EOS Production Sites
Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for February 2008 -- comparing the measured performance against the requirements.

Highlights:

- **Mostly stable flows with continued (increasing) congestion at GSFC**
  - GPA 3.26 (Last month: 3.32)
- **Only 1 flow below "Adequate"**:
  - **GSFC GES DAAC to EROS** ("**Low**")
    - Due to congestion at GSFC
    - Requirements are under review
- **Bottlenecks:**
  - GSFC: EBnet to Doors Gig-E
- **Requirements Update:** still in progress – to be based on "Actuals".
- Significant changes in testing are indicated in Blue, Problems in Red

Ratings Changes: (See site discussion below for details)

Upgrades: ↑:

GSFC → NSIDC: Adequate → **Good**

Downgrades: ↓

JAXA → US: Good → **Adequate**

GSFC → LaRC: Excellent → **Good**

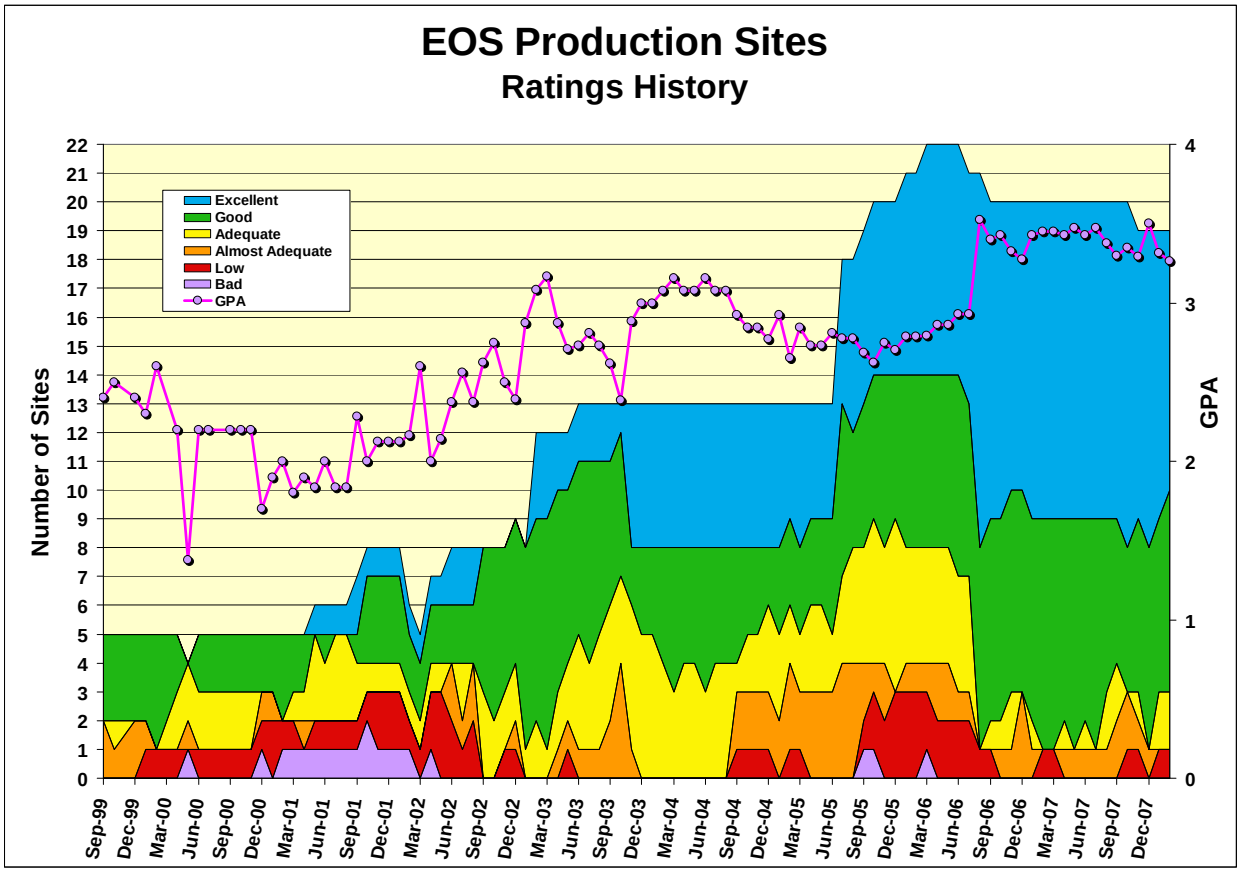
Testing Down X:

ASF → LASP, GSFC → ASF (ASF IOnet node is still not available)

Ratings Categories:

Rating	Value	Criteria
Excellent:	**4**	**Total Kbps** > Requirement * 3
Good:	**3**	1.3 * Requirement <= **Total Kbps** < Requirement * 3
Adequate:	**2**	Requirement < **Total Kbps** < Requirement * 1.3
Almost Adequate:	**1.5**	Requirement / 1.3 < **Total Kbps** < Requirement
Low:	**1**	Requirement / 3 < **Total Kbps** < Requirement / 1.3
Bad:	**0**	**Total Kbps** < Requirement / 3

Where Total Kbps = Integrated Kbps (where available), otherwise just iperf

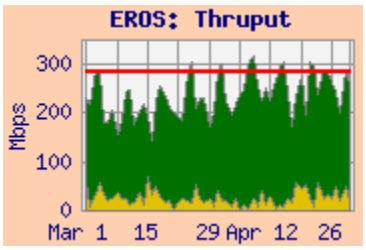


The chart above shows the number of sites in each classification since EOS Production Site testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

Requirements Basis:

- December '03 requirements from BAH.
  - Updated to handbook 1.4.1 (3/22/06)
- Additional Updates Incorporated:
  - New AIRS reprocessing flows (8/06)
  - GEOS requirements – Flows began in Nov '06
  - All LaRC-GSFC "Backhaul" Requirements removed
  - Extension of TRMM, QuikScat missions

Integrated Charts:



Integrated charts are included with site details, where available. These charts are "Area" charts, with a pink background. A sample Integrated chart is shown here. The yellow area at the bottom represents the daily average of the user flow from the source facility (e.g., GSFC, in this example) to the destination facility (e.g., EROS, in this example) obtained from routers via "netflow". The green area is stacked on top of the user flow, and represents the "adjusted" daily average iperf thruput between the source-destination pair most closely corresponding to the requirement. This iperf measurement essentially shows the circuit capacity remaining with the user flows active. The adjustments are made to compensate for various systematic effects, and are best considered as an approximation. The red line is the requirement for the flow from the source to destination facilities.

Network Requirements vs. Measured Performance

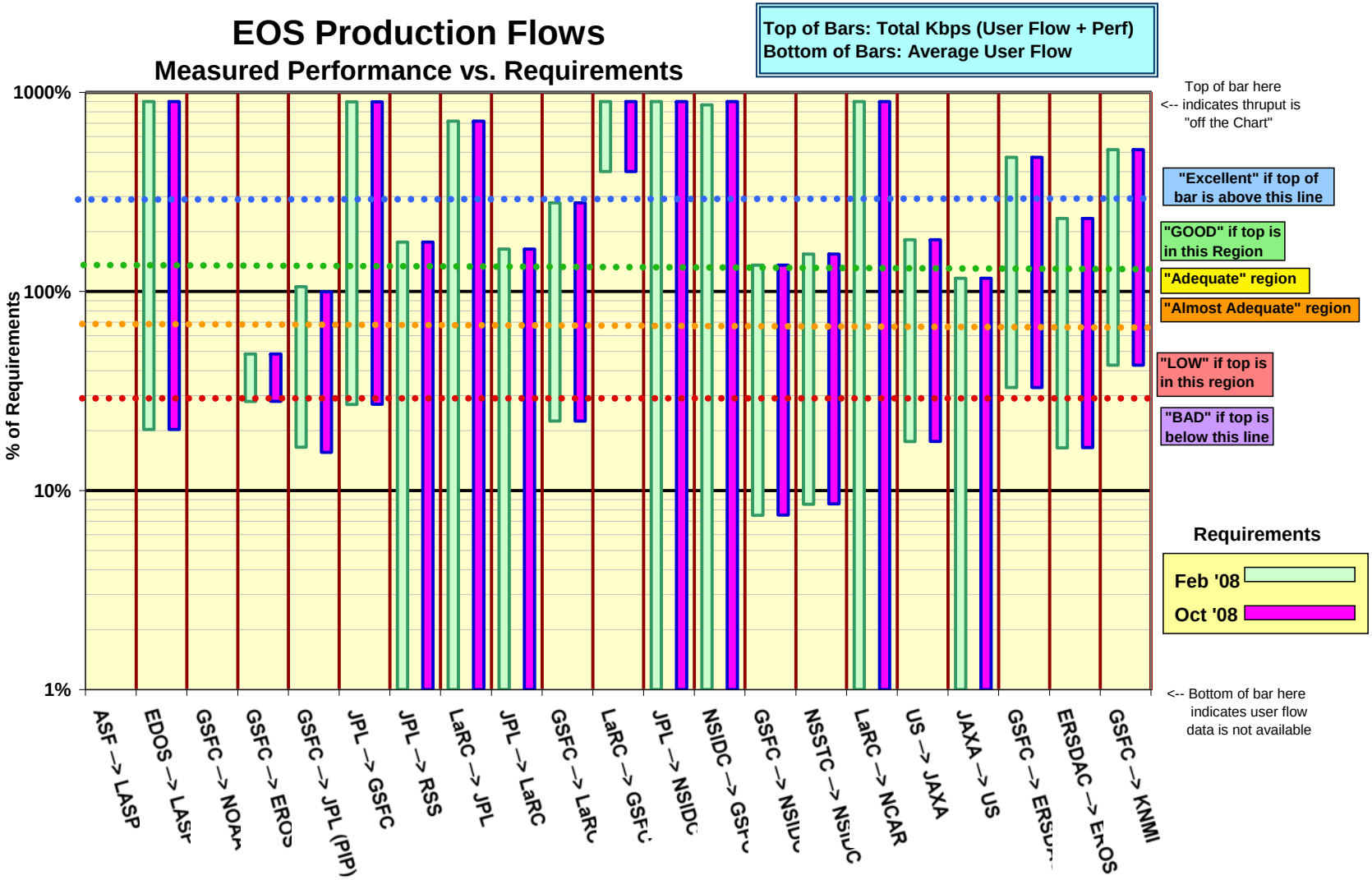
February 2008		Requirements (mbps)		Testing			Ratings		
Source → Destination	Team (s)	Current Feb-08	Future Oct-08	Source → Dest Nodes	Avg User Flow mbps	iperf Avg mbps	Integrated mbps	Rating re Current Requirements Feb-08	Rating re Current Requirements Last Month	Rating re Oct-08
GSFC –> ASF	QuikScat, Radarsat	n/a	n/a	GSFC-PTH → ASF				n/a	n/a	n/a
ASF –> LASP	QuikScat	0.02	0.02	ASF → LASP [via IOnet]				n/a	n/a	n/a
EDOS –> LASP	ICESat, QuikScat	0.4	0.4	EDOS --> LASP [via IOnet]	0.081	8.5		Excellent	E	Excellent
GSFC –> EROS	MODIS, LandSat	285.4	285.4	MODAPS-PDR → EROS LPDAAC	80.0	105.2	138.4	LOW	L	LOW
GSFC –> JPL (PIP)	AIRS, ISTs	113.8	121.0	GSFC-PTH → JPL-AIRS	18.8	114.9	120.3	Adequate	A	A A
JPL –> GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PTH → GSFC-PTH	2.0	64.3		Excellent	E	Excellent
JPL –> RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS		4.4		GOOD	G	GOOD
LaRC –> JPL	TES, MISR	43.2	43.2	LARC-DAAC → JPL-TES		310.0		Excellent	E	Excellent
JPL –> LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH		85.8		GOOD	G	GOOD
GSFC –> LaRC	CERES, MISR, MOPITT	86.9	86.9	GDAAC → LDAAC	19.4	239.1	242.3	GOOD	E	GOOD
LaRC –> GSFC	MODIS, TES	0.2	0.2	LDAAC → GDAAC	0.8	357.6	357.6	Excellent	E	Excellent
JPL –> NSIDC	AMSR-E	1.3	1.3	JPL-PTH → NSIDC SIDADS	0.003	85.1		Excellent	E	Excellent
NSIDC –> GSFC	MODIS, ICESAT, QuikScat	13.3	0.5	NSIDC DAAC → GDAAC	0.0002	115.4	115.4	Excellent	E	Excellent
GSFC –> NSIDC	MODIS, ICESAT, QuikScat	64.0	64.0	MODAPS-PDR → NSIDC-DAAC	4.8	86.5	86.8	GOOD	A	GOOD
NSSTC –> NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	0.6	11.5	11.5	GOOD	G	GOOD
LaRC –> NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR		158.4		Excellent	E	Excellent
US –> JAXA	QuikScat, TRMM, AMSR	2.0	2.0	GSFC-PTH → JAXA DDS	0.35	3.57	3.61	GOOD	G	GOOD
JAXA –> US	AMSR-E	1.3	1.3	JAXA DDS → JPL-QSCAT		1.49		Adequate	G	Adequate
GSFC –> ERSDAC	ASTER	12.5	12.5	EDOS → ERSDAC	4.1	57.2	58.8	Excellent	E	Excellent
ERSDAC –> EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	4.4	61.6	62.5	GOOD	G	GOOD
GSFC –> KNMI	OMI	3.3	3.3	GSFC-OMISIPS → OMI-PDR	1.4	16.9	16.9	Excellent	E	Excellent

*Criteria:		
	Excellent	**Total Kbps** > Requirement * 3
	GOOD	1.3 * Requirement <= **Total Kbps** < Requirement * 3
	Adequate	Requirement < **Total Kbps** < Requirement * 1.3
	Almost Adequate	Requirement / 1.3 < **Total Kbps** < Requirement
	LOW	Requirement / 3 < **Total Kbps** < Requirement / 1.3
	BAD	**Total Kbps** < Requirement / 3

Ratings Summary	Feb-08 Req Score	Feb-08 Req Prev	Oct-08 Score
Excellent	9	10	9
GOOD	7	6	7
Adequate	2	2	1
Almost Adequate	0	0	1
LOW	1	1	1
BAD	0	0	0
Total Sites	19	19	19
GPA	3.26	3.32	3.24

Notes: Flow Requirements include:
TRMM, Terra, Aqua, Aura, ICESAT, QuikScat, GEOS

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (January and October '08). Thus if the requirements increase, the same measured performance will be lower in comparison.



Interpretation: The bottom of each bar is the average measured user flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the integrated measurement – this value is used to determine the ratings.

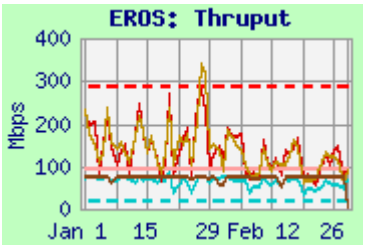
1) EROS:

Ratings: GSFC → EROS: Continued **Low**
ERSDAC→ EROS: Continued **Good**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/EROS.shtml
http://ensight.eos.nasa.gov/Organizations/production/EROS_PTH.shtml

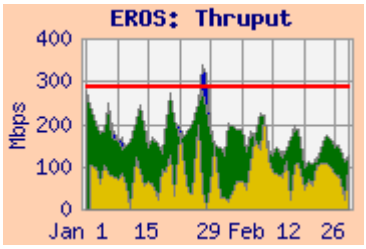
Test Results:

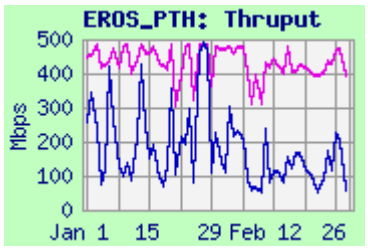
Source → Dest	Medians of daily tests (mbps)				
	Best	**Median**	**Worst**	**User Flow**	**Integrated**
MODAPS-PDR→ EROS LPDAAC	194.4	105.2	40.1	80.0	138.4
GSFC-DAAC → EROS LPDAAC	236.8	111.0	43.5		
ERSDAC→ EROS LPDAAC	78.6	61.6	18.7	4.4	62.5
GSFC-PTH → EROS PTH	352.8	113.3	38.8		
GSFC-ENPL → EROS PTH	481.4	420.9	337.0		
NSIDC→ EROS	75.6	73.5	63.5		
LaRC→ EROS	93.0	93.0	92.9		
EROS LPDAAC → GSFC DAAC	141.9	111.7	81.1		
EROS PTH→ GSFC PTH	460.4	434.8	389.6		



Requirements:

Source → Dest	Date	mbps	Rating
GSFC→ EROS	→ Mar '08	285	Low
ERSDAC→ EROS	FY '06 - '08	26.8	Good





Comments:

GSFC → EROS: The rating is based on the MODAPS-PDR Server to EROS LP DAAC measurement (Results are similar to GES DAAC). The route is via NISN SIP, on the NISN OC-48 (2.5 gbps) backbone, to the NISN Chicago CIEF, then via GigE to StarLight, peering with the EROS OC-12 (622 mbps).

The user flow this month was about 20% higher than last month, but remains far below the nominal requirement, apparently due in part to the use of compression on the MODIS collection 5 data (began at the end of 2006). This performance is predominantly limited by congestion on the EBnet to Doors Gig-E circuit at GSFC, as shown by the large best:worst ratio seen from the GDAAC, MODAPS, and GSFC-PTH hosts. The performance is lower than last month, due to increased loading on this GigE; andremains more than 30% below the requirement so the rating remains "Low". It should be noted that a reduction of the requirement will be forthcoming, due primarily to the MODIS collection 5 compression.

The GSFC-ENPL host has a direct connection to the MAX, bypassing the congested EBnet to Doors Gig-E circuit, and using the previous Internet2 route. It does not experience similar congestion to the DAAC. From ENPL, the performance would be rated "Good".

ERSDAC → EROS: Performance was very steady this month. See section 6 (ERSDAC) for the graph and further discussion of this performance.

NSIDC → EROS: The median thruput from NSIDC-SIDADS to EROS-PTH was quite stable this month

LaRC → EROS: The thruput from LaRC-PTH to EROS-PTH was also very stable this month.

EROS → GSFC: The thruput for tests from EROS to GSFC (both DAAC to DAAC and PTH to PTH) were mostly stable this month, but note that the DAAC to DAAC flow cannot use most of the WAN capability (compared to the EROS-PTH to GSFC-PTH results).

2) JPL:

2.1) JPL ←→ GSFC:

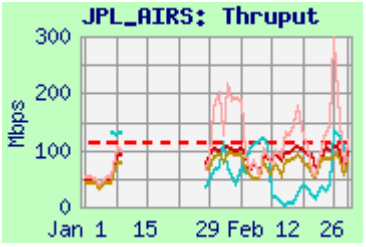
Ratings: GSFC → JPL: Continued **Adequate**
JPL → GSFC: Continued **Excellent**

Web Pages:

http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_PODAAC.shtml

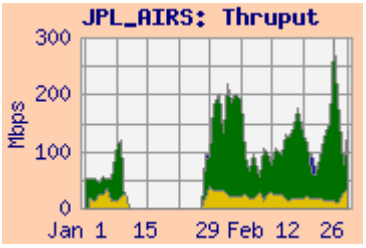
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-PTH → JPL-AIRS	276.1	114.9	40.9	18.8	120.3
GSFC-DAAC→ JPL-AIRS	112.8	94.1	47.6		
GSFC-PTH → JPL-PODAAC	226.5	67.6	19.8		
GSFC-PTH → JPL-QSCAT	91.3	51.8	16.4		
GSFC-PTH → JPL-MLS	157.2	36.3	8.0		
GSFC-NISN → JPL-MISR	50.8	32.3	14.7		
GSFC-PTH → JPL-MISR	40.6	17.0	7.9		
JPL-PTH→ GSFC PTH	64.6	64.3	63.8		
JPL-PODAAC→ GSFC DAAC	16.7	15.7	11.7		



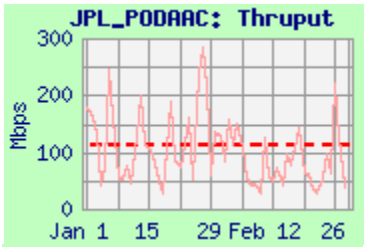
Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JPL Combined	Jan-May '08	113.8	**Adequate**
JPL → GSFC combined	CY '06-09	7.4	**Excellent**

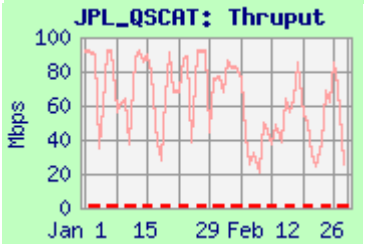


Comments: **The GSFC to JPL requirement increased Jan 1 '08, from 40 mbps to 114 mbps, due to GEOS 5 flows.** The rating downgrade last month was due entirely to this requirements increase – the measured performance was mostly consistent.

In September '07, the NISN PIP to JPL campus connection was upgraded to a Gig-E from a Fast-E (100 mbps). This circuit is no longer a bottleneck for GSFC to JPL and LaRC to JPL flows. However, the EBnet to Doors congestion at GSFC creates large variations in performance. The user flow from GSFC/EOS was similar to last month, not very far below the requirement without GEOS or contingency.



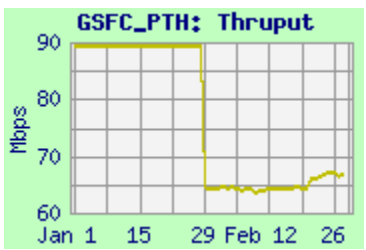
AIRS: The AIRS TLCF was upgraded to Gig-E last year, and the testing was retuned in January; thruput improved – but testing was down for most of that month due to node problems. Testing resumed in February and is now used as the basis for the rating, which remains "Adequate".



PODAAC: Thruput from GSFC-PTH increased with the NISN to JPL campus upgrade – peaks are now well over 100 mbps. Median thruput decreased, however, due to the increased congestion at GSFC.

QSCAT: Median thruput from GSFC-PTH is now typically close to 100 mbps – limited by a Fast-E connection at QSCAT, and congestion at GSFC.

MISR, MLS: Testing from GSFC-PTH is affected by the GSFC congestion. See section 2.2 (below) for these graphs.

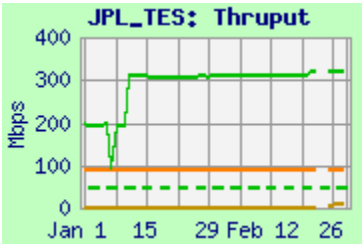


JPL → GSFC: Thruput is bimodal at either 65 or 90 mbps, like most of 2007 (thruput from JPL-PTH to LaRC-PTH is similarly bimodal). With the modest requirement, the rating remains "Excellent". The JPL → GSFC/EOS user flow was only 2.0 mbps this month – up from 0.7 mbps last month.

2.2) JPL ←→ LaRC

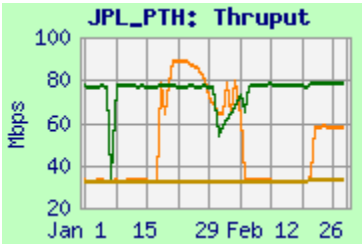
Ratings: LaRC → JPL: Continued **Excellent**
JPL → LaRC: Continued **Good**

Web Pages:
http://ensight.eos.nasa.gov/Organizations/production/JPL_TES.shtml
http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml



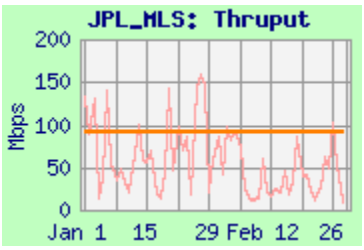
Test Results:

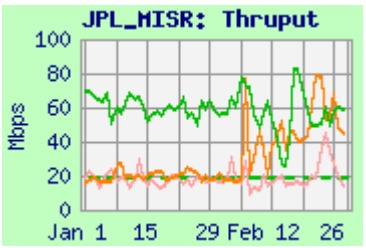
Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
LaRC DAAC → JPL-TES	311.3	310.0	278.7
LaRC PTH → JPL-TES	91.2	91.2	91.2
LaRC PTH → JPL-TES sftp	1.82	1.82	1.79
LaRC PTH → JPL-PTH sftp	32.5	32.5	32.4
LaRC PTH → JPL-MLS	91.1	91.1	91.0
LaRC DAAC → JPL-MISR	82.9	57.5	25.8
JPL-PTH → LaRC PTH	85.8	85.8	61.0



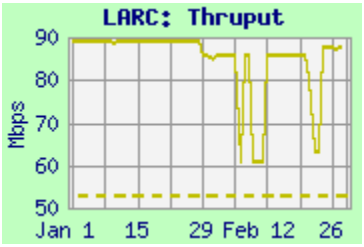
Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	FY '07 – '08	29.8	**Excellent**
LaRC DAAC → JPL-MISR	FY '07 – '08	18.5	**Excellent**
LaRC DAAC → JPL-Combined	FY '07 – '08	45.8	**Excellent**
JPL → LaRC	FY '07 – '08	52.6	**Good**





Comments: LDAAC was moved to campus address space in March '07. User flow data is no longer available from LaRC (has been requested but not implemented). Thus no integrated graphs are available from LaRC.



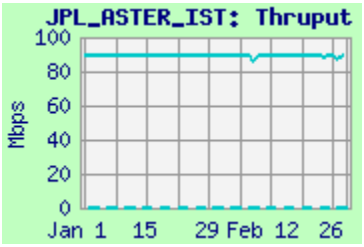
LaRC→ JPL: Performance for most tests improved and stabilized in Sept. '07 with the NISN to JPL Ethernet upgrade, and the ratings improved. Testing from LaRC to TES was retuned in January, with improved results. Also, sftp results to TES are much lower than iperf, due to TCP window limitations, but are much better from LaRC-PTH to JPL-PTH which has been patched to increase this window size. The TES system was upgraded in late February; the window size and sftp performance increased with that upgrade.

JPL → LaRC: This requirement is primarily for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. Thruput was again bimodal (along with other JPL-PTH flows). The rating remains "Good".

2.3) JPL ASTER IST

Rating: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Missions/terra/JPL_ASTER_IST.shtml



Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
ERSDAC → JPL-ASTER-IST	89.9	89.7	27.8

Comments: The test from ERSDAC was initiated in March '05, via APAN. The noisy but generally steady performance must be well in excess of the [unstated] requirement (IST requirements are generally 311 kbps), and is certainly higher than the dedicated 2 mbps EBnet circuit it replaced.

3) Boulder CO:

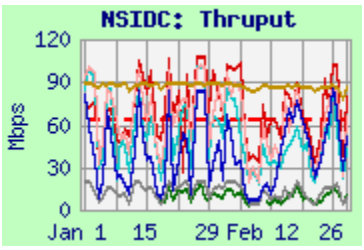
3.1) GSFC ← → NSIDC:

Ratings: NSIDC → GSFC: Continued **Excellent**
GSFC → NSIDC: ↑ Adequate → **Good**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/NSIDC.shtml

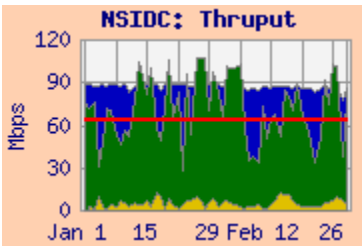
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
MODAPS → NSIDC-DAAC	89.0	86.5	56.0	4.8	86.8
GSFC-DAAC → NSIDC-DAAC	106.7	65.2	22.7		
GSFC-ENPL → NSIDC_u	68.5	68.0	52.6		
GSFC-ISIPS → NSIDC (iperf)	100.9	43.1	15.9		
GSFC-ISIPS → NSIDC (ftp)	20.3	12.1	2.9		
NSIDC DAAC → GSFC-DAAC	116.1	115.4	104.9		
NSIDC → GSFC-ISIPS (iperf)	78.6	78.3	71.1		

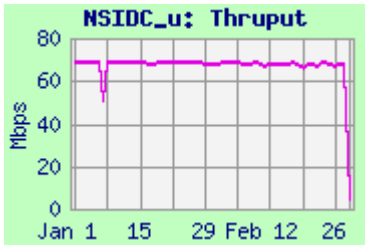


Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → NSIDC	CY '07 – '08	64.1	**Good**
NSIDC → GSFC	CY '06 – '08	13.3	**Excellent**

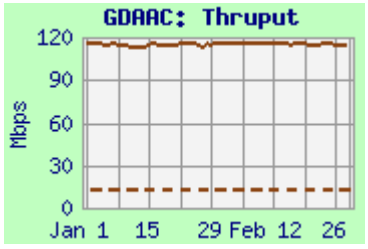


Comments: GSFC → NSIDC: This rating is now based on testing from the MODAPS PDR server to the NSIDC DAAC via NISN PIP, since this is the primary production flow. The thruput values were mostly stable this month, but affected by congestion at GSFC. The Integrated thruput is now **above** this lower requirement, by more than 30%, so the rating improves to "Good". Note that the integrated graph shows that the user flow remains **MUCH lower** than the requirement. This requirement is being re-evaluated.



GSFC → NSIDC_u via Internet2: Results via Internet2 are now also shown above, in the interest of possibly switching the production flows from PIP to Internet2. Thruput on this path was steady above the requirement. This testing was retuned in March, with improved results. So from a performance viewpoint, it appears that this is a viable option.

NSIDC → GSFC: Performance from NSIDC to GSFC was mostly steady this month; with the low requirement the rating remains "Excellent". The user flow on this path is now measured – it averaged under 1 kbps this month!



GSFC-ISIPS ← → NSIDC: Testing was retuned in December, and has been very stable since then. FTP thruput was much lower than iperf due to TCP window size limitations.

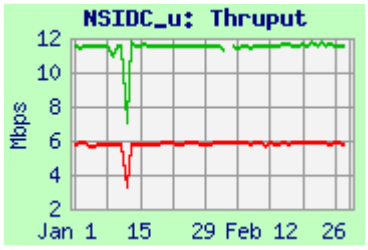
3.2) GHRC → NSIDC:

Ratings: GHRC → NSIDC: Continued **Good**

Web Pages: http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	Median	Worst	Req.
GHRC → NSIDC DAAC (iperf)	12.2	11.5	3.4	7.5
GHRC → NSIDC DAAC (ftp)	5.9	5.8	3.1	



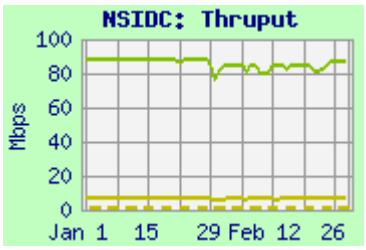
Comments: GHRC (NSSTC, UAH, Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC via mInternet2. The thruput was stable this month, and the median remains more than 30 % over the requirement, so is rated "Good". The user flow averaged a typical 500 kbps this month.

3.3) JPL → NSIDC:

Ratings: JPL → NSIDC: Continued **Excellent**

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Requirement**
JPL PTH → NSIDC-PTH	85.2	85.1	24.4	1.34
JPL PODAAC → NSIDC	7.1	6.6	5.2	



Comments: The test from JPL-PTH to NSIDC-SIDADS more fully assesses the true network capability – the thruput is much higher than from PODAAC. Thruput from JPL-PTH had been bimodal until late November – much like the JPL-PTH to GSFC and LaRC results. Thruput from PODAAC to NSIDC-SIDADS was much lower but stable. User flow is now measured on this path: only about 3 kbps this month! (Or maybe the flows are going via Internet2?) The rating remains "Excellent".

3.4) LASP:

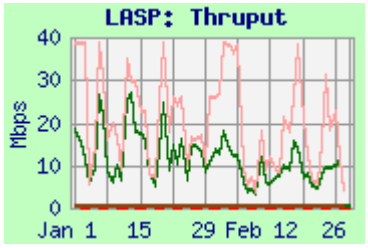
Ratings: GSFC → LASP: Continued **Excellent**

ASF → LASP: X Continued Down

Web Page: http://ensight.eos.nasa.gov/Organizations/production/LASP.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Req**
ASF → LASP	n/a	n/a	n/a	0.024
GSFC EDOS → LASP	**24.5**	**8.5**	**2.4**	0.4
GSFC PTH → LASP (iperf)	38.3	16.5	3.3	
GSFC PTH → LASP (sftp)	0.46	0.46	0.43	



Comments: The requirements are divided into ASF and GSFC sources:

ASF → LASP: Thruput from ASF to LASP is limited by ASF T1 circuit. However, in late September '07, the packet loss rate increased dramatically, with a corresponding drop of the typical thruput. The ASF IOnet test node stopped working in mid October, due to reconfiguration at ASF.

GSFC → LASP: Iperf thruput is noisy (attributed to congestion at GSFC), but well above the requirement; the rating continues "Excellent". But sftp thruput is MUCH lower than iperf, due to window size limitations -- a patch is available. The user flow averaged 81 kbps this month, about the same as recent months.

3.5) NCAR:

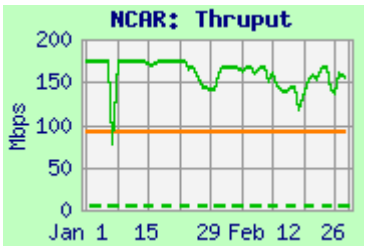
Ratings: LaRC → NCAR: Continued **Excellent**

GSFC → NCAR: Continued **Excellent**

Web Pages http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml

Test Results:

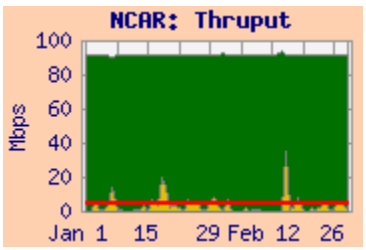
Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Requirement**
LaRC → NCAR	167.8	158.4	84.5	5.4
GSFC → NCAR	92.2	92.1	89.9	5.1



Comments: NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. Thruput from LaRC improved with retuning in December, and is well above 3 x the requirement, so the rating remains "Excellent".

From GSFC the median thruput is very steady, and also well over 3 x the requirement, so that rating also remains "Excellent". Thruput from ENPL, with a Gig-E connection to MAX, averages over 300 mbps.

The Integrated graph shows that the peak user flow from GSFC is usually consistent with the stated requirement. The average user flow this month was about 2.4 mbps (2.5 mbps last month).



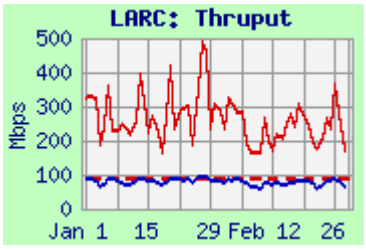
4) GSFC ←→ LaRC:

Ratings: GSFC → LaRC: ↓ Excellent → **Good**
LDAAC → GDAAC: Continued **Excellent**

Web Pages: http://ensight.eos.nasa.gov/Organizations/production/LARC.shtml
http://ensight.eos.nasa.gov/Organizations/production/LATIS.shtml

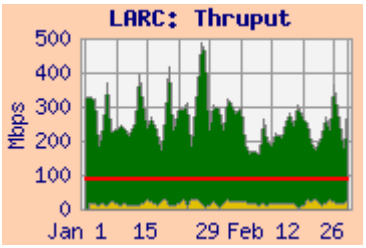
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	**Median**	**Worst**	**User Flow**	**Integrated**
GDAAC → LDAAC	416.4	239.1	123.2	19.4	242.3
GSFC-PTH → LaRC-PTH	91.6	76.5	45.6		
GSFC-NISN → LaTIS	290.4	174.1	120.4		
GSFC-PTH → LaRC-ANGe	414.5	323.3	192.7		
LDAAC → GDAAC	365.4	357.6	297.6	0.8	
LARC-ANGe → GSFC-PTH	385.4	343.7	275.6		



Requirements:

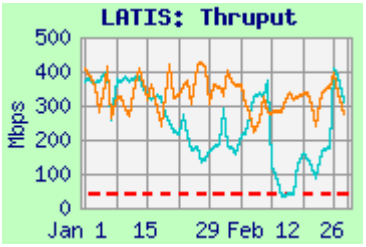
Source → Dest	Date	Mbps	Rating
GSFC → LARC (Combined)	CY '08	86.9	**Good**
LDAAC → GDAAC	FY '07 – '08	0.2	**Excellent**



Comments:

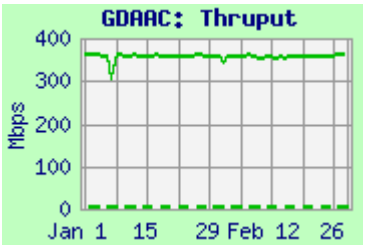
GSFC → LaRC: The requirement increased on 1 January '08 due to increased GEOS flows. The rating is based on the GDAAC to LaRC ASDC DAAC thruput, compared to this combined requirement. The integrated thruput is slightly BELOW 3 x this increased requirement, so the rating drops to "Good". Note: the lower thruput (around 90 mbps) to LaRC-PTH is limited by its 100 mbps LAN connection. The large difference between the daily best, median, and average values is attributed to congestion at GSFC.

The 19.4 mbps average user flow was a bit higher than last month's 17.3 mbps. The integrated graph shows that user flow was fairly steady. **Significant GEOS flows are apparently NOT included at this time.**



LaTIS: The thruput to LaTIS via PIP (from GSFC-PTH) was again mostly stable this month. The GSFC test node developed problems in late January (fixed in March), so those results are not meaningful at this time.

LaRC → GSFC: Performance from LDAAC → GDAAC improved with retuning in November, and remained much more than 3 x the modest requirement, so the rating continues as "Excellent". The user flow increased slightly to 800 kbps – typical for this flow



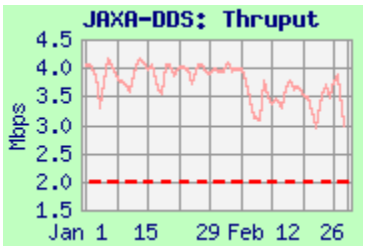
5) US ←→ JAXA:

Ratings: JAXA → US: ↓ Good → **Adequate**
US → JAXA: Continued **Good**

Web Pages
http://ensight.eos.nasa.gov/Organizations/production/JAXA_EOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JAXA_HEOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml

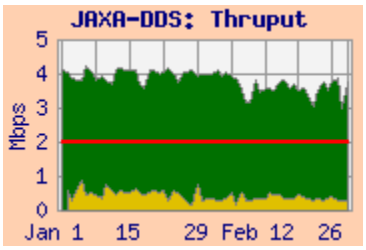
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-PTH → JAXA-DDS	4.16	3.57	2.46	0.35	3.61
GSFC-ENPL → JAXA-azusa	75.4	72.8	54.8		
GSFC-PTH → JAXA-azusa	44.1	27.0	8.6		
GSFC-PTH → JAXA (sftp)	0.85	0.83	0.70		
JAXA-DDS → JPL-QSCAT	1.80	1.49	1.15		
JAXA-DDS → GSFC-DAAC	1.10	1.09	0.96		
JAXA-azusa→ GSFC-MAX	85.9	35.3	5.1		



Requirements:

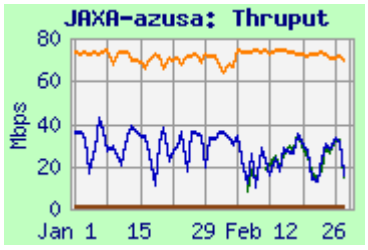
Source → Dest	Date	Mbps	Rating
GSFC → JAXA	Nov '03 – Mar '08	1.99	Good
JAXA → US	Nov '03 – Mar '08	1.28	Good



Comments:

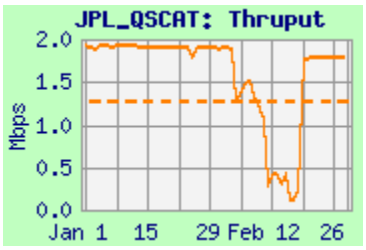
US → JAXA: DDS: Performance from GSFC is limited by TCP window size and the 10 mbps Ethernet at JAXA. Performance was mostly stable this month, but subject to the EBnet to Doors congestion at GSFC. Thruput was above the requirement, but by less than 3x; so the rating remains "Good".

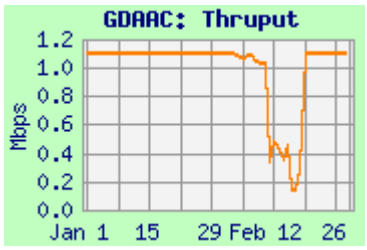
The integrated graph shows consistent user flow, about 20% of the requirement (or 30% of the requirement without the contingency).

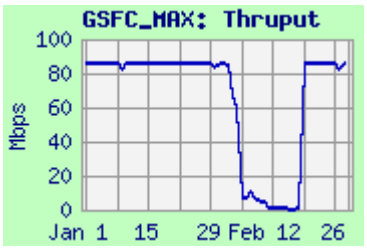


Azusa: Performance from GSFC-PTH and GSFC-ENPL to the JAXA azusa test node is not limited by a 10 mbps Ethernet, so its much higher performance more accurately shows the capability of the networks. The lower value from GSFC-PTH is due to EBnet congestion, not seen from GSFC-ENPL. But thruput using sftp between these same nodes is much lower, limited by ssh window size. A patch is available, but is not installed

JAXA → US: Thruput from DDS to JPL and GSFC is limited by the DDS node's TCP window size (which has not yet been tuned to fully utilize the increased network capability) and its 10 mbps Ethernet. The thruput took a step function down to both destinations, for about 2 weeks in February, due to increased packet loss! Average thruput from JAXA to JPL was above the requirement, but by less than 30%, so the rating drops to "Adequate". Thruput was much higher from Azusa to GSFC, with a 100 mbps Ethernet connection, and larger TCP windows. It also had a similar step function in February.







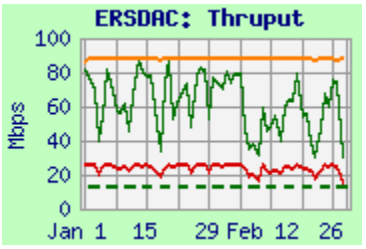
6) ERSDAC ←→ US:

Rating: GSFC → ERSDAC: Continued **Excellent**
ERSDAC → EROS: Continued **Good**

Web Page :http://ensight.eos.nasa.gov/Organizations/production/ERSDAC.shtml

US → ERSDAC Test Results

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-EDOS → ERSDAC	84.0	57.2	21.4	4.1	58.8
GDAAC → ERSDAC	26.5	23.6	13.7		
GSFC ENPL (FE) → ERSDAC	88.5	88.4	74.6		

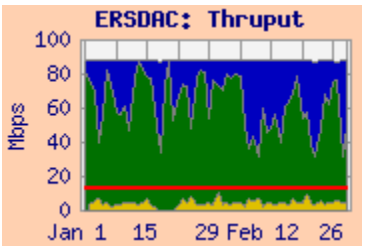


Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'05 - '08	12.5	**Excellent**

Comments: Dataflow from GSFC to ERSDAC was switched to APAN in February '05.

Testing from EDOS to ERSDAC was switched to use a FastE interface in April '07 – this test is now used as the basis for the "Excellent" rating. Peak performance is now similar to GSFC-ENPL, but the median and daily worst values are lower due to EBnet to Doors congestion. The integrated chart shows that the user flow continues to be below the requirement, by about a 3:1 factor.

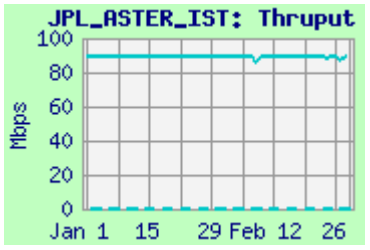


The thruput from GDAAC to ERSDAC appears to be limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Internet2 and APAN backbones are 10 Gbps), and thus exceed the capacity of the switch's FastE output circuit. But the FastE connected EDOS and GSFC-ENPL nodes are limited to 100 mbps by their own interfaces, so do not suffer performance degrading packet loss – and the performance is much higher.

The requirement includes the level 0 flows which used to be sent by tapes. The thruput continues to be more than 3 x this requirement, so the rating remains "Excellent".

ERSDAC → US Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER IST	89.9	89.7	27.8
ERSDAC → EROS	78.6	61.6	18.7

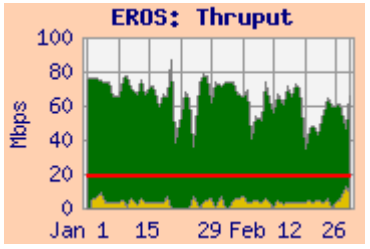


Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC→ EROS	FY '07- '08	26.8	**Good**

Comments:

ERSDAC → JPL-ASTER-IST: This performance is somewhat noisy (but less so than last month), and must be well in excess of the [unstated] requirement (IST requirements are generally 311 kbps).

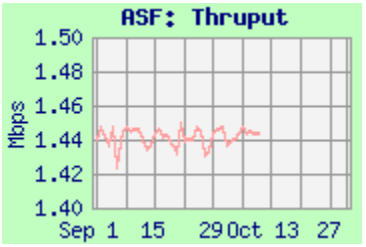


ERSDAC → EROS: The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were again very stable this month. Thruput improved to this present values in April '05. The median thruput is a bit below 3 x the requirement, so the rating remains "Good". This user flow averaged 4.4 mbps in February, in the normal range for recent months, and well below the requirement.

7) ASF

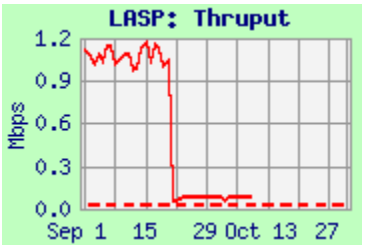
Rating: X Discontinued

Web Page: http://ensight.eos.nasa.gov/Organizations/production/ASF.shtml



Comments: The ASF IOnet host and firewall was reconfigured in October, and all IOnet testing stopped at that time. Note that the graphs on the right are from October 2007, the last month of successful testing.

GSFC to ASF: Testing to ASF transitioned to IOnet in April '06. Performance had been very stable and consistent with the T1 (1.5 mbps) circuit capacity.



ASF to LASP: Performance had been very stable for over a year limited primarily by the ASF T1; the rating "Excellent". However, in mid September, the packet loss rate increased dramatically, with a corresponding decrease in thruput.

Requirements:

Source → Dest	Date	Kbps	Rating
ASF→ LASP	FY '07	24	**n/a**

8) Other SIPS Sites:

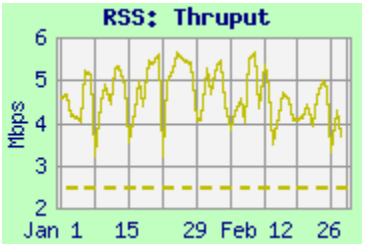
Web Pages http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml
http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	**Median**	**Worst**	**Reqmt**	**Rating**
JPL → RSS	5.7	4.4	1.9	2.4	Continued **Good**
OMISIPS → KNMI-ODPS	18.9	16.9	11.7	3.3	Continued **Excellent**

Comments:

8.1 RSS: RSS (Santa Rosa, CA) is a SIPS for AMSR-E (Aqua), receiving data from JPL, and sending its processed results to GHRC (aka NSSTC) (UAH, Huntsville, AL). This month the thruput from JPL remained noisy. Periods of low performance are believed to be attributable to correspondingly high user flow (User flow data remains unavailable on this circuit). The median iperf thruput is above the requirement, by more than 30%, so the rating remains "Good".



Note that with the present configuration (passive servers at both RSS and GHRC), the RSS to GHRC performance cannot be tested.

8.2 KNMI: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Internet2, peering in DC with Geant's 10Gbps circuit to Frankfurt, then via Surfnet through Amsterdam. The rating is based on the results from OMISIPS at GSFC to the ODPS primary server, protected by a firewall, and remains "Excellent". The user flow averaged only 1.4 mbps in February, a bit lower than recent months, as well as the requirement, as shown on the integrated graph.