Dell Healthcare Solutions

The Dell difference

Dell future-ready healthcare solutions enables new innovations that help deliver better outcomes

Innovate: To improve patient care efficiency, quality and outcomes

Dell data management and analytics solutions for mastering data growth, gaining actionable clinical insights and developing new capabilities

Modernize: To gain efficiency, scale and agility

Dell solutions that help optimize the healthcare data center, so workloads are optimized, virtualized, converged and cloud-enabled

Innovate: To accelerate life-saving diagnostics and therapies

Dell high-performance computing (HPC) solutions for faster genomic investigations and targeted precision-medicine treatments

Connect: To boost teamwork, productivity and responsiveness

Dell secure and compliant mobile health solutions for connecting patient care teams with each other and their patients anywhere, anytime

Protect: To ensure data privacy and regulatory compliance

Dell Security and Governance solutions for protection against evolving threats, while safeguarding PHI and maintaining compliance with HIPAA/HITECH regulations

The Dell difference

Few industries are subject to the relentless and ever-accelerating pace of change that healthcare faces. New innovations. New reimbursement models. New laws and regulations. New care delivery models and the need to maintain better continuity of care. And, of course, new technologies — from specific, point-of-care solutions to data center infrastructure solutions.

Future ready. At Dell, we see the combination of industry changes and continuing technology advancements driving a new imperative for healthcare providers to become "future ready." That's because, today in healthcare, being able to innovate and use technology to improve workflows and ultimately to enable better patient outcomes is mission-critical. It's about doing more of what's possible in an era of exciting new technology.

What does it mean to be a future-ready healthcare provider? First, information is interconnected, so it's available when and where it's needed to save lives. Second, data becomes knowledge that transforms healthcare from episodic care to coordinated, personalized care focused on prevention and wellness. Third, patients become more empowered to take control of their own health by being better connected to their own information, providing personalized, real-time feedback about their specific conditions.[1]

To become a future-ready healthcare provider, our extensive industry experience has led us to recommend that organizations consider four key initiatives:

- **Modernize.** Transforming IT environments and applications from legacy, often siloed, operations to open, seamless, resilient and secure structures that span the entire enterprise. For example, data centers — compute, storage and networking—will have workloads that are optimized, virtualized, converged and cloud-enabled. Modernization will help providers become more agile, so they can adapt and respond quickly to new conditions, especially opportunities for services, procedures and processes that can improve patient care and care team efficiencies, ultimately helping to boost revenue opportunities and innovation.
- **Connect.** Enabling clinical care teams to access personal health information (PHI), clinical resources and applications whenever and wherever they need it through innovative devices. The more connected an organization and its teams become, the better they're able to deliver high-quality care and improved patient outcomes.
- **Innovate.** Enhancing clinical processes and patient care through actionable data insights. With the right strategy and tools, unlock the value hidden within clinical and non-clinical data to enhance care and improve operations. Predictive analytics, for example, can help solve complex problems and provide actionable insights to enable better patient outcomes.
- **Protect.** Improving data security, knowing these are matters not only of compliance but also of patient safety, brand reputation, and business continuity. Threats are constantly evolving, requiring a layered, defense-in-depth approach, using tools that provide better security through shared intelligence and reduce complexity while maximizing workforce productivity.

Dell is different. Our open, standards-based design approach enables us to provide modular systems with more scalability. As one of the leading providers of healthcare IT solutions worldwide, Dell has the tools to help healthcare organizations deploy future-ready solutions that simplify administration; coordinate and manage patient care; manage and secure patient data; make the transition from episodic care to coordinated, personalized care focused on prevention and wellness; and ultimately improve population health and individual patient outcomes. At Dell, we want your organization to be future-ready starting today.

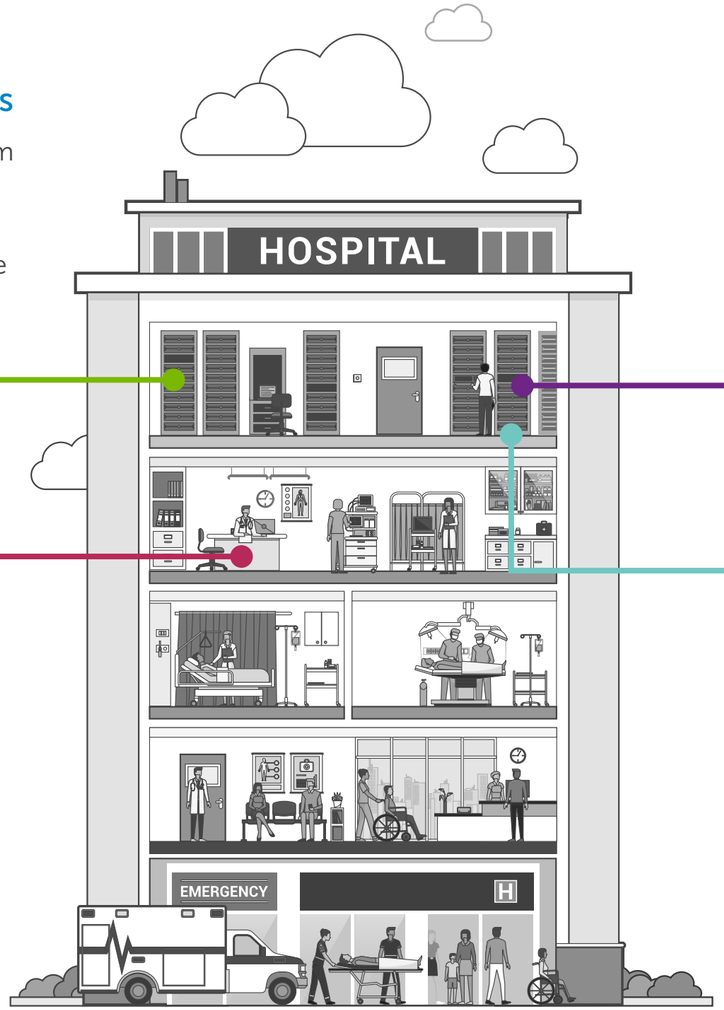
How Dell future-ready data center solutions work

Unify management of existing and new IT resources

With support for infrastructure from multiple vendors, Active System Manager (ASM) helps unify the management of IT resources for increased efficiency and simplicity in the data center. Deliver deep integration with top third-party virtualization platforms and manage cluster-level and virtual machines.

Use your infrastructure more fully and efficiently

From fast, easy hardware onboarding to comprehensive lifecycle management of your physical and virtual infrastructure, Active System Manager maximizes future-ready data center efficiency. Dell also offers an extended lifelong platform and Microsoft IoT OS to address stable hardware environment needs.



Enable and automate IT service delivery

Dell Active System Manager enables service-centric IT by helping healthcare IT staff to deliver the services users need — rapidly and efficiently via automation. Streamline infrastructure provisioning and help boost service levels.

Deploy servers quickly, with full visibility

Dell PowerEdge servers powered by Intel®, integrate the Dell Remote Access Controller (iDRAC) with Lifecycle Controller. This offers powerful, easy-to-use, remote management and configuration options, enabling streamlined local and remote server management.

To gain efficiency, scale and agility

Dell solutions help advance the healthcare data center, so workloads are optimized, virtualized, converged and cloud-enabled

The Challenge

Healthcare organizations run very specific applications, such as electronic health records (EHR) and business systems, that must support the management, security and delivery of clinical and non-clinical data. Future-ready data centers deliver multiple possibilities and provide efficiencies, but they can be complex. It's not a question of just deploying new servers, storage, and networking, Healthcare data requirements and security and control concerns have to be considered.

At the same time, providers must manage an explosion of data. Worldwide healthcare data is expected to grow to 15,000 petabytes by 2020 — 50 times its size in 2012.[2] And this means data storage requirements for healthcare organizations must keep pace.

Inefficient and inflexible legacy IT infrastructure and applications can slow healthcare organizations down, limit patient care and send costs soaring.

The Dell Solution

Dell helps healthcare organizations modernize their IT infrastructures as fast as their resources and needs allow. We offer a proven portfolio of on-premise and cloud-based solutions powered by Intel® allowing us to tailor solutions to our healthcare customers.

Creating a future-ready data center requires adding agility and functionality to your existing IT, and layering new technology onto it in a non-disruptive way to attain the desired results. Future-ready data centers are typically:

- **Workload optimized.** Healthcare applications are mission critical, and must function flawlessly when dealing with clinical data. Data centers should maximize application performance and scale for critical applications, such as electronic health records (EHR), picture archiving and communication system (PACS) and enterprise resource planning (ERP).
- **Virtual-ready.** Virtualization can introduce efficiency and the ability to maximize IT investments. For many organizations, it helps them get the "last mile" of efficiency out of their existing IT.
- **Software-defined.** Software-defined solutions are extremely powerful because it breaks down silos and allows you to deploy complex networking and storage architectures securely utilizing simple, compute-centric x86 platforms powered by Intel®.
- **Cloud-enabled.** Healthcare organizations are investigating how they can take advantage of private, public or hybrid clouds for clinical and non-clinical data. Cloud platforms can deliver much greater efficiencies but their deployments can be complex. Whether a private, public or hybrid cloud model is deployed, healthcare data requirements and security and control concerns must be factored in.

2. Ryan H. Sandefer and David T. Marc, "The Ecosystem of Federal Big Data and Its Use in Health Care," chapter 5 of *Big Data and Health Analytics* (Boca Raton, FL: CRC Press, 2015).

Simplified management. With future-ready data centers, healthcare IT staff can simplify management of their modernized, transformed infrastructure and become more service-centric at the same time. This means they can focus more time on delivering needed IT services faster and can adapt more quickly to the changing demands of their clinical, business and research constituents.

One important toolset to help them in this mission is Dell Active System Manager (ASM). Its unified console and highly intuitive user interface automate the deployment and management of IT services, allowing IT staff to configure infrastructure and applications in minutes. This speeds up workload delivery, streamlines infrastructure provisioning and helps improve service levels.

ASM's many features enable IT staff to:

- **Discover** and inventory available resources then pool those resources and allocate them to workloads.
- **Define** and design templates around best practices, or use its built-in templates to standardize infrastructure and workload deployments.
- **Deploy** workloads faster and more efficiently using proven templates.
- **Maintain** and better manage infrastructure lifecycle maintenance tasks, such as scaling resources up or down as user demands change.

Dell OpenManage Integration Suite is another toolset to help boost the efficiencies and agility of healthcare IT staff and their organizations, while providing unmatched scalability. It enables them to deploy servers more quickly and accurately, while gaining full visibility of enterprise hardware, whether deployed on-premise or in a private cloud. As the industry's first and only agent-free systems management solution, it uses the integrated Dell Remote Access Controller (iDRAC) with Lifecycle Controller, which is embedded in every Intel®-powered Dell PowerEdge server, to:

- Minimize errors and increase uptime.
- Automate management tasks.
- Utilize real-time storage management without agents.
- Deploy servers with zero-touch automation.

For healthcare organizations, cloud data centers are the destination platform for a future-ready, modernized enterprise. Dell solutions can help accelerate your transformation to this important IT model, so your stakeholders — patients, clinicians and staff — can share in the benefits of greater efficiencies, scale and agility.

The Watershed Addiction Treatment Programs organization builds a private cloud

The Watershed Addiction Treatment Programs needed a future-ready, modernized IT infrastructure despite a limited budget. It worked with Dell to build a new private cloud based on Intel®-powered Dell servers, storage and networking technologies, and financed through Dell Financial Services. Today employees can access patient information and other critical applications twice as fast as before, enabling caregivers to treat patients faster and be much more productive. Simplified systems management saves IT time to focus more on the organization's growth plans.

"We're able to remove technology as a barrier by using the Dell private cloud. Technology is now a facilitator, so we can increase both the number of patients and, more importantly, the quality of care we can give."

— Christopher Crosby, CEO, The Watershed Addiction Treatment Programs, United States

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Read more at: http://www.dell.com/learn/us/en/uscorp1/corporate~case-studies~en/documents~2015-watershed-10022463-enterprise-efficiency-financing.pdf

How Dell future-ready mobility solutions work

Simplify user and device management

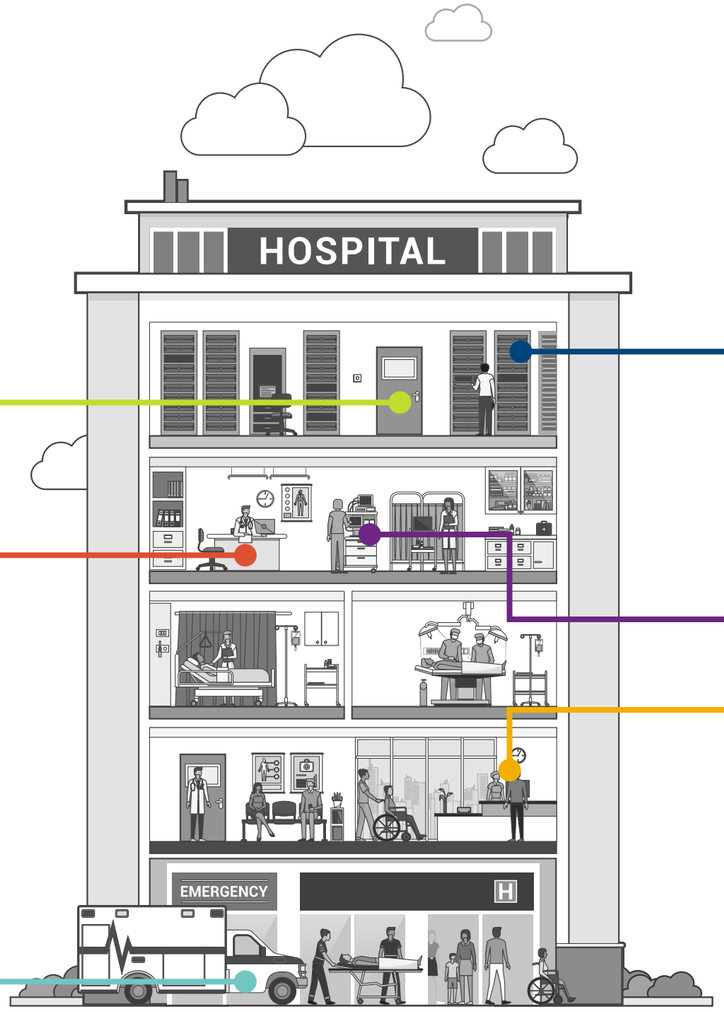
Easy-to-use KACE appliances enable constrained IT teams to provision, manage, secure and service all their network-connected devices faster.

Leverage innovative devices

Dell Latitude 2-in-1 laptops, Wyse, Edge Gateway's, embedded PCs, tablets and notebooks plus Dell OptiPlex desktops, Dell monitors and healthcare-ready peripherals are key technology solutions that empower caregivers to deliver better patient care.

Enable anywhere application and data access

Dell rugged mobile solutions are built to withstand EMS workers' roughest environments. They allow access to patient data and teleconsulting capabilities via cloud-based applications no matter where the job takes them.



Protect your data privacy

Secure organization and patient data with Dell Data Protection | Encryption Enterprise Edition solutions that enable IT teams to encrypt data accessed by devices in a fraction of the time and cost of other popular solutions.

Optimize healthcare with virtual desktops

Leverage Wyse technologies to virtualize Thin, Zero and All-in-One Thin Clients and significantly reduce costs and complexity.

Support secure, remote teleworking

SonicWALL secure remote access, wireless and firewall solutions enable clinicians and healthcare workers to get secure, single-sign-on (SSO) VPN access with multifactor authentication to key clinical resources from virtually any endpoint — including desktops, laptops, smartphones and tablets.

To boost teamwork, productivity and responsiveness

Dell secure and compliant mobile health solutions for connecting patient care teams with each other and their patients anywhere, anytime

The Challenge

On a practical level, when care teams are disconnected from each other, their applications and patient data, their productivity and their ability to deliver high-quality care are compromised. Crucial information can be lost or overlooked, with diminished patient outcomes and potentially grave consequences.

Both clinicians and patients need access to care team members and information in seamless, intuitive ways from anywhere, including the point of care — whether bedside in a hospital or in a patient's bedroom many miles away.

To deliver future-ready mobile solutions, healthcare providers need to identify the best device for each user scenario, while ensuring secure and HIPAA-compliant delivery of applications and data, optimizing applications for specific devices, and managing those devices efficiently and cost-effectively. This is where Dell can help.

The Dell Solution

Dell recognizes that delivering patient care is more activity-based today than location-based. "Bedside" can be in a hospital, outpatient clinic, ambulance or patient's home. Advanced technology, much of it powered by Intel® processors, has enabled much of this transformation. At the forefront of change, Dell can help drive organizations' mobility initiatives with a wide range of secure, manageable and reliable solutions — from innovative mobile devices, such as Dell laptops and tablets, to specialized monitoring and analytics capabilities that build on the growing "internet of medical things."

Users first. At Dell, we design and build our mobility solutions to minimize their back-end management demands on IT staff time, using open-source platforms when feasible.

- **Acute care.** Dell can enable clinicians and workers in acute care to seamlessly transition from their desks to medical floors to patient bedsides. Wherever they are, they can connect and collaborate. Our mobile solutions can employ virtual desktops, small-form-factor OptiPlex PCs, Latitude laptops and 2-in-1s, Venue tablets, or medical-grade peripherals and monitors. They can feature single-sign-on (SSO) capabilities to boost staff speed and efficiency.

  These can be tied into medical carts and integrated with back-end systems, such as EHR, enterprise content management (ECM) and EMV smart-pay solutions. We can tap into clinical archiving and workflow, such as vendor neutral archive (VNA) systems.

- **Ambulatory care.** Dell can equip remote mobile healthcare workers — typically EMS and first responders — with ruggedized and semi-ruggedized Dell Latitude laptops and tablets with Intel® processors. Designed and engineered to withstand the rigors of more extreme environments outside typical clinical settings. Dell client devices can provide users with wireless connectivity to back-end EHR, ECM and VNA systems. This also enables teleconsultation, facilitating communication with the ER doctors, so even as patients are being rushed to hospitals, they can begin getting the care they need, especially when seconds may count.

- **Home and community care.** Future-ready telehealth solutions, such as those from Dell partner HealthNet Connect, link to back-end EHR, ECM and VNA systems, and they digitize patient conditions with medical-grade IoT devices that can track 24/7 from anywhere. Dell Latitude notebooks, tablets and 2-in-1s powered by Intel® processors capture the information and serve as a platform for telehealth and data analysis. Home and community healthcare workers can securely monitor and treat chronic ailments, accessing back-end EHR and other systems wirelessly as needed, and patients can access their own health data and information.
- **Other health-related scenarios.** Pharmacists, radiologists, lab technicians, and other health professionals need tools to join care teams, support patient care and maximize their productivity, whether in their offices, on medical floors or outside those settings. Dell OptiPlex desktops for offices can complement Intel®-powered Dell Latitude laptops and 2-in-1s or Venue tablets, providing access to back-end business and clinical systems, including EHR, ECM and VNA systems. For more demanding applications needing more processing power, Dell Precision workstations with Intel® processors can fill the bill. Medical-grade viewing and diagnostic monitors, such as those from Barco, can enable a finer grade of detail for examining test results and radiology images.

With Dell mobility solutions, healthcare providers can give their future-ready workforces the tools and secure information access they need to improve collaboration, productivity and responsiveness — and dramatically enhance patient care and outcome.

The University of Mississippi Medical Center creates a telehealth solution for student athletes

U.S. high schools needed an effective and affordable way to evaluate football players for concussions during games, so they can reduce the risk of debilitating or life-threatening injuries. Their national association engaged the University of Mississippi Medical Center to implement a telehealth solution for high schools, using VSee software and Dell tablets, powered by Intel® processors. The university was able to design and implement an affordable, easy-to-use telehealth solution in just six days. Now injured athletes can get immediate concussion evaluations from a specialized physician, which lowers the risk of sending an injured player back into a game. It also provides a viable, future-ready telehealth model for other high school sports and youth sports organizations.

"The whole design and implementation of our virtual concussion clinic using Dell Venue tablets and VSee software took six days, and that includes time needed to drive all over the state and train high school staff."

— Dr. Kristi Henderson, Chief Telehealth and Innovation Officer, University of Mississippi Medical Center, United States

Read more at: http://www.dell.com/learn/us/en/vn/corporate~case-studies~en/documents~2015-ummc-10022610-telehealth-care-tablets-vsee.pdf

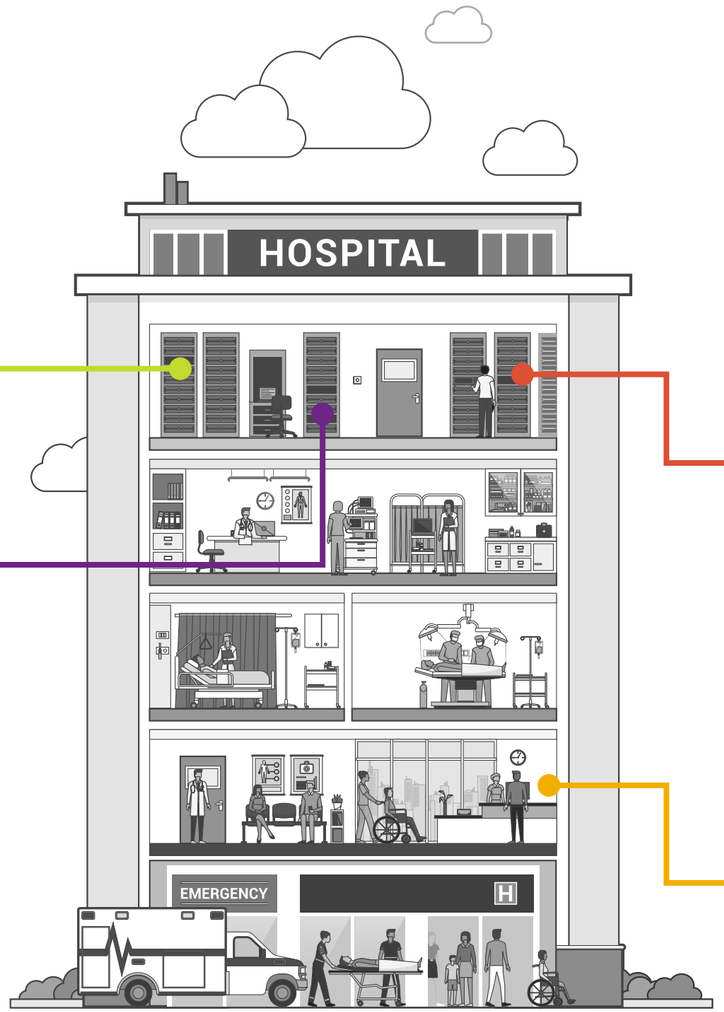
How Dell future-ready data management and analytics solutions work

Increase data storage efficiencies, agility and scalability

The patented high-performance and highly scalable with best-of-breed technologies, the future-ready Dell Fluid File System features industry-leading deduplication, compression algorithms, world-class virtualization and embedded system intelligence. It enables dynamic storage that delivers new levels of efficiency and agility.

Enjoy greater peace of mind

Dell Clinical Cloud Archive can provide cloud backup for archiving, collaboration, business continuity and disaster recovery.



Consolidate unstructured content from many sources

A Dell medical image store is a standards-based data repository enabling the consolidation of both clinical and non-clinical data, including unstructured content from multiple sources. The store can be based in the cloud or on-premises with the ability to scale at the speed of the most demanding PACS system.

Support exponential data growth

Unified, virtualized storage that scales for both capacity and performance enabling a standards-based data repository that consolidates the archive of medical content in a single application-agnostic and patient-centric repository.

To improve patient care efficiency, quality and outcomes

Dell data management and analytics solutions for mastering data growth, gaining actionable clinical insights and developing new capabilities

The Challenge

Legacy IT systems can't keep pace with the ever-growing mountains of data spawned by today's healthcare operations. Data can come from just about every step in the care-delivery cycle, from office visits to clinical admissions and from points of care to discharge. Data can also be generated by outpatient and in-home or follow-up monitoring and care.

Structured data can originate from such disparate systems as bidirectional EHR, lab testing, billing and remote monitoring that taps medical-grade devices, sensors and wearables to assess patient conditions. Unstructured data, a much larger source, is generated by emails, texts, images and video. Diagnostic imaging alone can produce terabytes of data each day for healthcare organizations.

How do healthcare providers turn this vast store of data into meaningful and actionable insights? And make it easily and readily accessible to patient care team members.

The Dell Solution

By deploying future-ready, big-data management and powerful analytics tools from Dell, healthcare IT staffs can develop and deploy game-changing applications and services much faster than with legacy tools. They can focus on improving patient care and outcomes, while boosting the efficiency and effectiveness of both clinicians and care teams.

Once information is freed from siloed systems and standalone applications, it can be shared securely and in compliance throughout healthcare organizations. Care teams can use it in many ways, especially with predictive analytics software like Dell Statistica. For example, analytics can help spot the onset of disease before symptoms appear and can recognize patterns in patient histories or in the epidemiologies of entire populations.

Tested reference architectures. To tame big data and deploy analytics, Dell offers tested and certified reference architectures for small, medium and large implementations, whether on-premises, in the cloud or a hybrid of the two. Based on those reference architectures, our engineered solutions can combine the components into complete and turnkey solutions that are simple to order, quick to deploy and easy to scale.

Among their components are future-ready Dell Storage products, including those with our patented, high-performance and highly scalable Dell Fluid File System. It features industry-leading deduplication and compression algorithms, plus best-in-class virtualization and embedded system intelligence. It also offers dynamic, automated tiering for even higher levels of efficiency and agility.

Market-leading toolsets. Complementing these Dell cornerstones for big data and analytics is our portfolio of related software and appliances. Dell Boomi, for example, enables data integration and synchronization across different applications and platforms, offering easy data access no matter if data resides on-premises or in the cloud. Dell also has teamed with Cloudera and Intel

to provide turnkey Apache Hadoop solutions for storing, managing and analyzing large, disparate data sets across distributed environments.

Dell can also help healthcare organizations to archive and secure pesonal health information (PHI) and to connect relevant data sets to specific patient records. In developing and delivering these solutions, we partner with leading clinical software providers, coupling our Dell hardware infrastructure, powered by Intel®.

Here are two examples:

- **Enterprise content management (ECM).** Dell can provide healthcare organizations with a true end-to-end ECM solution and be their single point of contact. Our validated technology stack features market-leading ECM vendor OnBase by Hyland to enable rapid time to value. Software-defined technology platforms like this offer superior ease of use and the flexibility to adapt quickly to changing requirements.
- **Vendor neutral archive (VNA).** Dell believes healthcare organizations should be able to design and deploy data-archiving systems with their choice of hardware, software and services — the core VNA concept. This way, their archives can address specific needs and preferences and also support on-premises, hybrid, or fully cloud-hosted approaches. For example, a VNA can make diagnostic imaging data more accessible across the clinical ecosystem via Dell mobility solutions that enable remote viewing of images and collaborative consultations with specialists.

University of Iowa Hospitals and Clinics create predictive analysis with Dell Statistica

At University of Iowa Hospitals and Clinics, lower infection rates can have major impacts for overall patient health and cost savings. For this reason, surgeons wanted to know about patient susceptibility to infections, so they can make critical treatment decisions in the operating room that could help prevent post-op infections. Using future-ready Dell Statistica software, the surgical team harnessed the power of big data analytics, coupled with other methods, to keep patients safe — reducing surgical site infections by 58 percent — while decreasing the cost of care. The surgical team can now do more than just analyze disparate data (EMRs, registry and patient satisfaction data); the team can also merge it with live patient data in the operating room to make data-driven decisions about individual treatment.

"With the right analytics tools, a small group of people can deliver predictive analytics. It simplifies the deployment, execution, sharing of the models and the analysis of the data — all in one package."

— Jose Maria Monestina, Senior Application Developer, University of Iowa Hospitals and Clinics, United States

Read more at: http://www.dell.com/learn/us/en/uscorp1/corporate~case-studies~en/documents~2015-univ-iowa-10021115-big-data-analytics-software.pdf

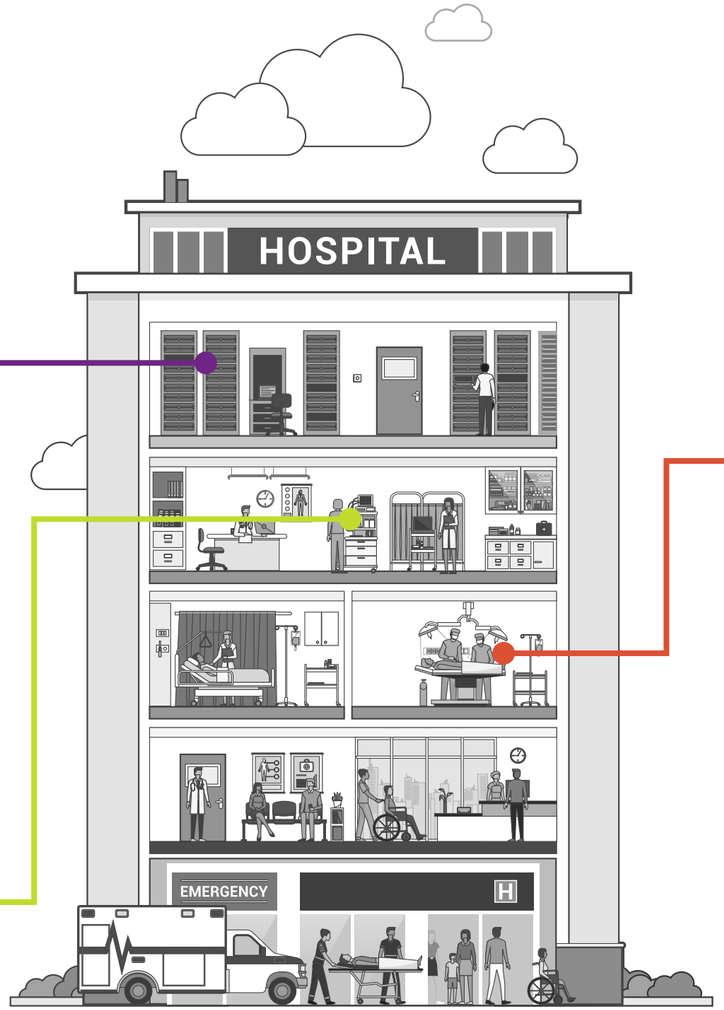
How Dell future-ready HPC genomic solutions work

Reduce costs and speed time to results

With the core compute residing in a converged architecture, Dell HPC System for Genomics is highly dense, so it occupies a smaller space in the data center. With this solution you have the option to only pay for what you need. Customers can choose small, medium or large configurations so they increase utilization and ROI. Because Dell HPC System for Genomics is pre-tuned, researchers can begin to use it right away, rather than spending precious time configuring and testing settings.

Improve reliability and flexibility

Dell HPC System for Genomics has been configured to provide high availability, reliability and flexibility. Dell ProSupport can quickly resolve questions or issues with any component of the solution.



New data sources for clinical decision-making

The Dell HPC System for Genomics speeds up genomic processing while using less energy. This solution can process up to 163 genomes per day while consuming 2 kilowatt-hours per genome while accelerating data transfers.

To accelerate lifesaving diagnostics and therapies

Dell high-performance computing (HPC) solutions for faster genomic investigations and targeted precision-medicine treatments

The Challenge

Genomics is a life-sciences discipline that combines DNA-sequencing methods with bioinformatics to analyze the complete set of DNA — the genome — inside a single cell of an organism. Mapping the human genome assists in developing advanced gene therapies and disease interventions, especially an emerging approach called precision medicine.

Precision medicine, an initiative backed by the U.S. National Institutes of Health, targets an individual's therapeutic needs by taking into account that person's distinct variability in genes, lifestyle and environment. Physicians use extremely sophisticated testing to determine the optimal therapy for a patient's particular disease, employing such tools as molecular diagnostics, imaging and data analytics software.

To conduct this testing in a timely manner, powerful computers are needed. Every human has 23 chromosome pairs, and just one of those can have almost 250 million base pairs, two nucleobases bound together by hydrogen. This can result in more than 4 million genetic variations for just that one chromosome. That's a lot of data to sift through in order to derive an individual's genomic profile.

If precision medicine using these diagnostics is to help clinicians fight disease, highly detailed and specifically prescribed treatments require the parallel-processing power of HPC computing.

The Dell Solution

Dell incorporates fast yet highly cost-effective Intel®-based PowerEdge servers, storage and networking equipment for our HPC solution.

Several years ago, the first HPC clusters were accomplished by "supercomputers." These enormously expensive machines were purpose-built with massive parallel-processing architectures using tens of thousands of processors. Since then, computer engineers realized that they could achieve the same magnitudes of parallel processing and then scale that even further, using commercially available servers, storage and networking equipment. Dell and Intel pride themselves on being among the industry's best solution due to price performance, energy efficiency and rack density.

The Dell HPC System for Genomics, powered by Intel®, is designed as a plug-and-play, turnkey solution that comes pre-tuned and ready to operate. This enables medical researchers to spend more time working on genomic sequencing instead of dealing with the computer science aspects of running HPC clusters, including deployment and maintenance. By getting more sequencing done, they can achieve their results much faster, accelerating lifesaving, precision-medicine therapies.

The Dell HPC System for Genomics features the most advanced multicore Intel® processors available and can support configurations as small as 4 nodes per rack and up to 40 nodes per rack. For interconnecting the nodes in a cluster, the Dell HPC system can use 10GbE or fibre switches, as well as InfiniBand high-speed interconnects. Plus, it minimizes the amount of I/O operations by loading more data in memory during processing.

With the core parallel-processing computing power residing in a converged architecture, the system is highly dense, so it occupies less space in the data center. And by using less energy, it saves on power and cooling costs. Its modular components also enable customers to choose small, medium or large configurations, so they increase utilization and ROI.

The system supports cloud-style services, too. This means that if medical researchers want to take advantage of the faster performance of an onsite HPC system but lack available IT staff, they can engage Dell Remote Services to manage it for them.

Dell will continue working with Intel® R&D and product management to ensure that we're always providing scientists working in life sciences and medical research the most future-ready HPC platform available for genomics investigations anywhere in the world.

Neuroblastoma and medulloblastoma research uses HPC to develop precision-medicine treatments for young cancer patients

Each year thousands of children are diagnosed with cancer. Organizations such as the Neuroblastoma and Medulloblastoma Translational Research Consortium (NMTRC) are working to improve outcomes for these children, most under six years old. Assisted by geneticists from Translational Genomics Research Institute (TGen), NMTRC pediatric oncologists conducted their research using extremely powerful parallel-processing capabilities of a future-ready HPC cluster consisting of Dell servers, storage and networking equipment, with powerful Intel® multi-core processors. Their efforts have led to the creation of more effective, personalized treatments developed using insights from each child's genome. The time needed to conduct the genetic sequencing of children's biopsies has been reduced by days. The treatments have helped stop the cancer progression in 60 percent of patients, and today many are in complete remission, able to resume their childhoods.

"We've gone from treating every child exactly the same way to being able to develop individualized therapies. We're now able to stop the progression of cancer in 60 percent of our patients, and today some are cancer-free."

— Dr. Giselle Sholler, Chair of the NMTRC and Director of the Pediatric Oncology Research Program at Helen DeVos Children's Hospital, United States

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Read more at: https://www.dell.com/en-us/work/learn/assets/corporate~case-studies~en/documents~2015-nmtrc-10022460-big-data-processing-medical-science.pdf

How Dell future-ready security and data governance solutions work

Keep threats out, let workers in

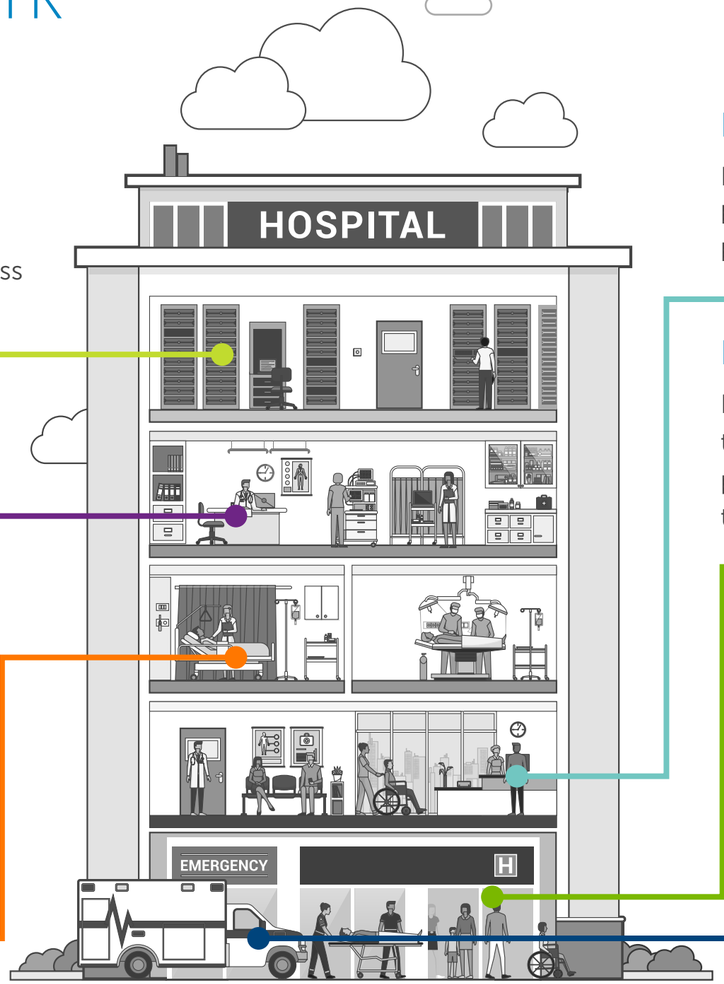
SonicWALL Next-Gen firewalls provide better security effectiveness and application control without compromising performance.

Mitigate endpoint risk

Dell future-ready solutions for endpoint security deliver a comprehensive, proactive approach to data security, with advanced malware prevention and a data-centric, policy-based based approach to encryption.

Simplify identity and access management

Dell One Identity and Access Management solutions simplify the process of giving employees the right access to business-critical information, handling identity management and access governance.



Back up and archive data automatically

Dell Data backup and archiving enable disaster recovery and business continuity solutions in the event of a data loss caused by system outage, failure or security threats like ransomware.

Reduce user and device management chores

Dell Client Cloud Manager delivers a fully managed service to centrally manage and secure endpoints. It also delivers proactive reporting and support that allows organizations to adopt a secure BYOD strategy.

Enable secure access anywhere, anytime and over any device

Dell secure mobile access and multifactor authentication solutions enable secure access to mission-critical resources from virtually any endpoint while keeping personal health information (PHI) HIPAA-compliant.

To ensure data security and regulatory compliance

Dell Security and Governance solutions for protecting against evolving threats, while safeguarding PHI data and compliance with HIPAA/HITECH regulations

The Challenge

Healthcare continues to be one of the world's most targeted industries by hackers.[3] It accounts for more than a third of all data breaches, more than the banking and credit industry.[4]

Breaches can be disruptive and costly, with settlements in the millions and lasting damage to healthcare providers' brand reputations. Non-compliance with HIPAA/HITECH regulations can generate hefty fines, too.

Hacked personal health information (PHI) data is lucrative. It can be worth up to 10 times more than credit card numbers on the black market and can be used to commit identity theft and fraudulent medical claims.[5]

Worse, ransomware is a fast-growing threat to healthcare organizations. As an insidious spin on Trojan-horse malware, it can infect user devices, not only disabling them but also demanding payment to unlock their encrypted data. It also illustrates an increasingly sophisticated cyberthreat environment with multiple actors and techniques. Keeping up with those threats — and ensuring HIPAA-HITECH compliance — can be hard for overworked healthcare IT staffs.

The Dell Solution

With a comprehensive portfolio of security products and services, Dell helps healthcare organizations worldwide deploy multilayered, defense-in-depth cybersecurity models.

- **Networks safeguards.** SonicWALL provides a complete range of next-generation firewalls, VPN and email security solutions that can perform deep-packet inspections of all bidirectional network traffic — without imposing a network performance burden.

  Easy to manage and update with the latest policies and signatures, SonicWALL firewalls deliver better security effectiveness, faster performance and more price-to-performance value than competitive alternatives. In fact, Dell was one of only three vendors to earn a Recommended rating in 2016 NSS Labs Next-Generation Firewall Security Value Map for four years in a row.

- **Data and endpoint security.** Dell helps healthcare providers protect PHI in accordance with HIPAA and HITECH on an ever-growing number of endpoints. With the proliferation of BYOD among users, patients and visitors and the increasing numbers of medical devices and sensors, there is a growing risk of data breaches.

  Dell endpoint security solutions encrypt PHI on endpoints, while also providing advanced malware protection to keep out the most sophisticated malware, including ransomware.

- **Identity and access management:** Dell One Identity solutions help simplify the complexities and time-consuming processes that are often required to govern identities, manage privileged accounts and control user access. It automates account creation, assigns access, streamlines ongoing administration, and unifies identities, passwords and directories.

  At the same time, our Dell One Identity solutions help ensure that all users can get to the resources they need to do their jobs from any location and from any device in a convenient, secure and fully compliant manner. Examples include:

- Role-based access to PHI
- Context-aware and multifactor authentication with single sign-on for clinical portals
- Identity and data governance as per HIPAA, PCI and other regulatory mandates

- **Managed services.** Most healthcare organizations lack the IT staff resources to adequately address all the cybersecurity threats they face, not to mention responding to incidents and mitigating breaches if they occur.

  That's why Dell also provides a full portfolio of managed security services, risk consulting, incident response and threat intelligence services from SecureWorks, a Dell company.

  No other technology supplier offers such comprehensive security services. For example, our managed intrusion detection and protection services are backed 24x7 by security experts working in SecureWorks Counter Threat Operations Centers around the globe. SecureWorks is a leader in the Gartner magic quadrant for managed security services. Its Counter Threat Platform, processes more than 132 billion events a day looking for security threats. Customers get immediate alerts by email or phone if an incident occurs — along with recommended actions, if needed.

Green Clinic Health System keeps its EMR secure, manageable and HIPAA-compliant

Green Clinic deployed a future-ready Dell virtual desktop infrastructure and Dell Wyse thin clients, plus new desktop and laptop PCs, linked to a new electronic health records (EHR) system. It then wanted to better manage those endpoints, while keeping them secure and HIPAA/HITECH-compliant. Dell KACE systems management and deployment appliances were chosen to help IT staff keep up with security upgrades and patches. By automating device deployment and updates, the IT staff saves 20 hours a week on desktop management, freeing time to enhance patient-facing services. To enhance security, the clinic also deployed SonicWALL firewalls, which have helped to streamline HIPAA compliance. It also uses the SecureWorks Managed Intrusion Prevention System, which alerts IT staff if the firewall is attacked and supports detailed reporting on potential security threats in compliance with HIPAA.

"HIPAA requires the same level of management for remote and on-site workstations, and this is exactly what the KACE appliances provide."

— Jason Thomas, CIO and IT Director, Green Clinic, United States

Read more at: http://www.dell.com/learn/us/en/uscorp1/corporate~case-studies~en/documents~2016-green-clinic-10022727-emr-security-management.pdf

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Put future-ready Dell healthcare solutions to work for you

With dedicated Dell healthcare specialists, we have been empowering healthcare professionals and patients, connecting clinical communities and providing solutions that have enabled improvements in care delivery.

We believe that better information drives better healthcare. To this end and working with our partner Intel, we provide healthcare technology solutions that help to drive efficiency, maximize productivity and deliver information securely to the point of care.

Let's work together to make you future ready today.

> Contact your Dell representative today.

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