents such as an inability to access a patient's charts or to dispatch an ambulance. These issues can take an average of four to five days to correct—which is unacceptable given the mission-critical, real-time applications EHRs support. Most of this time is spent diagnosing the issue as opposed to actually resolving it. The process is even more complicated in multivendor environments in which different teams often point fingers instead of identifying solutions.
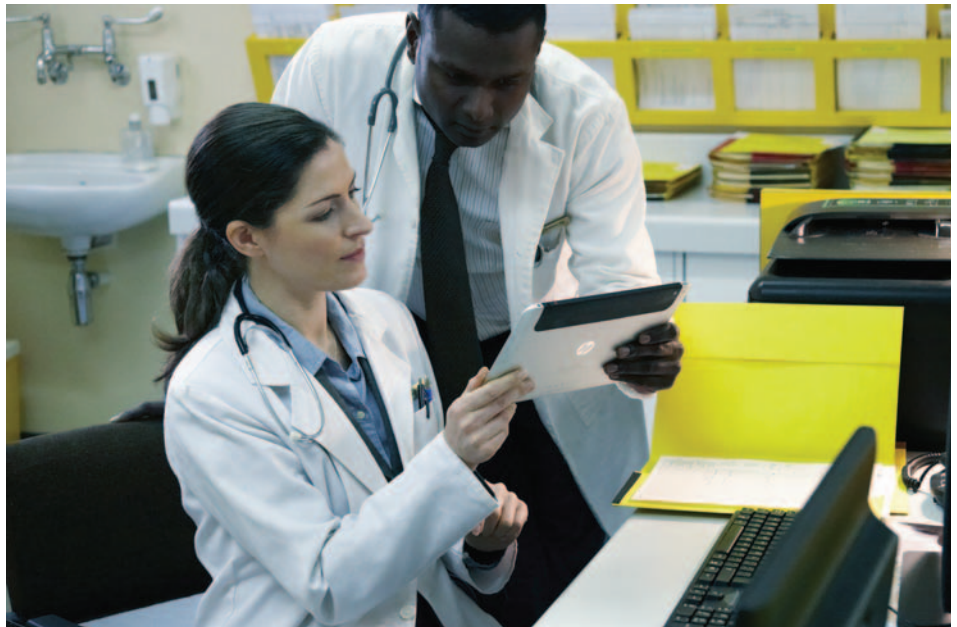
Dealing with Level 1 severity incidents associated with EHR IT operations is just one of many issues that IT teams face with the management of their EHR systems. Here are some others:

- Streamlining interoperability with other EHRs and EHR-consuming apps

- Ensuring Meaningful Use requirements are met

- Managing complexity

- Reducing heavy workloads

- Handling the impact of mergers and acquisitions

- Dealing with security and policy management

Streamlining interoperability with other EHRs and EHR-consuming apps
Healthcare IT teams need to understand and optimize the critical interrelationships across functional units. With the complexity of EHR systems, many critical interrelationships often go unnoticed. As a result, IT teams struggle to ascertain the true impact and risks of planned changes. Additionally, the ambiguity of interrelationships across EHR systems makes it difficult to diagnose and remediate incidents and downtime.

The quality of a patient's care is directly attributable to the quality of collaboration across functional units. That leads to the main benefit of EHR systems: enhancing operational synergies in order to effectively and securely exchange patient and logistical data across geographic, organizational, vendor, and disparate systems and boundaries. The ultimate goal, as always, is to optimize overall patient care.

Healthcare providers are also implementing and relying on configuration management systems (CMS) to support effective interoperability. Effective interoperability across the EHR system's wide range of functions and capabilities requires that healthcare organizations have robust configuration management systems—and that the CMS information is channeled into actionable venues to support monitoring, proactive risk management, and incident remediation.

Ensuring "Meaningful Use"
The Stage 1 Core Set Meaningful Use compliance mandates that IT operations teams must ensure minimum performance and functionality levels on EHR applications. A major pain point of IT healthcare is the requirement to continually monitor, manage, and validate EHR functionality. IT healthcare organizations generally see some degree of EHR downtime and high-severity issues at least once a month, leading to natural concerns around overall Meaningful Use compliance. Healthcare providers that don't adhere to the standards face financial penalties.

Patients are also demanding increased performance levels from healthcare providers. System lags and errors on Web portals and patient-facing interfaces are perceived as a negative reflection on the quality of care that an organization is capable of providing—which can be devastating in an era of online reviews that drive annual plan renewals and provider ratings.

Managing complexity

IT administrators and healthcare executives uniformly cite management complexity as a key issue when working with their EHR systems. This complexity generally is a result of the numerous process controls in place for security and policy reasons, the sheer size of the EHR system, and its broad impact throughout the organization.

Leveraging automation to lighten the load

Implementing, maintaining, and modernizing an EHR system is an immense undertaking. The work ranges from making complex, critically important decisions to managing routine housekeeping workflows that support day-to-day functions. Healthcare IT managers and decision-makers are looking to leverage automation technology to simplify and expedite routine system health-checks and remediate any quickly resolvable issues in order to free up time for IT staff to tackle EHR enhancements. Automating system health-checks can considerably reduce risks and downtime. The benefits are two-fold: lighten the load on IT personnel and reduce the chances of human error.

Integrating with cloud computing platforms

Many of these organizations are looking to consolidate their legacy data centers and offer a modernized Infrastructure as a Service or Platform as a Service. Either can provide shared services such as EHRs or financial management, which can often be managed in a single domain while leaving specific applications that may be associated with a particular provider specialty or additional capabilities in separate domains. And they can still be managed by those same IT teams or by third-party outsourcers that once maintained their legacy data centers. In other cases, providers have embraced the Software-as-a-Service (SaaS) trend as they adopt EHR, often relying on vendors such as Epic, Cerner, and AllScripts to maintain and support patient-facing portals. These cloud service trends have empowered IT organizations to manage evolving patient expectations, growth, and the changing scope of service delivery.

While the benefits are far-reaching, managers are struggling to align the performance and functions of various cloud-based models such as SaaS-based applications with internal measures of patient interactions and service delivery. SaaS offerings come with contractual guarantees of uptime and availability; however, operational teams require much deeper performance analytics in managing services and applications across their EHR systems.

For example, an SaaS-driven patient portal delivering 99.9997 percent availability over 12 months may have also had three failures per week in transmitting patient-entered information to a back-end schedule-management database. In this type of scenario, merely monitoring the performance and uptime of the SaaS application as a silo would make it difficult to identify, diagnose, and remediate underlying issues.

Handling the impact of mergers and acquisitions

As the percentage of overall national GDP devoted to healthcare has steadily increased—along with pressures to reduce its cost—consolidation in the industry has really ramped up among providers. These include small hospitals being absorbed into larger networks to individual physicians joining groups or HMOs. These merger-and-acquisition trends force a review of the disparate systems and processes held by the organizations that are involved. The issue is that healthcare organizations are held to performance and accountability standards across the acquired and merged clinics, hospitals, and offices that are inseparable from the underlying IT systems they bring with them.

Following an M&A event, IT teams are challenged to bring together systems across the combined organizations, deciding how to consolidate and capitalize on synergies. The complexity and confusion of EHRs can be compounded in this process of discovery and decision-making. As a result, risks increase during this transitional period. The speed and success of the transition will make or break the new organization. Even an organization's track record on previous acquisitions will impact its internal approval for future transactions and potentially influence external funding.

Dealing with security and policy management
EHRs by definition contain very sensitive electronic personal health information. While EHR systems are designed to control, manage, and secure information, healthcare organizations still need to make sure that their infrastructures are also meeting security and policy standards.

How the EHR Performance and Stability Management solution enhances and protects the investments of healthcare organizations

Traditional system monitoring measures the performance and uptime of infrastructure elements, including servers and network devices. Configure Consulting understands that EHR systems are supported by a breadth of diverse systems and therefore guides healthcare IT professionals toward a holistic EHR monitoring approach. In conjunction with HP Software, Configure Consulting has developed the EHR Performance and Stability Management solution that addresses the above challenges through service availability monitoring that proactively identifies risks before they become critical incidents. It also provides clear diagnostics on any incidents that do occur.

By focusing on the patient experience and regulatory information security requirements, our EHR Performance and Stability Management solution provides IT operations teams with clear visibility into the EHR infrastructure. This includes application components, attributes, dependencies, and interrelationships. Additionally, we leverage auto-discovery to proactively identify application vulnerabilities, policy breaches, and relevant system changes.

To streamline some EHR performance and availability issues, the Configure Consulting solution creates simple, effective workflows—such as creating service desk incident tickets against any monitoring alerts. Monitoring tools can discover IT incidents, configuration management systems are used to diagnose the cause and impacts of these incidents, and automation solutions support quick remediation and resolution. The EHR Performance and Stability

Management solution integrates these components with a single-pane view that supports service-level agreement (SLA) targets to reflect the overall performance and availability of the EHR system and execute changes or remediation as required.

The EHR Performance and Stability Management solution includes:

- **Automation tools** for implementing and auditing security policies. These mechanisms can directly link to the National Vulnerability Database (NVD)—the repository of vulnerability management and security standards maintained by the U.S. government. This direct, automated link can be used to identify and remediate any areas of vulnerability related to the organization's EHR system and related infrastructure.

- **Automated infrastructure discovery** of application components, interrelationships, and relevant changes—all of which can be used to assess the impact of consolidation and in bringing together disparate systems.

- **Unauthorized change detection** across the EHR infrastructure to proactively identify system changes that have not been previously approved through the change management process.

- **Process monitoring for SaaS applications**, which involves the monitoring of each patient interaction as an individual component as well as a contributor to the overall SaaS application.

- **Synthetic monitoring** to validate, in real-time, the proper functioning of communication and EHR data transfer channels between disparate business units. Testing critical processes at frequent intervals helps to proactively detect risks before they impact patients, clinicians, or other end users.

The combined HP and Configure Consulting EHR Performance and Stability Management solution provides healthcare providers and payers with:

- Service availability monitoring and aligning total service availability with the experience of all end users, including patients, doctors, and billing personnel

- Automated discovery of EHR critical assets, infrastructure-related HIPAA compliance breaches, and application vulnerabilities

- Automated incident response and remediation, and reducing reaction time and mean-time-to-repair

HP Software powers the EHR Performance and Stability Management solution

The EHR Performance and Stability Management solution incorporates the following HP Software components:

HP Server Automation, which offers lifecycle server management and automated application deployment. It helps cut cost and risk by automating tasks such as provisioning, patching, configuration management, and compliance management. A proven, scalable solution for management across physical and virtual servers in a variety of environments and across geographies, HP Server Automation shares a common infrastructure with HP Database Middleware Automation software. This extends lifecycle management capabilities to databases and middleware applications from a single platform, which is critical in dealing with integration of disparate underlying electronic medical records (EMRs) and EHRs.

HP Server Automation helps healthcare organizations get the most out of their EHRs with:

- Time savings and minimized risk with automated provisioning and patching

- Up-to-date compliance requirements information, enabling remediation in minutes

- Consistency and success in deploying applications that support and consume EHRs

- Baseline knowledge of all physical and virtual servers associated with EHRs across geographies

- Scaling to thousands of servers at multiple sites while enforcing access policies

HP Application Performance Management, which monitors applications across traditional, mobile, virtual, and cloud environments. This is critical because EHRs are increasingly viewed and modified across cloud environments on mobile devices. HP Application Performance Management provides insight into every transaction to quickly resolve application issues. This solution improves application performance by monitoring the end-user experience and aligning IT performance with business goals.

HP Application Performance Management, when applied to EHRs, enables healthcare organizations to:

• Acquire a 360-degree view of application performance and availability

• Trace user transactions across application tiers to speed resolution times (most EHRs have components at more than one tier)

• Measure the end-user experience, using repeatable transactions from multiple locations

• Gain deep application insights for fast problem isolation and issue resolution

• Share scripts across testing and operations for higher-quality EHR services

HP Configuration Management System, which consists of a comprehensive set of tools for collecting, storing, managing, updating, and presenting data about IT services configuration items (software and infrastructure) and about their relationships. HP Configuration Management System includes HP Universal Discovery and HP Universal CMDB (UCMDB), which integrate with trusted sources in a seamless fashion—allowing IT management teams to make effective decisions and control changes.

HP Configuration Management System delivers:

• Thorough understanding of EHR components and infrastructure dependencies

• More effective and accurate change planning and impact analysis

• Lower time to resolution for critical events with fast view of service decomposition

• Improved visibility showing deviations from standard configuration of IT assets associated with the EHR

• Control of configuration management and compliance issues

HP Data Center Automation, a suite enabling IT to deliver business services with high quality, compliance, and cost-efficiency. The suite automates repetitive tasks associated with managing servers, network, storage, databases, and application servers. This allows IT operations to shift investments to more strategic initiatives, ensure compliance across the data center, and standardize their operations—all while reducing the risk of downtime and accelerating time to market.

HP Data Center Automation is designed to:

• Automate provisioning, configuration, patching, and release management

• Standardize operations to reduce errors and downtime

• Achieve compliance across storage, network, servers, databases, and applications

• Shift investments to more strategic initiatives

• Accelerate the deployment of private and hybrid clouds

Conclusion

Healthcare organizations have spent millions of dollars on their electronic health records systems. They need to maximize their investments to reduce costly operational inefficiencies, avoid expensive compliance violations, and focus on the overall objective to improve the quality of the patient experience. IT administrators involved with managing EHR systems, therefore, have a mandate to maintain performance levels, manage risk in a complex infrastructure, understand where issues are coming from, meet compliance requirements, and run effective compliance audits. Healthcare informatics and M&A activity will be two critical make-or-break trends in healthcare and how IT acquires, manages, and links EHRs to the business goals of a given provider's organization.

Configure Consulting, combined with HP Software, offers the EHR Performance and Stability Management solution to enable healthcare IT organizations across North America to implement monitoring, auto-discovery, and automation solutions that promote total service availability and effective EHR systems management. This innovative approach focuses on aligning service availability with infrastructure performance metrics.

The EHR Performance and Stability Management package provides healthcare organizations that deploy EHR systems with:

• Service availability monitoring

• Automated discovery of EHR critical assets, compliance breaches, and application vulnerabilities

• Automated incident response and remediation

About Configure Consulting

Configure Consulting specializes in implementing quick-start solutions empowering IT operations teams with efficiency, stability, and top performance in the delivery of business services. As an HP Software Sales and Service Partner, Configure Consulting has been implementing solutions globally for Fortune 500 clients across a number of industries. Specifically, Configure Consulting has worked with healthcare IT organizations across North America to implement monitoring, auto-discovery, and automation solutions geared to promote total service availability and effective management of EHR systems.

Configure Consulting has particular expertise with change configuration and release management, closed-loop incident process, business service management, configuration management systems, and service asset and configuration management.

After a successful implementation, our clients come away with leading solutions following industry best practices. The Configure Consulting team has developed a deep understanding across the HP IT Performance Suite (formerly BTO) portfolio and has attained HP ExpertOne certification. Our team partners with the customer through each step of the implementation and strives to provide a high-quality solution.

About HP Software

HP Software helps enterprises manage and transform their technology environments. Our solutions are not just about IT management. They're about helping your IT perform better—by giving you the visibility and control to build and operate a seamless, secure IT landscape.

To learn more
For more information or to discuss the specific EHR challenges you are facing, please contact your HP sales representatives, call Configure Consulting at 1-800-987-8460, or visit:
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