

CASE STUDY

Carilion Clinic Improving patient service through enhanced EMR document delivery

A large regional healthcare provider needed a simple yet reliable way to manage critical documents from its new electronic medical records (EMR) system. Working together, the hospital, their EMR software vendor, and LRS created a highly automated single point of control for assured healthcare document delivery.



ORGANIZATION

Roanoke, Virginia-based Carilion Clinic (Carilion) is a large not-for-profit health care organization. Encompassing eight hospitals in the western part of Virginia, Carilion is the area's largest employer and has been providing healthcare in the region for more than a century. Its 12,000 employees deliver on the organization's mission to improve the health of the communities it serves.

Carilion's healthcare vision is a future in which hospitals and physicians work together, completely focused on patient care. To this end, the organization has made a commitment to developing systems that ensure fast, accurate, and secure processing of patient information. Not surprisingly, some of the most important information exists in the form of electronic and hardcopy documents.

CENTRALIZE, STANDARDIZE, OPTIMIZE

Over the years, Carilion had implemented a multitude of business and medical information systems on a variety of computing platforms. However, in 2007, Carilion took a major step in moving away from these separate best-of-breed systems and toward a single integrated electronic medical records (EMR) system.

Using products from Wisconsin-based EMR software provider Epic Systems Corporation (Epic), IT staff at Carilion started building a highly integrated environment designed to improve care and increase hospital efficiency.

"Historically, we have had various business and medical applications running on Linux, UNIX, Windows, and on a mainframe," says Mahesh Tailor, Manager of Technical Services at Carilion. "In addition to the positive patient and business benefits of the new EMR system, this consolidation should also make the overall IT environment easier to manage."

However, Carilion knew that the system would not be effective without a way to get critical information to the right person at the right time... in the right form.

THE ROLE OF HEALTHCARE DOCUMENTS

EMR systems can automate many paper-intensive processes – especially those involving handwritten notes, prescriptions, and other medical documents. But while tablet computers and PCs are slowly replacing clipboards and paper charts, many documents still need to be printed.

For example, a patient is admitted at a clinic with sharp pains in his lower back. After ruling out more serious possibilities, the physician diagnoses the patient with a lumbar sprain. The patient receives a prescription for muscle relaxants and is instructed to perform a series of daily stretching exercises before following up with a physical therapist.

In the end, the patient leaves the hospital with a variety of documents. These include an illustrated set of stretching instructions, a receipt for the patient's insurance co-payment, a referral to an independent physical therapist, and a prescription form printed on special tamper-proof paper. All of these are generated by the various modules of a single EMR system.

"ISLANDS OF PRINTING"

In Carilion's legacy environment, however, generating and delivering these documents was not quite as straightforward:

"We had all these islands of print – individual machines printing directly to printers, UNIX servers printing through HP JetDirect hardware, applications that ran scripts to massage data and submit it to the mainframe... it was a free for all," says Tailor. Every minute spent waiting on a document was a minute wasted for both clinician and patient, as well as the next patient waiting to be treated.

To obtain maximum benefits from the new Epic EMR system, Carilion knew they needed a single point of control to ensure reliable delivery of medical



Carilion Roanoke Memorial Hospital

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documents. After thoroughly surveying the market, they chose to implement VPSX® output management software by Levi, Ray & Shoup, Inc. (LRS).

INTEGRATING THE VPSX AND EPIC SOLUTIONS

In the end, Carilion decided to run the software in the Windows environment administered by Jed Krisch, Manager of Technical Services.

"Epic software generates output in two different formats," says Krisch. "The first is basic text, which is used for reports and other backend printing. However, most of the documents that relate to an individual patient's care are generated in a proprietary Epic format called ERTF, which is not directly supported by print devices."

These specially-formatted documents often contain graphical overlays or other formatting, along with information about the file. Working together, engineers at Epic Systems and LRS developed a way for VPSX software to interface with the Epic Print System (EPS) component in order to correctly format and route any document to the appropriate destination.

"In complex environments like ours, VPSX provides far more functionality and control than the basic EPS system," says Krisch.

REAL-WORLD VPSX BENEFITS

Tailor and Krisch's teams have one mission: provide superior service to their internal clients who deal directly with patients. LRS output management software supports this mission in several important ways.

When clinicians encounter a problem printing a patient document, Carilion help desk staff now have a single resource to locate the print job and quickly re-route it to an alternate device. Using VPSX software, this process takes seconds instead of five minutes or more. Likewise, if a patient or doctor requires a duplicate copy of any document, reprints are just a phone call away.

Many healthcare documents contain sensitive patient information that is subject to privacy regulations. LRS software can prevent such documents from being sent automatically to an unattended printer until a user enters a PIN code or otherwise verifies his or her identity. "These days, you have to be careful. If a confidential medical document is sitting in an output tray and the wrong person reads it, that can be a major problem," says Mahesh Tailor.

LOOKING FORWARD

Carilion's current environment supports 900 printers, a number that will more than double in coming years. However, the hospital's VPSX-based output strategy leaves it well positioned to handle the ever-increasing information demands of its users.

Carilion Clinic sees information technology as an asset that can increase service levels to their patients. Output management solutions from LRS help Carilion deliver on this promise.

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