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Analysis of internal network requirements for the distributed Nordic Tier-1

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The Tier-1 facility operated by the Nordic DataGrid Facility (NDGF)
differs significantly from other Tier-1s in several aspects: It is not
located at one or a few locations but instead distributed throughout the
Nordic, it is not under the governance of a single organisation but
but is instead build from resources under the control of
a number of different national organisations.

Being physically distributed makes the design and implementation of
the networking infrastructure a challenge. NDGF has its own internal OPN
connecting the sites participating in the distributed Tier-1.

To assess the suitability of the network design and the capacity of the links, we present a
model of the internal bandwidth needs for the NDGF Tier-1 and its associated Tier-2 sites.
The model takes the different type of workloads into account and can handle different
kinds of data management strategies. It has already been used to
dimension the internal network structure of NDGF. We also compare the
model with real life data measurements.

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