



## Journey of a Five-Year Partnership



Kootenai Health is a healthcare provider located in Coeur d'Alene, Idaho that provides medical services to patients throughout the region. The organization's 254-bed hospital and over 30 outpatient clinics recently underwent a major expansion.

### The challenge: a hospital-wide IT overhaul

Kootenai engaged in a fundamental restructuring of every aspect of its IT ecosystem. The healthcare provider had been saddled with outdated technology that wasn't suited to meet its current needs or its future ambitions. Among the shortcomings were an inadequate email solution, a disorganized networking system, an inefficient and outdated data center and a faulty and poorly-performing electronic healthcare (EHR) solution.

To tackle this complex challenge, Kootenai partnered with IT consulting and management advisory services firm T2 Tech Group.

"Kootenai Health chose T2 Tech Group to assist with the development of our IT infrastructure because T2 Tech has a broad range of technical expertise and a demonstrated track record of delivering on-time projects and well negotiated deals. They were a critical partner in assisting our IT staff in developing a high-volume, redundant network; an enterprise-class, redundant virtual desktop and server environment; and an enterprise-class, redundant data storage environment. Within the first 18 months their efforts helped Kootenai Health achieve >99.9% network uptime, a >90% server virtualization and a >99.9% system uptime."

– Michael Gaul, Chief Information Officer, Kootenai Health

### IT TRANSFORMATION

Over a period of nearly five years, Kootenai Health and T2 Tech Group managed to transform Kootenai's IT infrastructure from a dated liability into a cutting-edge asset.

### DATA CENTER MANAGEMENT

Kootenai Health was able to consolidate its data center and adopted a virtual environment where a single piece of hardware hosted multiple apps. This allowed the removal of a large amount of hardware to reduce the number of rows of racks in the data center by a third.

### VDI AND SSO

T2 Tech managed a roll out of secured VDI and SSO to support 2,000 hospital employees. Estimated time savings from this initiative were approximately 30 minutes per shift for nurses and 10 minutes per day for physicians.

### EHR MIGRATION

Kootenai Health gained control of its crucial EHR system by bringing it in house. The completed migration work has prevented further data loss and system downtime, creating an environment with significantly improved system uptime (>99.9%) and user experience (20s response times down to 3s).

## T2 Tech gives Kootenai the works

To support the IT renewal project, T2 Tech brought to bear its complete portfolio of capabilities, addressing every aspect of Kootenai's technology lineup to rebuild its entire ecosystem. After nearly five years of effort, T2 Tech recently helped the hospital's IT team complete the major objectives of the Kootenai project, while work continues on other tasks.

## Establishing a strong staffing solution

After assessing critical needs and to form a collaborative partnership, T2 Tech and Kootenai came together to develop project processes and staffing needs. As Kootenai embarked on new IT initiatives, T2 Tech helped Kootenai recruit, interview and retain a strong IT team to work with T2 Tech's subject matter experts, engineers and project managers. Through this collaboration, Kootenai grew from 16 IT staff members to a healthy and sustainable workforce of 110 personnel. The team that was built, worked together using T2 Tech's unique project management methodology to not only execute on the projects but also develop the processes and tools to maintain the systems in the future.

## Getting up-to-date on email

The project kicked off with the migration of Kootenai's email to a system more suited for mission-critical communication within an enterprise. Kootenai had been using an outdated version of Zimbra for email communications. T2 Tech managed Kootenai's transition to Microsoft Exchange, which offers advanced features as well as superior reliability, ease of use, unified communications integration and email archiving. In parallel, T2 Tech addressed Kootenai's fragmented directory service, replacing multiple forests with a single hospital-wide domain based on Microsoft's Active Directory service.

## A storage substitution scheme

The next task for T2 Tech was working with the Kootenai's IT team to replace the hospital's storage, which was outdated and lacked required redundancy to ensure essential data integrity. T2 Tech oversaw the installation of a new storage system, working with Kootenai staff members to select hardware specifically suited to the hospital's requirements.

## Untangling the network

Next on the list was a complete revamping of Kootenai's network infrastructure. T2 Tech worked with the Kootenai team to rewire the network closets to become more organized and easy to maintain. Over time, Kootenai had organically established multiple network closets for each floor of the hospital.

The team was able to create a strategy to simplify and consolidate the network equipment so it occupied just one closet per floor. Furthermore, T2 Tech introduced new switches, managing the procurement of hardware and securing a significant discount from the supplier.

## Virtualization delivers real benefits

With the network instability issues resolved, T2 Tech turned its attention to Kootenai's data center, which suffered from cooling issues and inefficient usage of hardware. T2 Tech assisted Kootenai's team with consolidating the hospital's data center, adopting a virtual environment where a single piece of hardware can host multiple apps. This allowed the removal of a large amount of hardware from the data center. This project was able to reduce the number of rows of racks in the data center from three to two. This increased the physical density of the data center and enabled more efficient cooling by using a hot-aisle-containment system that diverts hot exhaust to the air conditioning return.

## Where the desktops roam

Following the reshaping of the data center, the integrated team implemented a virtual desktop infrastructure (VDI) and integrated single sign-on (SSO) system. The VDI solution allows users to access their desktops from any computing device, including low-cost zero clients, effectively allowing the users' desktops to roam and follow them wherever they are needed. Kootenai's existing computing solutions required users to enter their user names and passwords for each application. Instead, T2 Tech created multiple app profiles using an enterprise SSO system, allowing users access to every piece of software on their system with just one log-in.

## The return of the EHR

The next stage of the project involved the hospital's crucial EHR system. Kootenai had outsourced the hosting of its Meditech EHR to a third party, but had encountered problems, including data loss and system downtimes. Having made the decision to bring control of the EHR in-house, the hospital worked with T2 Tech to manage the migration. They identified the right storage and computing technologies to host the Meditech system and developed a method to extract the data and synch it with the hospital data center.

## Focusing on patient care

With the major infrastructure and EHR pieces in place, the two organizations worked together to establish an interactive patient care solution that included an interactive auto-updating careboard, patient-specific education, room service, feedback and entertainment. Kootenai and T2 Tech also deployed a

bed-management system that optimizes patient flow, resulting in improvements in efficiency and quality of care for patients.

## IT support notification

Alongside the other stages of the project, T2 Tech developed a unique innovation, called Project Hollywood, for Kootenai. Project Hollywood is a visual IT notification system that aggregates system alerts and quickly focuses support resources on critical technology issues. It employs an algorithm that actively parses system alerts to provide a visible system status using an ambient LED lighting system. The unmistakable cues of the lighting system effectively alert IT support teams of issues that need immediate attention in order to facilitate timely response and resolution.

## Reaping the benefits

The wholesale upgrade of Kootenai's IT infrastructure is yielding widespread improvements in hospital costs, efficiency and patient care.

For example, the VDI and SSO systems can save nurses nearly 30 minutes per day, while sparing doctors on average 10 minutes daily. These savings quickly add up, with the hospital estimating a \$1.7 million in indirect annual productivity savings from workflow improvements.

Working side-by-side for a period of nearly five years, Kootenai Health and T2 Tech Group managed to transform the healthcare provider's IT infrastructure from an outdated liability into a cutting-edge asset. The project serves as a model for how medical providers across the country and around the world can reshape their technology systems.

---

## ABOUT T2 TECH GROUP

T2 Tech Group specializes in tackling difficult technology challenges and transforming IT liabilities into valuable assets for clients in a range of industries. Since its founding in 2006, T2 Tech has built a reputation for delivering high-quality technology consulting and management advisory services to executives and IT leaders in a range of industries. Unlike many consulting firms, T2 Tech has no financial interest in vendor selection, freeing the company to focus completely on realizing customer goals. At T2 Tech, we advocate for our clients; approach each project with no bias; and practice the highest levels of integrity, experience and expertise. For more information about T2 Tech Group, visit [t2techgroup.com](http://t2techgroup.com) and connect with us on Twitter @T2TechGroup.