PRN Telemedicine

The PRN telemedicine solution is a hybrid active-active/store-forward system, meeting the demands of today's modern telemedicine platforms.

The PRN telemedicine solution improves on the traditional techniques of store-forward systems, by adding an "active-active" communication system that preserves the integrity of patient care across the store-forward boundary.

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The PRN telemedicine solution is designed specifically for the user's active participation in a collaborative telemedicine platform. Traditional store-forward systems lack this basic interactive responsiveness, interpretation services, security and the auditing required of today's systems. These traditional systems have historically been created, by device manufactures as a way to sell more devices, or by medical imaging technology companies trying to extend the life of older systems by bolting on web services and deploying the old, non-scalable systems to the cloud. PRN is purposely built for telemedicine and cloud computing. PRN is also device agnostic and works seamlessly with many of todays modern medical devices.

Traditional Store-Forward

Traditional store/forward systems gather or collect information in one location and send it to another location or other intermediate destination for later processing. Later processing would include the capability for a user to access the sent information, and operate on it. The later processing is meant to occur asynchronously from all other activity, and there is no inherent requirement for any acknowledgment nor guarantee that the later processing will/did take place. Additionally, this technique does not require the sender to be notified if/when the receiver has operated on the data, nor do these systems maintain a current processing status.

The Active-Active Advantage

The PRN solution further enhances the traditional store-forward system with an active-active communication system. This system wraps the underlying transmission mechanism with an active sending and an active receiving requirement, hence the term active-active. This active-active system adds guaranteed delivery mechanisms, real-time eventing, publish and subscribe messaging, fault tolerant connections and highly available connections, to form a complete telemedicine platform. This hybrid solution is much more responsive to events occurring in the network. All transactions in the system have an assigned priority, such as routine, ASAP and STAT, with their associated response time. The response times are tracked and available for use in quality measures. All receivers have the ability to set their availability states indicating to senders the ability to process sent transactions in an agreed to response time. Changes in these states are published and updated in real time. Users of the system are notified, via text or email, of system events, like process status changes and transaction completed notifications. All steps in the processing of a transaction are monitored, and state change events generated in real-time.

The Store-Forward "boundary"

The store-forward boundary is defined as the boundary in time and space that naturally occurs because the sender is "sending and forgetting", and the receiver "receives silently". This boundary can result in patient care delays or drops because neither side really knows what the state of processing is for a given transaction. It happens because both the sender and receiver are decoupled, and act independently with no overarching governance of the transaction.

Closing the Store-Forward "boundary"

To close the store-forward boundary, the PRN solution relies on its active-active components to drive a workflow process by and between the sender and receiver. This workflow is integral to the system, and the system relays current state information, in the form of real-time events, to the sender and receiver. The workflow uses these real-time events to drive state changes in the flow, moving the current state to the next step in the process. The sender and receiver always know what the current state of the process is, and therefore it is easy to determine which side is responsible for processing the transaction. Both sides can monitor the transactional processing as it continues to completion, preserving the integrity of patient care.

PRN – Built for purpose

The PRN solution has been designed by the main stakeholders in telemedicine, specifically primary care providers, specialists, office administrators and billing specialists. It is purposely built for telemedicine, utilizing highly available and scalable cloud services for computing and storage. From a software perspective, the PRN solution was designed and built from the ground up by highly experienced IT professionals with many years of experience in healthcare information technology and in critical systems design. The solution consists of all the latest web client technologies and frameworks, and uses web page responsive design for mobility. A full system of record (SOR) is also maintained for each transaction, and considered immutable once completed. The SOR ensures reproducibility at any time in the future for review of previous exams. Additionally, the SOR can serve as a proof of transaction processing for auditing, or litigation purposes.

A hybrid system for the future

We at PRN believe we have designed and developed a telemedicine platform for now and the future. It employs all the latest state of the art software engineering principles, like agile development. Using these approaches, the PRN solution is uniquely positioned to work in today's telemedicine world, and to seamlessly adapt to the challenges of the future.