Lightning Talk Submission

Title
TSX: Stable, long-term analysis of performance metrics

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Bio
Jamie has worked in the network research community for over 12 years as a senior member of the WAND network research group at the University of Waikato. During his time inside the WAND group Jamie specialised in both active and passive network measurement research. Jamie was also involved in WAND's rural WiFi wireless research project, which continued though successful commercialisation as Lightwire Limited.

Jamie joined the REANNZ team in 2012 and now heads up the REANNZ technology strategy and architecture. Jamie is responsible for the REANNZ technology roadmap and ensuring these developments are focused towards areas that will best support the future requirements of our membership.

Keywords
Reporting, Performance, Time-Series, SNMP, Metrics

Description
Like many NREN's, REANNZ collects tens of thousands of performance and traffic metrics from across our network every minute. These metrics provide the basis on which REANNZ reports on our network to many parties – internally towards our engineering and management teams and outwardly towards our membership and our governance bodies. However, like all networks, the REANNZ network changes constantly. Devices are regularly added and removed. Ports on the network are connected, disconnected and change function continually.

TSX is an open-source software project built by REANNZ in the past year to untangle the mess of long-term collections of raw network metrics and provide a rich, structured and stable way to query our historical data store. Using TSX, REANNZ can now provide precise and accurate, high-resolution reports on high level concepts such as traffic destined to a specific member no matter where on the network, backbone traffic, traffic exiting a specific geographic region etc. The TSX query language is modeled on the Borgmon monitoring system from Google, querying label sets that change over time. A query could result in many slices of different raw metrics being pulled out over time, which are then assembled into a single output time-series. The output time-series can then be graphed, binned or have various statistics such as max, min, average, total volume etc calculated on the series.

This lightning talk will quickly explain why REANNZ needed to build TSX and follow on to examples of how we have used TSX and how others may be able to use it also.