LHCOPN Monitoring Directions
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perfSONAR Activity is Growing

- **3+ different code bases**
  - GEANT Java
  - RNP Java
  - NetRadar
  - Other service specific activities

- **Short Term Development Plans**
  - o Internet2
    - Build Observatory for new network by July 1, 2007
  - o GEANT
    - Transitioning from Research Activity to Service Activity!
    - Pilot
      - April 07 – August 07
      - 5 NRENs + GÉANT2
    - Prototype
      - October 07 – February 08
      - 11 NRENs + GÉANT2

perfSONAR Deployments

16+ different networks have deployed at least 1 perfSONAR service
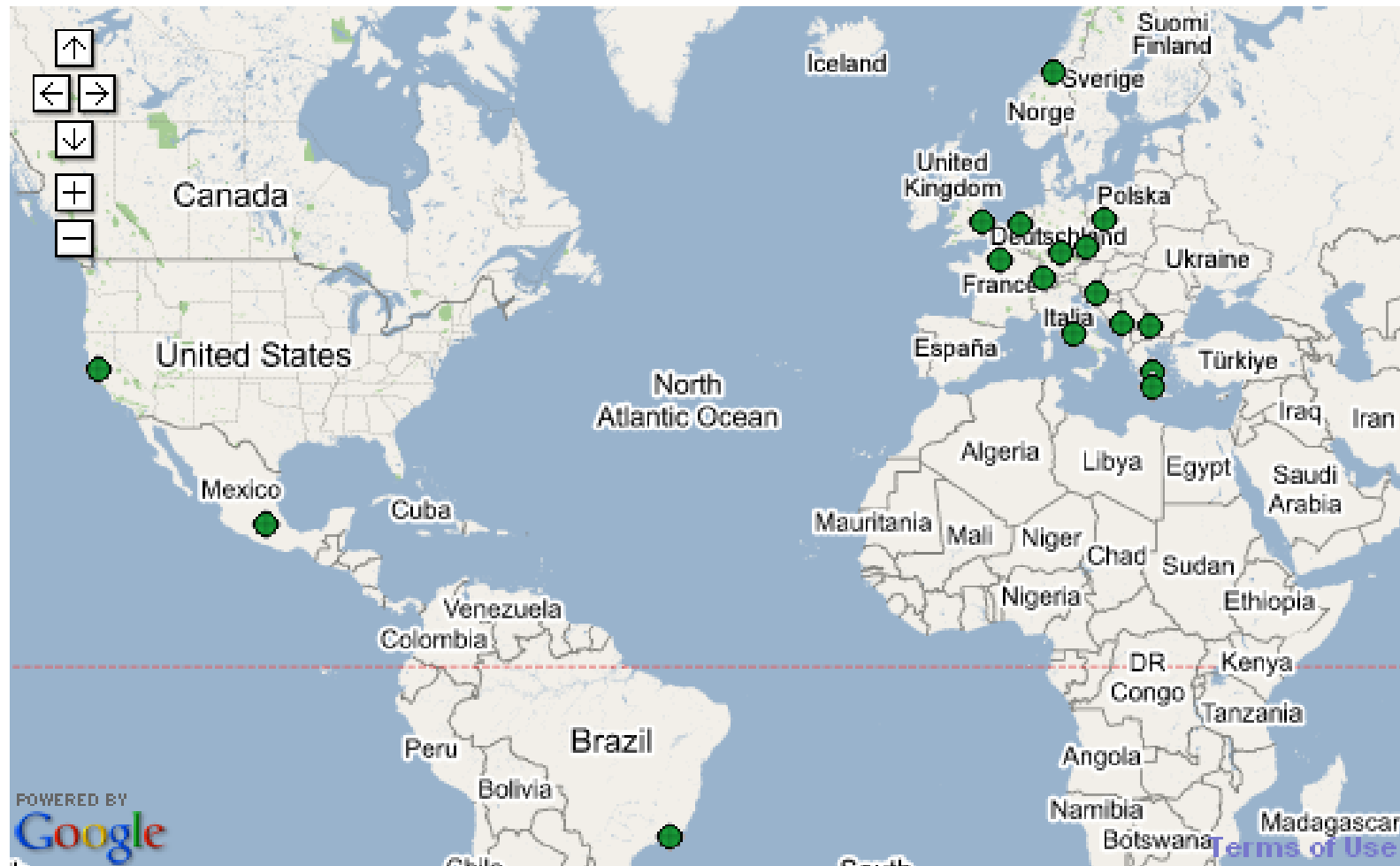
GEANT Pilot - Functionalities

Metric	Time	Location
L3 link utilisation, L3 link capacity	Latest, historical	Backbone and access links.
Domain link L2 status.	Last 5min, historical (*)	Only for LHC circuits.
show commands	On-demand	All backbone switches/routers.
TCP/UDP throughput (***)	On-demand, historical	From three sources connected to important network node.
OWD, jitter, OWPL and traceroute	Historical	From the same sources as for the throughput metric.

(*) historical is currently not required by the Circuit E2E monitoring tool.
(**) List of command from a list of pre-defined commands for all the backbone routers.
(***) UDP throughput tests will be restricted to PERT to discover packets dropped in case of difficult problem to solve.

GEANT Pilot - Portfolio

Visualisations / Web-service	Metric		perfso narUI	CNM	JRA1 Looking glass	JRA4 L2 visuali sation	XML access
RRD MA or SQL MA	L3 link utilisation	Historical	Yes	Yes			Yes
	L3 link capacity	Historical	Yes	Yes			Yes
L2 status MP(*)	L2 circuit status	Latest				Yes	Yes
SQL MA (*)	L2 circuit status	Historical				Yes	Yes
Hades MA	OWD, IPDV, OWPL,	Historical	Yes	Yes			Yes
	traceroute	Historical					Yes
Telnet/SSH MP	Delay RTT	On-demand			Yes		Yes
	show command	On-demand			Yes		Yes
	Traceroute	On-demand			Yes		Yes
BWCTL MP	Achievable throughput (TCP)	On-demand	Yes				Yes
	UDP throughput	On-demand	Yes				Yes
Lookup Service	Service discovery		Yes	Yes			Yes

(*) L2 status MP or SQL MA

GEANT Prototype portfolio

Service	Prototype/Functionality		perfsonar UI	CNM	NEMO	Visualperf SONAR	JRA4 L2 visualisation	XML access
RRD MA or SQL MA	L3 link utilisation	Historical	Yes	Yes	Yes	Yes		Yes
	L3 link capacity	Historical	Yes	Yes	Yes	Yes		Yes
	L3 Interface Output drops	Historical	Yes	Yes	Yes	Yes		Yes
	L3 Interface Input drops	Historical	Yes	Yes	Yes	Yes		Yes
L2 status MP	L2 circuit status	Latest					Yes	Yes
SQL MA	L2 circuit status	Historical					Yes	Yes
Hades MA	OWD, IPDV, OWPL	Historical	Yes	Yes				Yes
	Achievable throughput (TCP)	Historical	Yes	Yes				Yes
	UDP throughput	Historical	Yes	Yes				Yes
	traceroute	Historical	Yes	Yes				Yes
Telnet/SSH MP	Delay RTT	On-demand	Yes					Yes
	show command	On-demand	Yes					Yes
	Traceroute	On-demand	Yes					Yes
BWCTL MP	Achievable throughput (TCP)	On-demand	Yes					Yes
	UDP throughput	On-demand	Yes					Yes
Hades MP	OWD, IPDV, OWPL	On-demand	Yes					Yes
Lookup Service	Service discovery		Yes	Yes	Yes	Yes		Yes
Topology Serivce	Topology information			Yes	Yes	Yes		Yes
Auth or GiDP	Authentication Service		Yes	Yes		Yes	Yes	Yes
Autz	Authorisation Service		Yes	Yes		Yes	Yes	Yes

In orange, the additional foreseen functionality from the prototype over the Pilot.

- So, how do we leverage all of this activity to meet LHCOPN objectives?

LHCOPN Monitoring Directions

- Select 1 or 2 important use cases:
  - o Utilization
    - Is per circuit sufficient?
      - – CERN is in progress
    - Do we need per link break-downs by experiment or by tier?
  - o Latency
    - Will show
      - – Congestion
      - – Route changes
    - An independent circuit 'uptime' measure.
  - o Achievable Bandwidth

- Clearly define some short-term achievable objectives.

- Leverage perfSONAR development teams
  - o Make sure we are feeding requirements into the current development efforts!
  - o You can give them to me if you don't have another conduit

- Timing
  - o GEANT is preparing a new release of perfSONAR for the pilot.
    - Install the release candidate code, or wait a couple weeks for the release
  - o Portions of I2 code base should be available shortly after that.
    - Perl based services

- Network Measurement Data Distribution Restrictions
  - o Can it be public?
  - o perfSONAR authentication & authorization
    - due Summer 07