WAN Dynamic Circuit Support at Fermilab

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Abstract:

Fermilab has been one of the earliest sites to deploy data circuits in production for wide-area high impact data movement. The US-CMS Tier-1 Center at Fermilab uses end-to-end (E2E) circuits to support data movement with the Tier-0 Center at CERN, as well as with all of the US-CMS Tier-2 sites. On average, 75% of the network traffic into and out of the Laboratory is carried on E2E circuits. These circuits can provide traffic isolation, and in many cases, guaranteed bandwidth levels. While circuit technologies and services are emerging on a number of fronts, of particular interest is the evolution of dynamic circuit support. The capability to establish a circuit when needed, and tear it down when that need has been satisfied, offers an obvious attraction for large-scale data movement of an irregular or bursty nature, such as in high energy physics. However, E2E circuit support comes at a cost, involving significant higher complexity and added support effort.

This presentation will discuss Fermilab's experiences with deploying and supporting E2E circuits, with an emphasis on dynamic circuits. The talk will cover the current state of dynamic circuit services within the research and education community, issues with monitoring E2E circuits, and difficulties with troubleshooting in a circuit environment. We will speculate on the future evolution of circuit services, discussing where the problems lie, and what needs to happen for wider deployment to occur.