In healthcare timing is everything.

This rings particularly true with network-connected devices monitoring patients—providing clinicians with critical insights into patient care. This was clearly the case for a large hospital experiencing abnormal behavior of different CARESCAPE medical devices throughout its facilities.

With over 1,500 GE medical devices, such as bedside monitors, telemetry servers, UPS, gateways and central stations, the hospital was experiencing sporadic and abnormal behavior of these systems on the network and needed to identify and isolate the problem.

The root cause of the issues was believed to be a network timing glitch. Fair enough, but proving it was another challenge altogether.

For GE CARESCAPE networks, all devices must have the same timestamp when data is transmitted to, in most cases, an EHR/EMR system.

### PROBLEMS
- CARESCAPE devices have different timestamps
- Critical patient data correlation is inaccurate
- Potential data compliance issues
- GE devices exhibit abnormal network behavior

### REQUIREMENTS
- Identify devices acting as time masters
- Baseline time master behavior in real time
- Alert staff to device timing issues
- Pinpoint root cause to abnormal device behavior

### RESULTS
- Automatic identification of the time master
- Real-time and historic time master tracking
- Eliminates reactive remediation
- Faster time to incident resolution
If the data, and associated timestamps don’t align, this causes serious discrepancies that potentially impact patient care and create compliance issues.

The timing problem can also negatively impact the device performance on the network as devices constantly try to sync timing with other devices.

WHAT TIME IS IT?

Within CARESCAPE networks, the concept of a time master is used to synchronize devices.

Using the GE unity protocol, GE medical devices broadcast information about themselves, such as the services they offer, the type of device they are, where they are located and if they are the time master.

A peer-to-peer time synchronization algorithm within the GE Unity protocol designates a single GE device as the time master. All other devices synchronize with this time master.

While all GE device participate in this procedure, the leader election process allows only one device at any given time to be the master. If there are multiple time masters at any given time, or if the time master is constantly changing, this creates big problems.

Finding and fixing them can an extremely complex and cumbersome activity of manually analyzing and correlating volumes of network data to figure out why devices don’t all have the same time.

Needed was a simple and automated way to monitor and manage this process using all the network traffic currently available.

BEFORE

The screen below shows how Voyance tracked the behavior of GE CARESCAPE devices, showing at different times multiple time masters active.

AFTER

Once identified and fixed, the Voyance screen above shows the proper assignment of only one time master active.
But no such solution existed to automatically identify what GE devices were time masters or provide an historic or real-time view of the time master election process.

This level of visibility needed to be provided in context with other device behavior across the network for staff to have a precise picture of what was really happening.

**ENTER VOYANCE BY NYANSA**

A purpose-built network analytics platform developed specifically for GE CARESCAPE environments, Voyance uniquely dissects the GE Unity protocol, surfacing insights such as time master status, behavior, telemetry waveform data and device network performance across the network – all within a single platform.

Voyance automatically develops an inventory of all GE CARESCAPE devices, uniquely identifying what CARESCAPE device is acting as the time master.

By constantly analyzing the GE Unity protocol and correlating this data with other network analytics, the hospital is now able to immediately see, and be altered to, if and when more than one GE device is acting as a time master. Moreover, the hospital is can quickly determine when such incidents happen with the ability to have all GE Unity data correlated to all other data analytics from other parts of the network. This is achieved with little to no human intervention.

For GE CARESCAPE customers, the timing is ideal to assure the highest levels of patient care and critical device performance with the newest AI-based technologies designed precisely for this purpose.

**ABOVE**

Voyance automatically creates an inventory of CARESCAPE devices, identifying which is currently the time master.