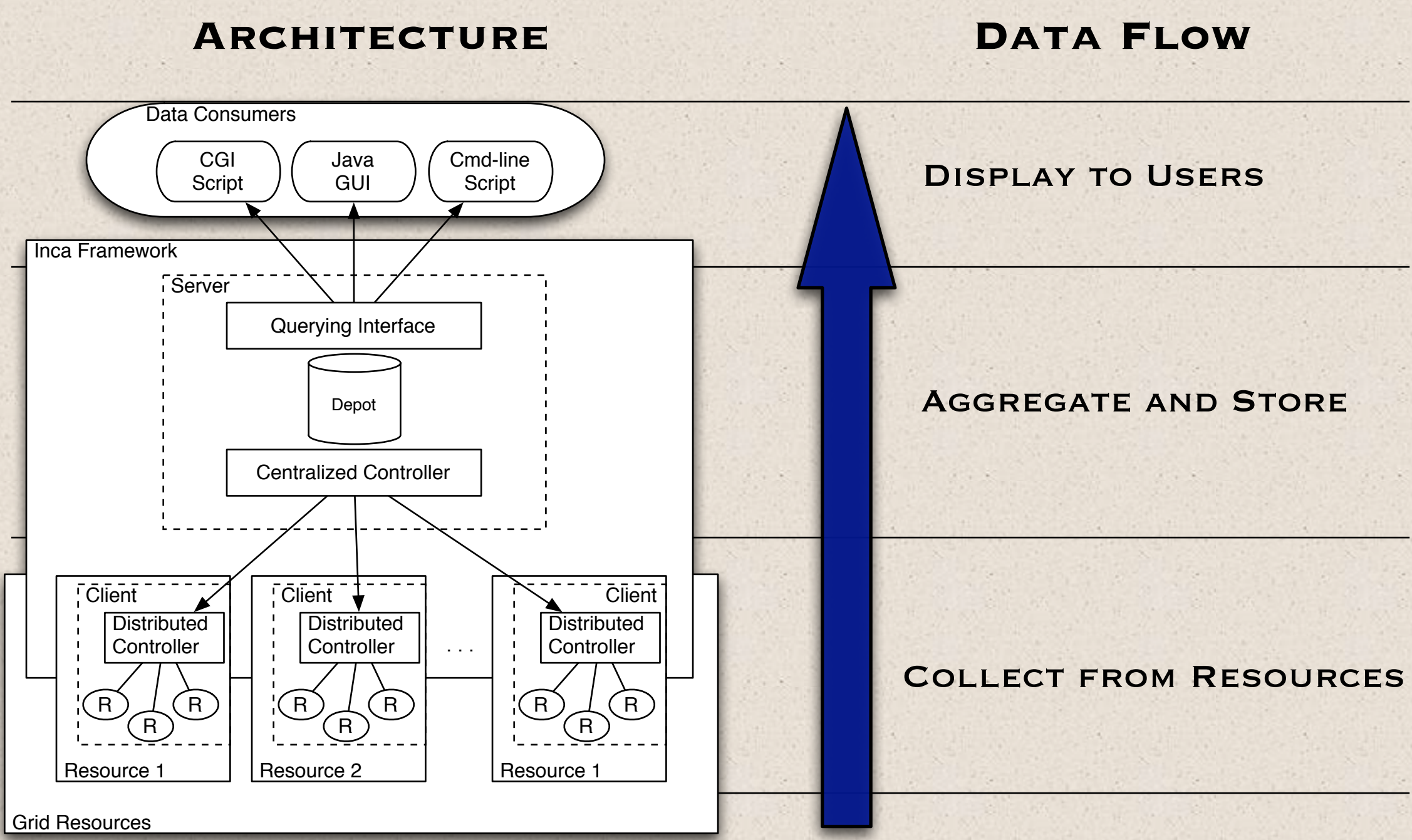


BENCHMARKING AND MEASURING GRID PLATFORMS:
SOFTWARE TOOLS AND RESULTS ON THE TERAGRID

INCA

FRAMEWORK FOR AUTOMATED
MONITORING OF GRID SYSTEMS

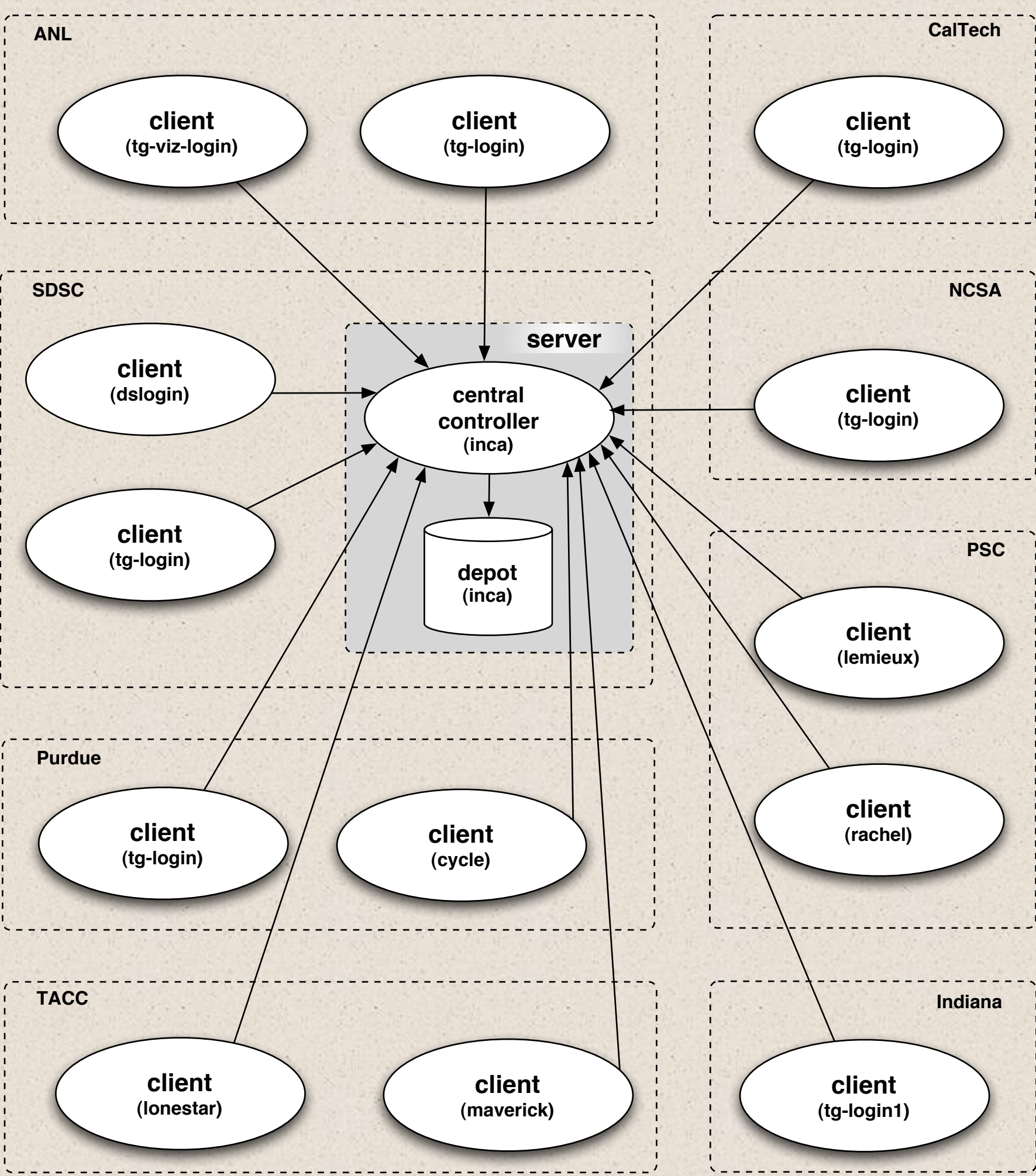


USE CASES:

THE BASIC DATA COLLECTION AND ANALYSIS
FRAMEWORK PROVIDED BY INCA SUPPORTS A
DIVERSE SET OF USE CASES.

- SERVICE RELIABILITY
- MONITORING
- BENCHMARKING
- SITE INTEROPERABILITY CERTIFICATION
- SOFTWARE STACK VALIDATION

TERAGRID Deployment:



PARTICIPANTS

CHAITAN BARU, HENRI CASANOVA, ALLAN SNAVELY
MARGARET MURRAY, OMID OKHALILI, CATHERINE OLSCHANOWSKY, SHAVA SMALLEN

GRASP

GRID ASSESSMENT PROBES

LIKE ALL COMPUTING PLATFORMS, GRIDS ARE IN NEED OF A SUITE OF BENCHMARKS BY WHICH THEY
CAN BE EVALUATED AND CHARACTERIZED. DUE TO THE DYNAMIC NATURE OF GRIDS, A ONE TIME
EVALUATION IS NOT SUFFICIENT; EFFECTIVE MEASUREMENTS MUST BE COLLECTED PERIODICALLY AND
VIEWED AS A TIME SERIES.

	3 NODE	GATHER	CIRCLE
BASIC TOPOLOGIES			
TERAGRID DEPLOYMENT			
TERAGRID DATA			
1 DAY			
1 WEEK			
1 MONTH			

TERAGRID

DISTRIBUTED INFRASTRUCTURE
FOR OPEN SCIENTIFIC RESEARCH

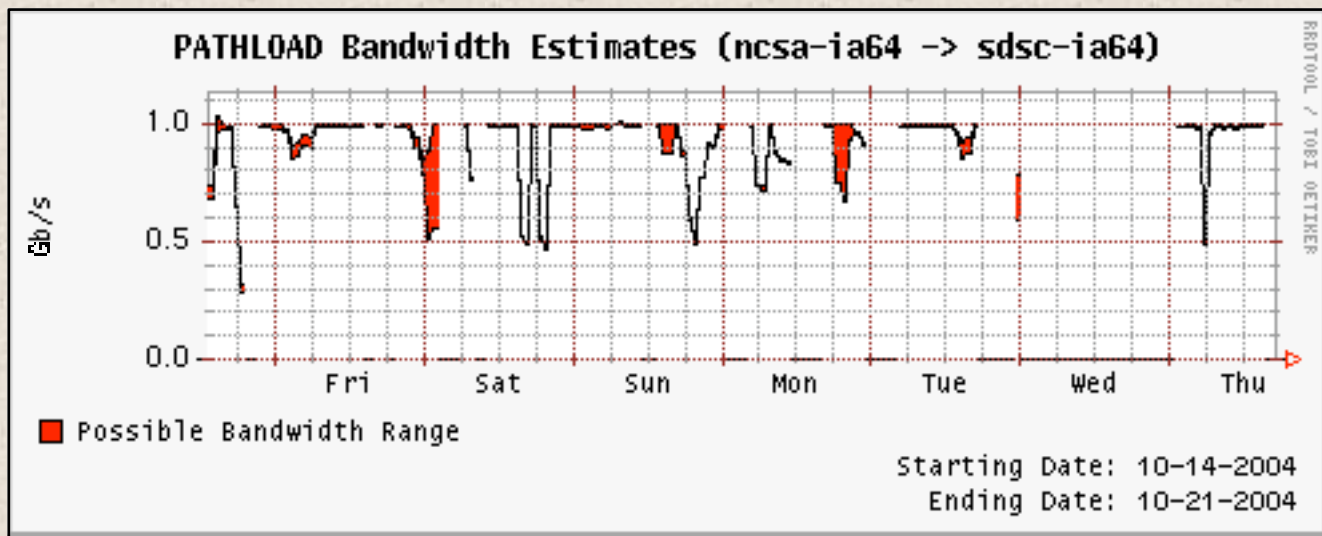
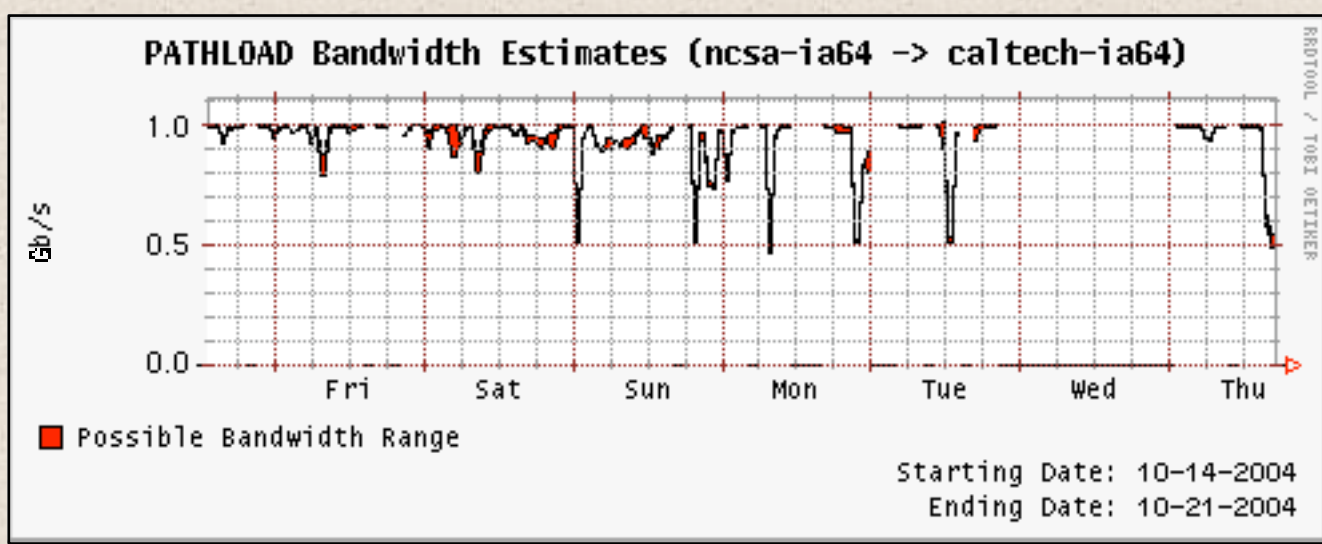


RESOURCE SUMMARY:

THE TERA-GRID OFFERS 40 TERA-FLOPS OF COMPUTING
POWER DISTRIBUTED AT NINE SITES, FACILITIES
CAPABLE OF MANAGING AND STORING NEARLY ONE
PETABYTE OF DATA, HIGH-RESOLUTION VISUALIZATION
ENVIRONMENTS, AND TOOLKITS FOR GRID COMPUTING.
TERA-GRID'S TIGHTLY INTEGRATED COMPONENTS ARE
CONNECTED THROUGH A 40 GIGABITS PER SECOND
NETWORK

INCA NETWORK MEASUREMENTS:
(E2E REPORTER)

- PROVIDES TERA-GRID USERS WITH SITE-TO-SITE
PERFORMANCE BASELINES
- WRAPS NETWORK MEASUREMENT TOOLS
- COLLECTS MEASUREMENTS
- ARCHIVES RESULTS IN RRDTOOL
- DISPLAYS RESULTS IN TIME-SERIES GRAPHS



IN THE TWO GRAPHS ABOVE, PATHLOAD MEASURES DYNAMIC
AVAILABLE BANDWIDTH OVER TIME ON TWO DIFFERENT E2E PATHS
(NCSA->CALTECH AND NCSA->SDSC.) PATHLOAD [DOVROLIS ET AL]
USES EFFICIENT AND LIGHTWEIGHT PROBES AS PART OF A
METHODOLOGY CALLED SLOPS (SELF-LOADING PERIODIC STREAMS)
TO ACCURATELY MEASURE E2E AVAILABLE BANDWIDTH FROM A
USER'S PERSPECTIVE.

ORGANIZATIONS

