



GridPP

UK Computing for Particle Physics

Networking: Status Report

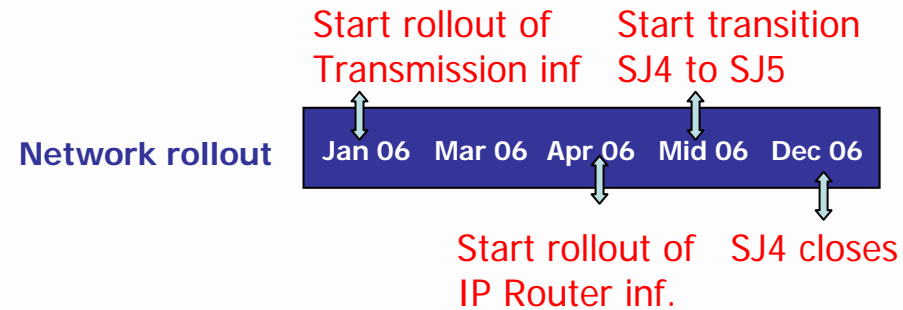
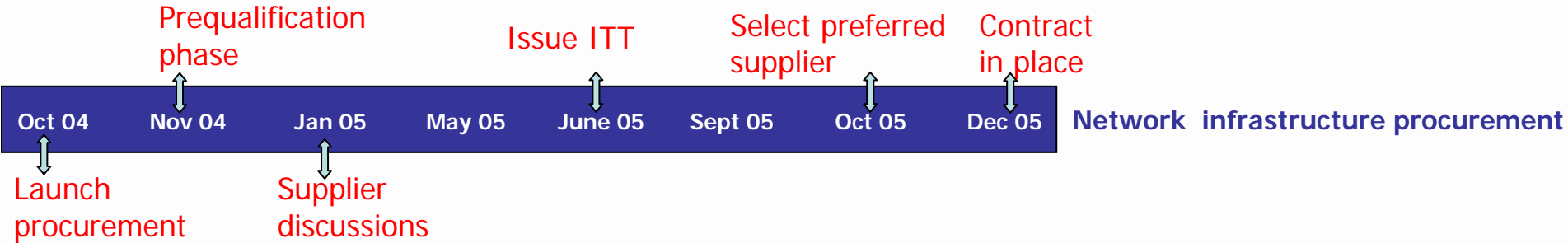
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CCLRC, Daresbury Laboratory

11 January 2006



1. SuperJANET5 status and timetable
2. LHC Optical Private Network
3. Network Performance Monitoring
(thanks to Mark Leese and Rik Tyer¹ at Daresbury)
4. Questions?

1. Rik Tyer funded by the JISC through UKERNA to embed the Gridmon network performance monitoring into the national network infrastructure in support of Grid computing



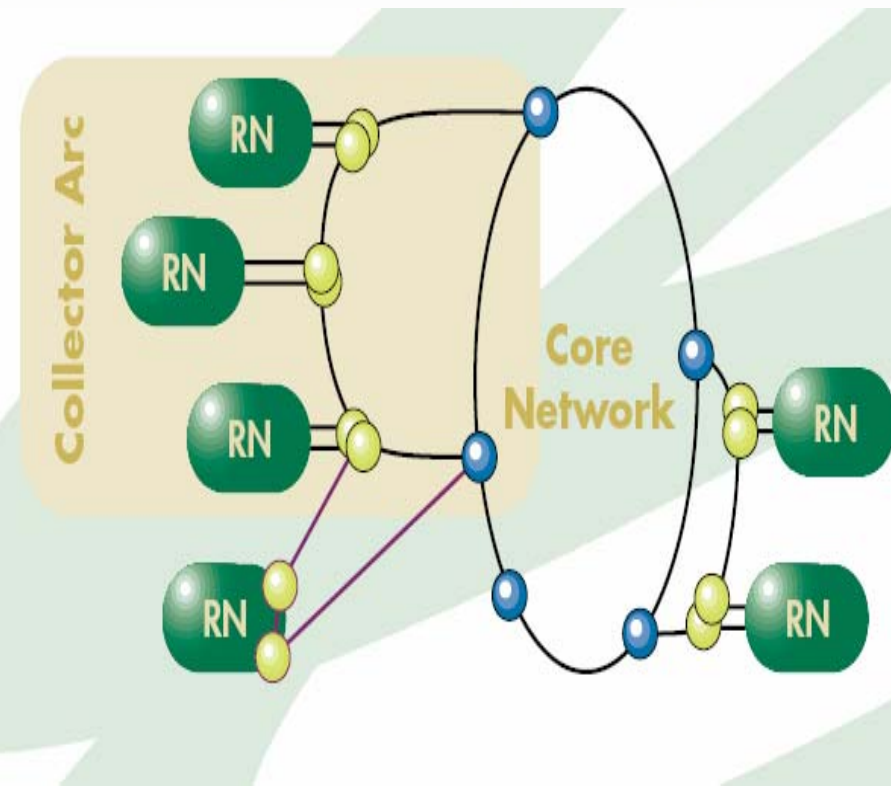


The supplier is responsible for the operations, management and maintenance of both the fibre systems and the WDM transmission equipment.

UKERNA will continue to operate all other services above this layer, such as the JANET IP production network.

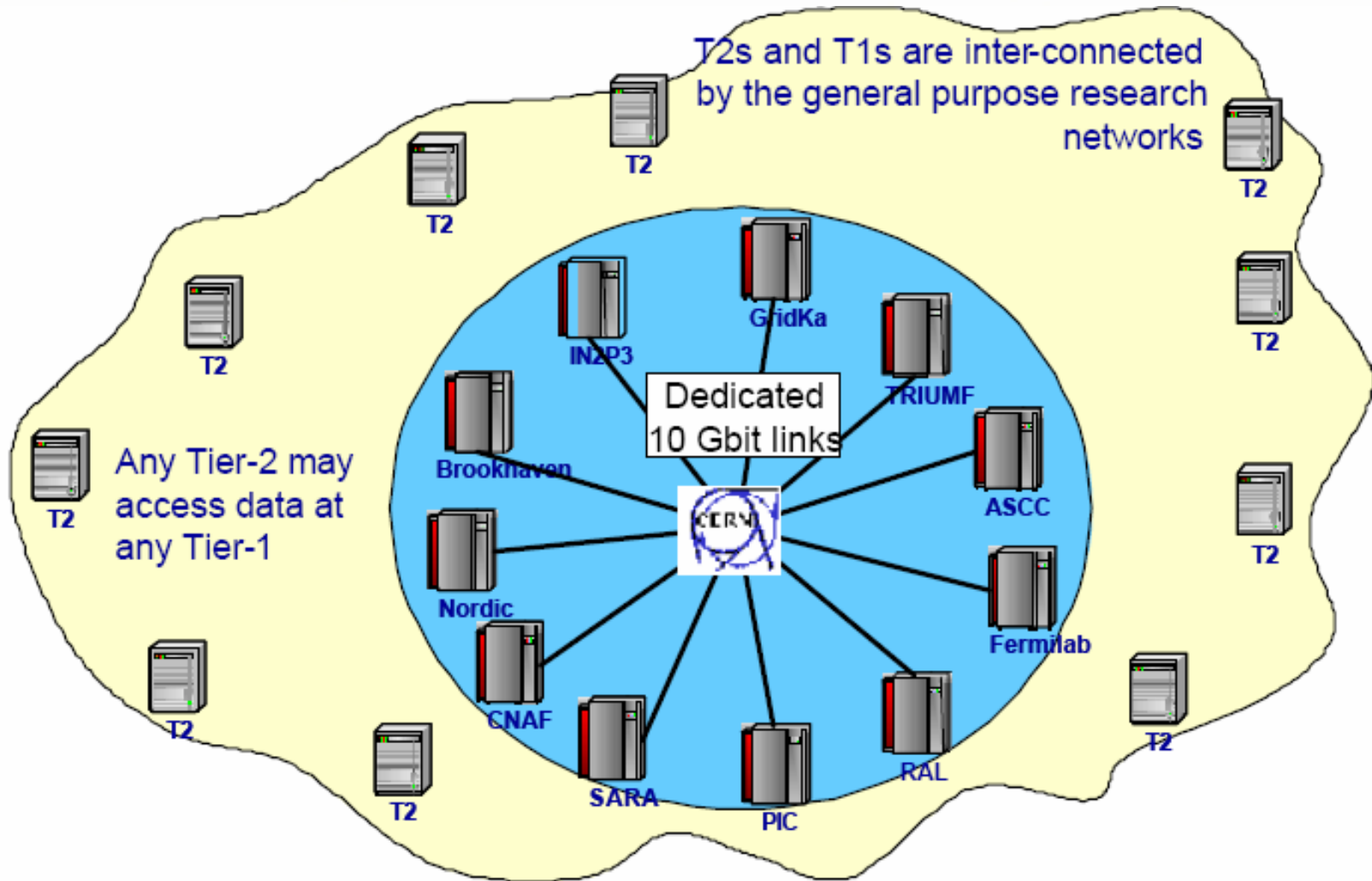
The SuperJANET5 network architecture is envisaged as a high speed core network, capable of operating using 10Gbit/s wavelengths and from the fourth quarter of 2008, a number of 40Gbit/s wavelengths.

The JANET Regional Networks are to have dual, diversely routed connections to this core network, which should be capable of 2.5Gbit/s and 10Gbit/s wavelength operation.





LHC OPN Topology





CERN/NRENs/Tier1 Meetings :

The **Optical Private Network** has been discussed with increasing detail

Started summer 2004

Routing Task Group - led by Edoardo Martelli, CERN

Operations Task Group - led by Roberto Sabatino, DANTE

Security Task Group - led by Robin Tasker, CCLRC

Detailed planning in above areas well advanced and hope for final Task Group reports by January 2006 ready for implementation

As ever the devil is in the detail



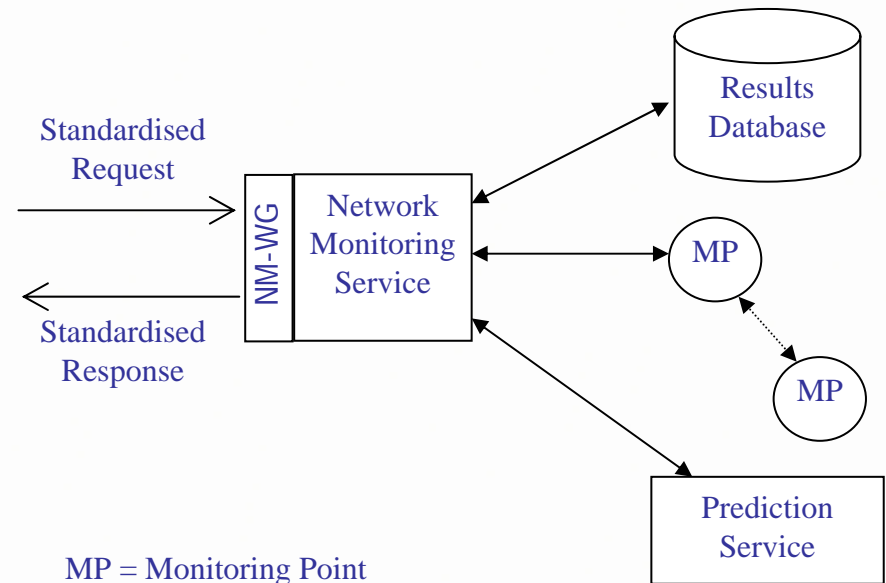
Request / Response Approach

Interactive systems clients will be able to request

- historic data,
- future or on-demand tests
- predictions (i.e. NWS style).

All request and result messages are formatted using standardised schemas developed within the **GGF NMWG**.

This allows heterogeneous monitoring systems to interact providing that they use the same schemas.





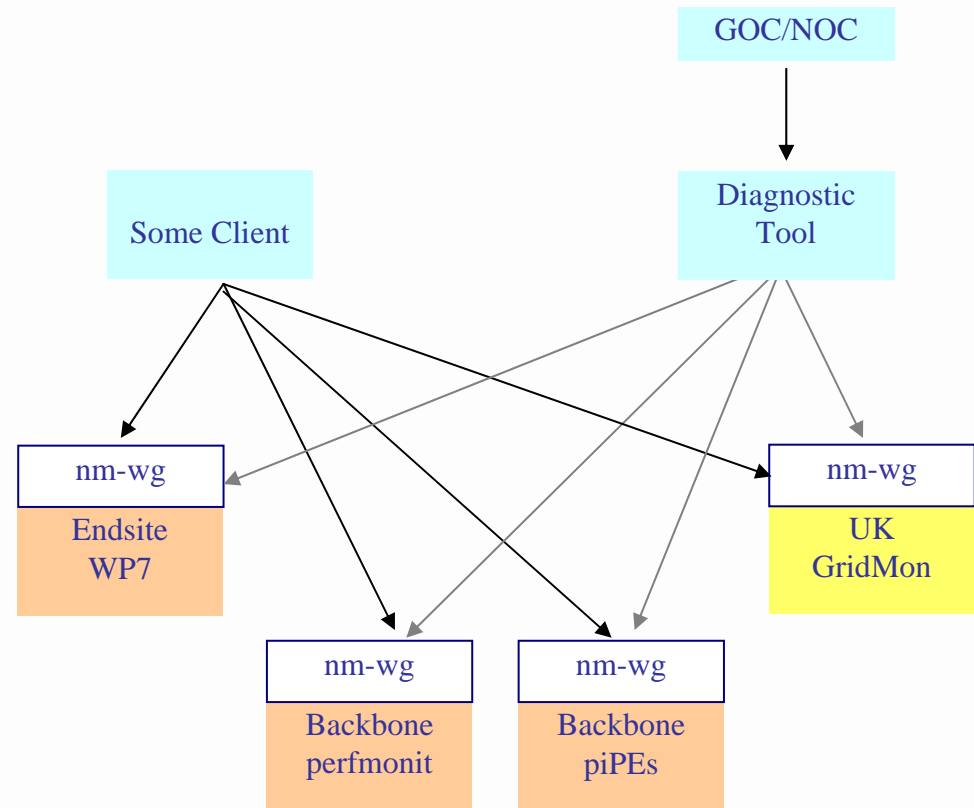
If a Client, whatever that may be, wishes

to receive detailed information concerning a network path;

or

to concatenate data from several backbone networks to produce a picture of the full backbone path.

Then the Client has to make several requests, and if necessary, perform its own data aggregation.

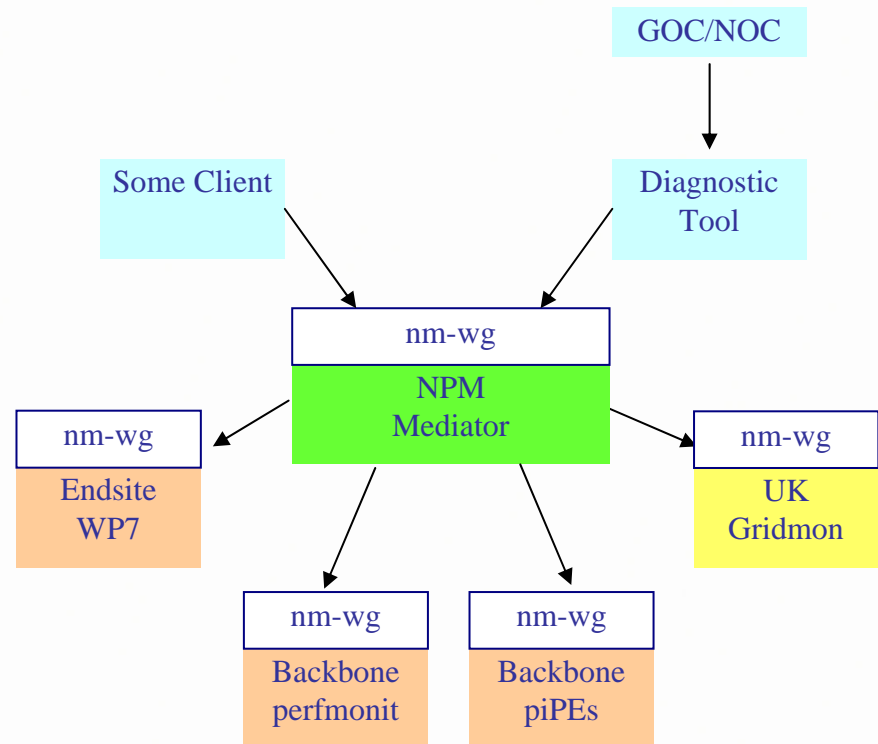




EGEE JRA4 is responsible for “Development of Network Services” .

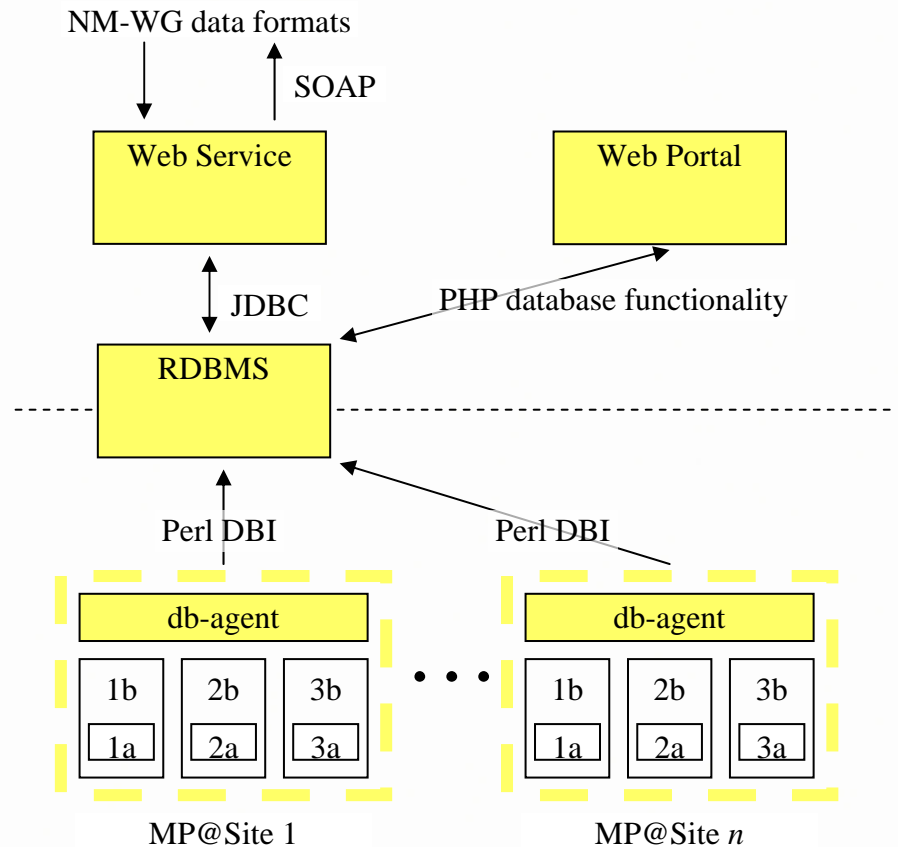
Within JRA4’s Network Performance Monitoring (NPM) activity, the “Mediator” software has been developed.

This will greatly simplify this process by unifying access to network performance measurement data.



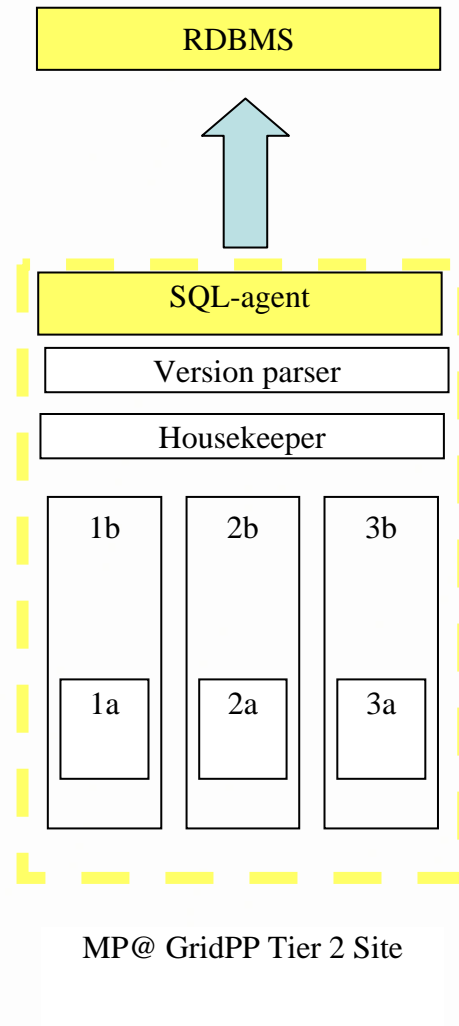


1. An infrastructure in which each site (MP) will store its test data in a central database.
2. Web Services and human (web) access to the data will also be via services running centrally.
3. Storing and providing access to the data from a central location reduces complexity of the individual monitoring nodes
4. Critically, we can also move to a relational database model, speeding up access to the data and allowing considerably more advanced queries to be made



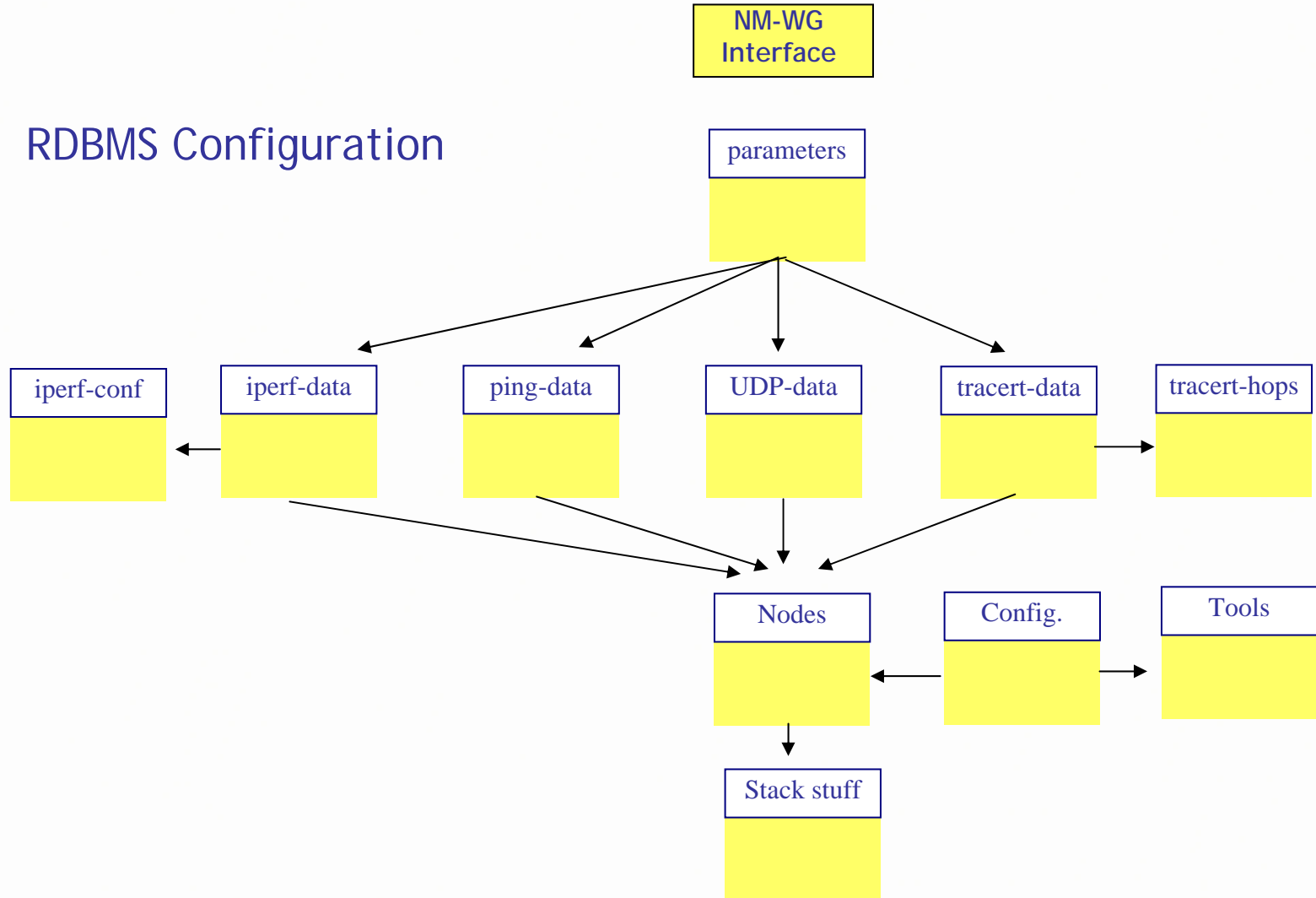


Monitor Point Configuration





RDBMS Configuration





- **Map view:**
 - snapshot view of site's connectivity within the last 30 mins
 - looking at adding representation of thru'put (achievable bandwidth)
 - of interest to end-users, GOC and NOC
- **Graph view:**
 - will offer more flexible graphing (e.g. multiple metrics and/or multiple sites on the same graph...up to a limit!)
 - of likely interest to NOC, GOC and end-users (in that order)
- **Text view:**
 - will allow users to make specific queries for textual data, e.g. min/max values for TCP thru'put over last day
 - to prevent abuse will initially will be tied down to specific queries
 - of likely interest and provides more detail and finer control of queries for NOCs or local Sys and NetAdmins

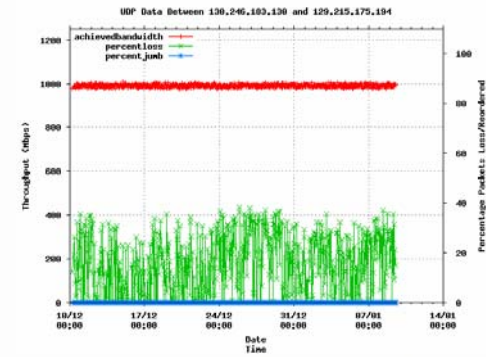
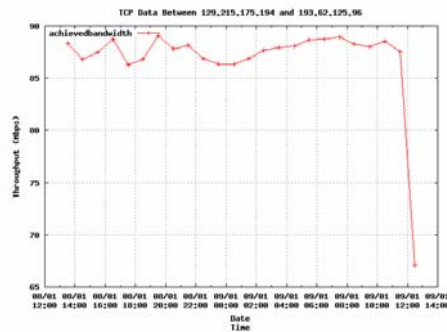
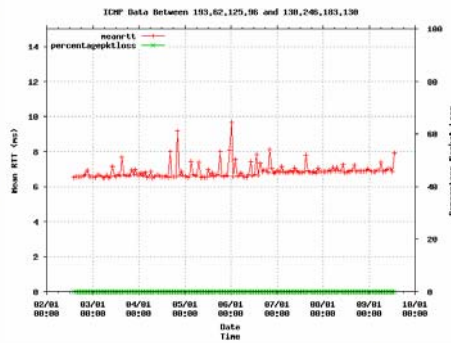


- GridMon V1 (for UK e-Science) ran tests in a **full mesh** (between all nodes) for the 12 original e-Science centres and 1-2 others
- The LHC model is different - RAL (as Tier-1) distributes data to NorthGrid, Southgrid *etc.* where data is processed within that Regional Tier-2.
- Proposed that Full mesh therefore replaced with:
 - **star** from RAL (Tier-1) to all sites (Tier-2s)
 - **full mesh** within each Regional Tier-2
 - e.g. Edinburgh runs tests to Glasgow, Durham and RAL but not Cambridge or Manchester or UCL or...
- Could be changed if desired, but test contention is an issue - meshes do not scale, and GridPP has approx 20 sites



Implementation Status

1. MP and RDBMS software up and running with prototype Gridmon V2 nodes located at Daresbury, RAL and Edinburgh collecting data...



2. MP machines purchased and delivered, about to be configured and shipped to all sites by February/March timeframe.



SuperMicro SuperServer 5015M-MF

3. Portal implementation will be visible through January...design meetings will be organised with interested parties



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Questions?