

Case Study: Achieving medical device connectivity across a multi-hospital enterprise



New Jersey-based Virtua partnered with Bernoulli to deliver enterprise-wide medical device integration and connectivity using the standards-based, open architecture Bernoulli One™.

Bernoulli®



As one of New Jersey's largest, non-profit health systems, Virtua provides comprehensive health care services at its hospitals, ambulatory surgery, urgent care, long-term care and rehabilitation centers, health and wellness facilities, home health services, and paramedic program. Virtua has been named the #1 Best Place to Work in the Delaware Valley every year since 2007, and is the recipient of multiple regional and national awards and recognition for its quality of care and commitment to patient safety.

Known as an early adopter of clinical and digital technologies, Virtua partnered with Bernoulli on a multi-phase, enterprise-wide medical device connectivity and interoperability project utilizing the company's standards-based, open architecture Bernoulli One™ system. The solution is uniquely designed to provide device connectivity and integration across complex healthcare ecosystems, powered by an integrated, scalable, secure, and cost-effective web-based platform. The goals of the project included:

- Provide connectivity to Virtua' perioperative system
- Allow clinicians to focus on patient care with an easy plug-and-play medical device connectivity solution
- Establish a connectivity paradigm across departments and modalities
- Move Virtua closer to a fully electronic and paperless environment

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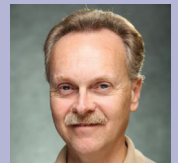
Establish a connectivity paradigm across departments and modalities

Move Virtua closer to a fully electronic and paperless environment

The Challenge

Like many innovative hospitals and health systems, Virtua's need for a medical device connectivity partner grew, in part, to free clinicians from writing out hundreds of patient data numbers from scores of different devices and machines every day in the course of care delivery.

"We wanted to free up our clinicians to afford more time with the patient and less on manual documentation," said Tom Decker, Virtua's System Integration Architect.



As the health system considered a solution, Virtua's leadership noted that the different systems in different departments, such as the OR, Med-Surg units, and the Emergency Department, needed to work together.

"We wanted to have a connectivity paradigm that was uniform across all those different modalities. We wanted a solution that looked the same, felt the same, and offered the same experience for clinicians in any department," said Decker.

To meet those requirements—and avoid burdening clinicians with a technically complex system—Virtua sought a plug-and-play solution that didn't come with too many technical requirements in order to work. Because Virtua did not have device connectivity prior to partnering with Bernoulli, "simple" was the operative word for front-end use.

"We wanted to be able to wheel in the device, plug it in and get to work," Decker explained. "Other vendors had issues with this—their equipment required clinicians to plug into certain ports, based on device type, in order to achieve connectivity."

Finally, as an Epic customer, Virtua also wanted a vendor partner with experience developing interfaces with the electronic medical record system.

The Solution

Bernoulli *One*[™] is uniquely designed to provide device connectivity and integration across complex healthcare ecosystems, powered by an integrated, scalable, secure, and cost-effective web-based platform. As a result, current and complete medical data are available at all times so that doctors can make the best clinical decisions for the patient.

In addition, the plug-and-play simplicity of the system means clinicians focus their attention on the patient, rather than the technical requirements of various medical devices.

“We see medical device integration as a critical feature in our clinical information systems to automate clinician workflow and provide accurate, real time device data for clinical decisions,” Decker said. “Bernoulli’s solution is flexible enough to support different clinical workflow and devices in various care areas. It’s also easy to scale up to accommodate future growth and demand.”

Bernoulli’s vectored event grid architecture enables true interoperability across disparate devices, networks, and systems by utilizing dynamically programmable intelligent appliances at the network edge. The system’s granular level of patient data detail, in real-time, at the point of care for improved decision support applications while also providing flexibility for user-defined configuration and control for device connectivity, monitoring and management, resulting in better allocation of personnel resources and reduced support costs.

Unique Benefits Bernoulli *One*[™]

Bernoulli *One*’s platform delivers on its promise of accurate, real-time patient data, anytime, anywhere, because it is the only system that delivers these five unique benefits:

1. Best patient care outcomes with real-time synchronized patient data that are available wherever the patient is, and wherever the clinician is, on multiple platforms like workstations, tablets or smartphones.
2. Lowest overall cost of ownership, with a single system management controller that does not require expensive add-ons as the hospital expands connectivity.
3. Maximum reliability, with plug and play connectivity supporting the automatic identification patient care devices of any make and model, and a dashboard providing technicians with real-time monitoring and alerts so they can remotely address issues before the clinician realizes that a problem exists.
4. Highest level of patient data security and privacy, with data encrypted from the point of capture and throughout the transmission and data access protected by authentication.
5. An medical device integration platform integrated with rules and post-processing that enables creating new information, notifications, analysis and reports from the discrete data collected from the bedside.

Results

Phase I of the integration began in Virtua's Perioperative Department, which includes Endoscopy, ECT, and Interventional Radiology, as well as any additional areas that utilized general anesthesia or conscious sedation.

The ability of clinicians to document electronically has been among the most significant results of the implementation so far, allowing clinicians to devote their time facing the patient and meeting their care needs.

Phase II focusing on Virtua's Critical Care Units, which includes the ICU and NICU/PICU, will be implemented in 2017.

Summary

Virtua sought a medical device connectivity solution that was simple for clinicians to use and was flexible enough to meet the needs of the health system now and in the future.

"Our partnership with Bernoulli allowed us to support the distributed device data collection and integration demands as defined in our vision of a totally digital healthcare system environment," Decker said. "The systems addresses the device connectivity and patient authentication requirements we identified at the outset of this multi-year and multi-departmental project."

Achieving medical device connectivity enables access to real-time, synchronized patient data available anytime and anywhere, automation, and connectivity among myriad devices across an enterprise.

With the Bernoulli One system, Bernoulli and Virtua were able to begin developing, deploying, and implementing medical device connectivity within critical areas of the health system. Bernoulli One's flexible and scalable architecture ensures that Virtua will be able to manage multiple devices from multiple vendors, eliminate paper documentation, and allow clinical staff to focus on the patient and not on equipment.

Bernoulli[®]



About Bernoulli

Bernoulli is the leader in real-time solutions for patient safety, with more than 1,200 installed, operational systems. Bernoulli One™ is the market's only real-time, connected healthcare platform that combines comprehensive and vendor-neutral medical device integration with powerful middleware, clinical surveillance, telemedicine/virtual ICU, advanced alarm management, predictive analytics and robust distribution capabilities into ONE solution that empowers clinicians with tools to drive better patient safety, clinical outcomes, patient experience, and provider workflow.

For more information about Bernoulli One™ visit www.bernoullihealth.com