

Use Case of Tidal Network

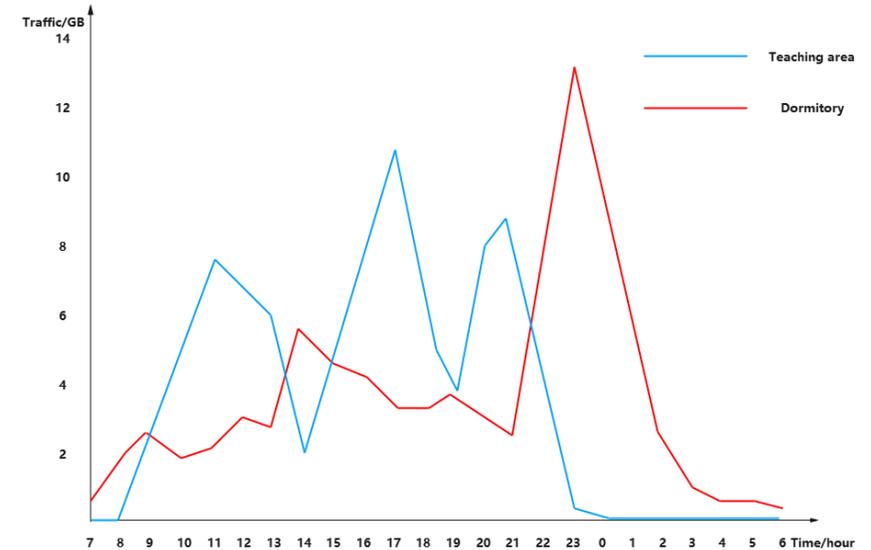
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Background

- Tidal Effect of Traffic.
 - Tidal effect of traffic in the campus network: Thousands of people go to the Teaching buildings, libraries and labs in the daytime and go to dormitory in the night.
 - Tidal effect of traffic in the Chinese New Year: More than 200 million people move from their work town to home town, and these people generate huge traffic on our network(such as watching the Spring Festival Gala, greetings via video, etc.).
- Energy saving of tidal traffic.
 - Although devices consume less energy at idle than busy, but the energy efficiency .
 - Shutting down some links or nodes is an effective mean to reduce energy consumption.

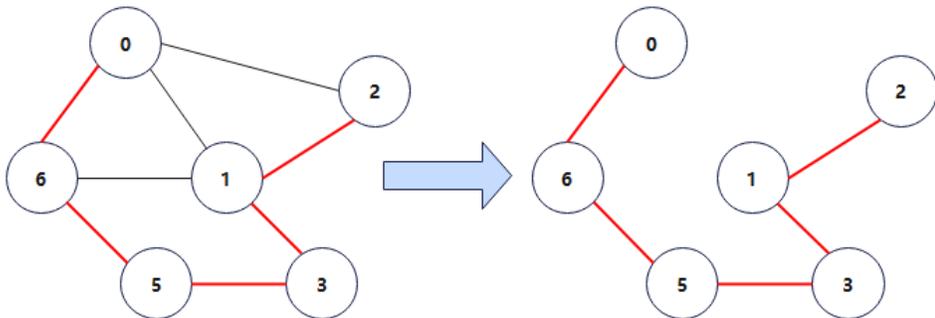


Tidal effect of traffic in campus network

Assumptions & Routing Impacts

Assumptions

- The regularity of tidal traffic is predictable
- An algorithm to calculate which nodes or links can be disabled or enabled under different traffic scales.

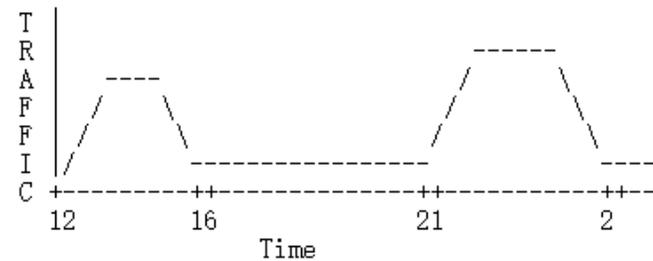
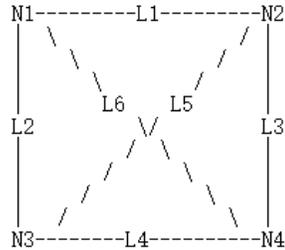


Routing Impacts

- Data model with time-variant information
- Collection and advertisement for the time-variant information (Maybe not necessary)
- Routing algorithm based on time-variant information

Exemplar

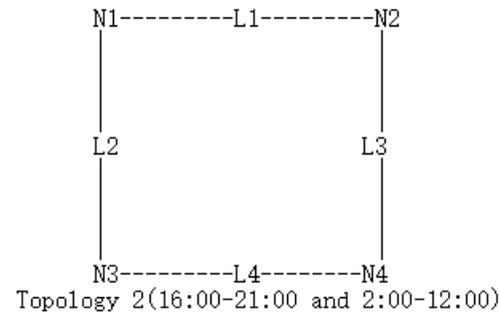
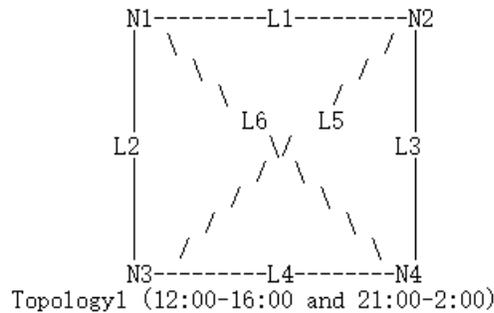
- A network Demo for the dormitory



A network with 4 nodes and 6 links

The regularity of tidal traffic in the dormitory network

- Time-variant topology (assume that L5 and L6 can be shut down when the traffic is low)



- Problems to be solved

- How to describe the time-variant information?(May be very complex but with periodic characteristics)
- New routing algorithms based on the time-variant information?(Avoid packet loss during the change of topology)

Thank You