



CESO 2019

TROUBLESHOOTING

NETWORKING PROBLEMS/CASE STUDY

CT IMAGE TRANSFER TO ENITS

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CT IMAGE TRANSFER TO ENITS

- **The Emergency Neuro Image Transfer System (ENITS)**
- When a patient suffers a head trauma each second between injury and diagnosis is critical. Transferring head trauma patients can be very risky and can cause tremendous stress on their families. It also comes with significant costs to the health care system. Prior to ENITS, the majority of emergency head trauma cases were transferred either to a neurosurgical centre in Ontario or to a similar facility in the United States. The average cost of these out-of-country transfers is approximately \$100,000.
- The challenge was to improve access to expert neurosurgery care for patients across Ontario, regardless of their location.
- The Emergency Neuro Image Transfer System (ENITS) is a centralized web-based image archive that makes remote neuro consultations easier, faster and more accurate.
- Referring hospitals across the province can send emergency CT head scan images to ENITS where they are accessed and viewed, at any time, by on-call neurosurgeons from any of the province's 13 neurosurgical centres.

CT IMAGE TRANSFER TO ENITS

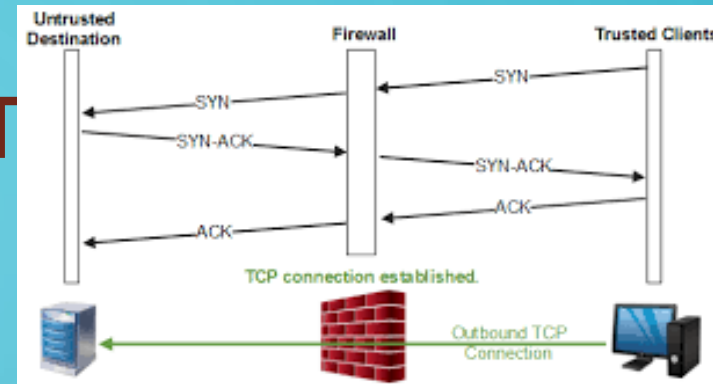
- **Configuration**
- CT Service sets up MSH ER CT with ENITS IP info (138.XX.XX.XX)
- MSH ER CT is setup with IP config (172.XX.XX.XX/AE title MSH_CT_X-XX-XX) and ENITS group is contacted to update CT IP on ENITS server
- MSH IT configures firewall for IP and Nat IP(10.XX.XX.XX)
 - A NAT (Network Address Translation) is the process where a network device, usually a firewall, assigns a public address to a computer inside a private network

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- Problem
- Mount Sinai ER CT scanner (SIEMENS Somatom Definition CT) cannot send patient images to ENITS server for diagnostic evaluation
 - Received error message "Remote node ENITS down or Network not available for sending" on CT scanner

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- Troubleshooting steps



https://campus.barracuda.com/resources/attachments/image/41115743/10/FW_TCP_Accept_Policy_outbound.png

- CT Service ran traceroute from CT to ENITS to check route packets between the two connections. This showed that the connection to ENITS server was not being made.
- CT Service contacted MSH IT-confirmed IP configuration
- CT Service contacted ENITS group and confirmed correct IP setup
- ENITS group confirmed that ENITS/eHEALTH firewalls were configured correctly
- ENITS group ran Sniffer packet capture and found inbound packets from CT were receiving SYN signal OK but the ENITS SYN-ACK signal was not connecting
 - TCP knows whether the network TCP socket connection is opening, synchronizing, established by using the SYNchronize and ACKnowledge message when establishing a network TCP socket connection.

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- Problem Resolution
- CT Service contacted MSH IT with packet capture results and MSH IT reconfigured firewall SYN-ACK connectivity from ENITS server
- CT Service sends CT images successfully from MSH ER CT to ENITS server and receives the message "send successful to ENITS"



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