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NOTED: a congestion driven network controller

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NOTED is an intelligent network controller that aims to improve the throughput of large data transfers in FTS (File Transfers Services), which is the service used to exchange data transfers between WLCG sites, to better exploit the available network resources. For a defined set of source and destination endpoints, NOTED retrieves the data from FTS to get the on-going data traffic and uses the CRIC (Computing Resource Information Catalog) database to get comprehensive understanding about the network topology. This feature, has been shown successful results during SC22 and SC23 conferences where, NOTED was executing actions when it detected congestion on a given link and dynamically reconfiguring the network topology by using an SDN (Software-defined Network) service. Recently, NOTED has been integrated with the CERN NMS (Network Monitoring System) to increase even more its capabilities and be driven by congestion. In this way, NOTED brings the capability to identify which WLCG sites are congesting the network, both in LHCOPN (Tier 0 to Tier 1's links) and LHCONE (Tier 1's to Tier 2's links) networks, and execute an action in the network to reconfigured it by adding capacity to the network. This new version of NOTED has been tested during SC23 and will be used at scale during DC24 (WCLG Data Challenge) in which the NREN's and WLCG sites performs the testing at 25% of rate that will be use by HL-LHC (High Luminosity LHC) to accomplish the requirements by 2029.

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