

EOS Production Sites Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for September 2007 -- comparing the measured performance against the requirements.

Highlights:

- **Mostly stable flows** – GPA 3.30 (Last month: 3.38)
- **Only 2 flows below “Adequate”:**
 - GSFC GES DAAC to EROS (“**Almost Adequate**”)
 - Requirement is under review
 - JPL to RSS (“**Almost Adequate**”)
 - Appears due to high user flow – flow data unavailable
- **Upgrade:** NISN PIP to JPL Campus
 - Fast-E (100 mbps) → Gig-E (1 gbps) on Sept 15
- **Bottlenecks:**
 - GSFC: EBnet to Doors Gig-E
 - JPL: AIRS TLCF to campus LAN
- **User Flow:** Collecting user flow data on 5 more paths.
- **Requirements Update:** 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)

Upgrade: ↑: None

Downgrade: ↓:

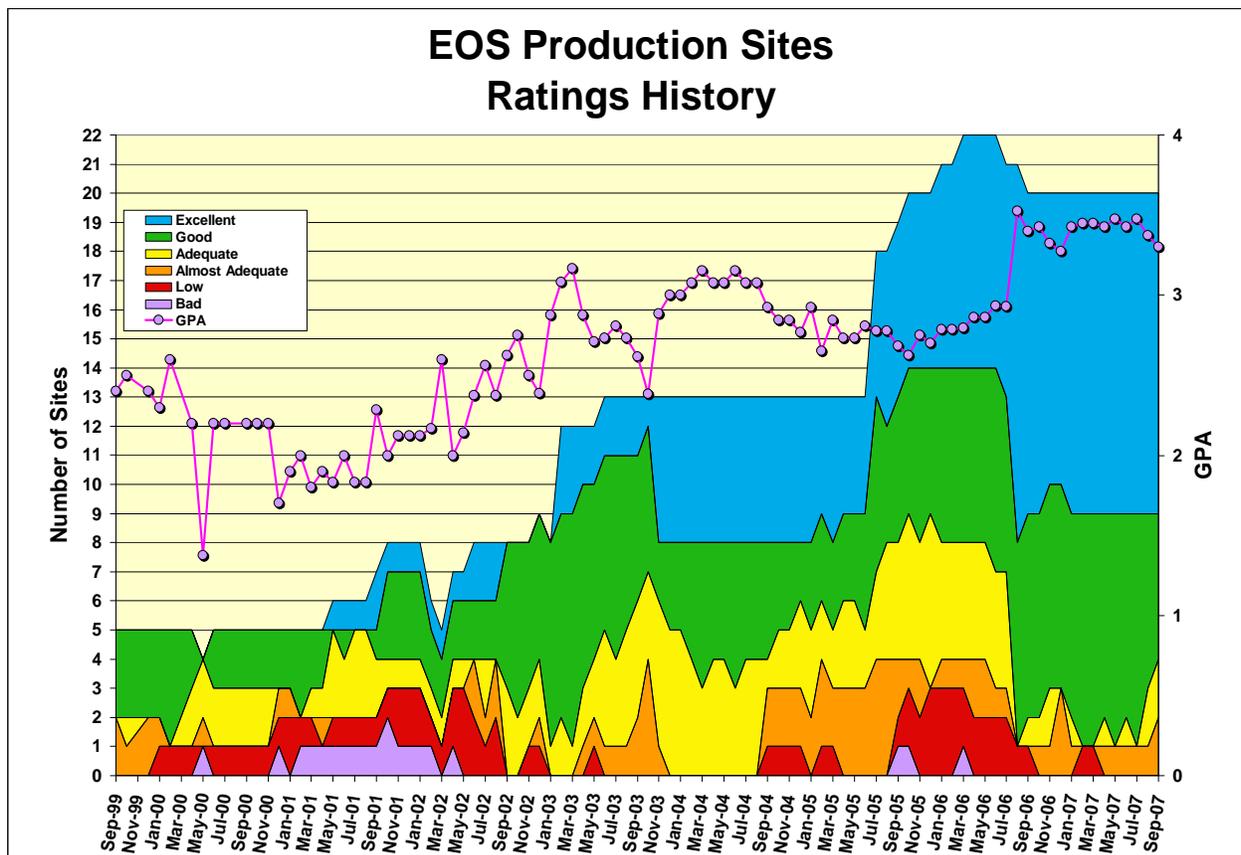
JPL → RSS: Good → **Almost Adequate**

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

Ratings History:



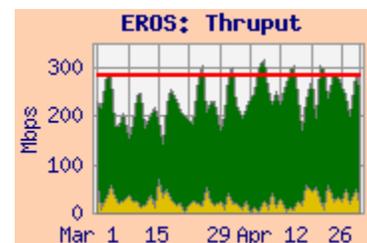
The chart above shows the number of sites in each classification since EOS Production Site testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

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:

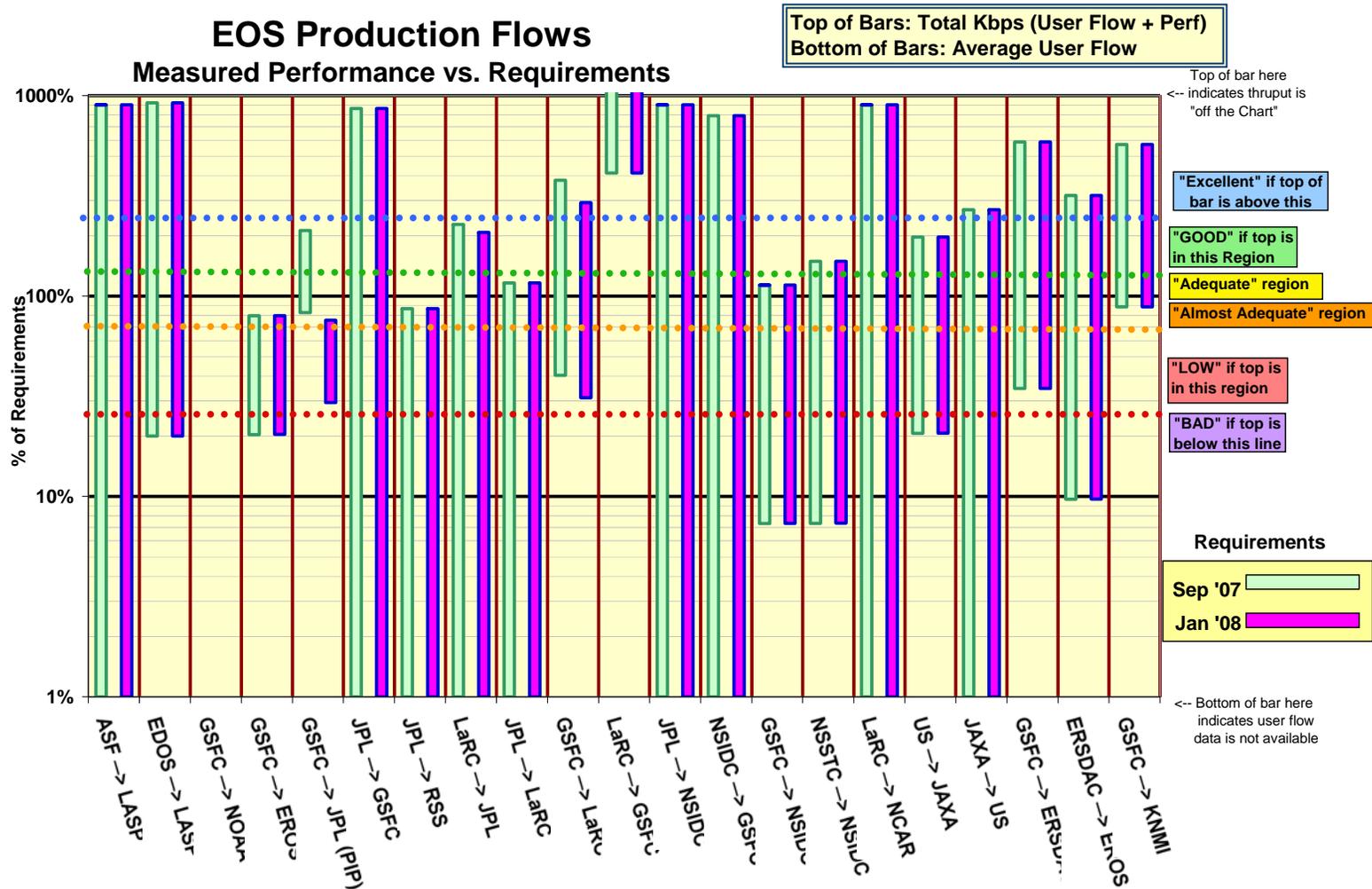
Integrated charts are included with site details, where available. These charts are “Area” charts, with a pink background. A sample Integrated chart is shown here. The yellow area at the bottom represents the daily average of the user flow from the source facility (e.g., GSFC, in this example) to the 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 thrupt 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

September 2007		Requirements (mbps)		Testing				Ratings		
Source → Destination	Team (s)	Current	Future	Source → Dest Nodes	Avg User Flow mbps	iperf Avg mbps	Integrated mbps	Rating re Current Requirements		Rating re
		Sep-07	Jan-08					Sep-07	Last Month	Jan-08
GSFC → ASF	QuikScat, Radarsat	n/a	n/a	GSFC-PTH → ASF		1.44		n/a	n/a	n/a
ASF → LASP	QuikScat	0.02	0.02	ASF → LASP [via IOnet]		1.02		Excellent	E	Excellent
EDOS → LASP	ICESat, QuikScat	0.4	0.4	EDOS → LASP [via IOnet]	0.08	11.6		Excellent	E	Excellent
GSFC → NOAA	QuikScat	0.0	0.0	n/a		n/a		n/a	n/a	n/a
GSFC → EROS	MODIS, LandSat	285.4	285.4	GDAAC → EROS LPDAAC	58.1	203.6	228.0	A A	A A	A A
GSFC → JPL (PIP)	AIRS, ISTs	40.5	113.8	GSFC-PTH → JPL-PODAAC	33.5	74.4	86.2	GOOD	G	LOW
JPL → GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PTH → GSFC-PTH		63.9		Excellent	E	Excellent
JPL → RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS		2.1		A A	G	A A
LaRC → JPL	TES, MISR	39.6	43.2	LARC-DAAC → JPL-TES		90.0		GOOD	G	GOOD
JPL → LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH		61.1		Adequate	A	Adequate
GSFC → LaRC	CERES, MISR, MOPITT	67.2	86.9	GDAAC → LDAAC	27.0	244.6	254.0	Excellent	E	GOOD
LaRC → GSFC	MODIS, TES	0.2	0.2	LDAAC → GDAAC	0.8	184.2	184.2	Excellent	E	Excellent
JPL → NSIDC	AMSR-E	1.3	1.3	JPL-PTH → NSIDC SIDADS		59.8		Excellent	E	Excellent
NSIDC → GSFC	MODIS, ICESAT, QuikScat	13.3	13.3	NSIDC DAAC → GDAAC	0.0	105.9	105.9	Excellent	E	Excellent
GSFC → NSIDC	MODIS, ICESAT, QuikScat	64.1	64.1	GDAAC → NSIDC-DAAC	4.7	72.7	72.7	Adequate	A	Adequate
NSSTC → NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	0.6	11.2	11.2	GOOD	G	GOOD
LaRC → NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR		153.0		Excellent	E	Excellent
US → JAXA	QuikScat, TRMM, AMSR	2.0	2.0	GSFC-PTH → JAXA DDS	0.4	3.80	3.91	GOOD	G	GOOD
JAXA → US	AMSR-E	1.3	1.3	JAXA DDS → JPL-QSCAT		3.46		GOOD	G	GOOD
GSFC → ERSDAC	ASTER	12.5	12.5	EDOS → ERSDAC	4.3	71.1	73.1	Excellent	E	Excellent
ERSDAC → EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	2.6	85.0	85.2	Excellent	E	Excellent
GSFC → KNMI	OMI	3.3	3.3	GSFC-OMISIPS → OMI-PDR	2.9	18.7	18.7	Excellent	E	Excellent
							Ratings Summary			
							Sep-07 Req		Jan-08	
							Score	Prev	Score	
*Criteria:	Excellent	Total Kbps > Requirement * 3				Excellent	11	11	10	
	GOOD	1.3 * Requirement <= Total Kbps < Requirement * 3				GOOD	5	6	5	
	Adequate	Requirement < Total Kbps < Requirement * 1.3				Adequate	2	2	2	
	Almost Adequate	Requirement / 1.3 < Total Kbps < Requirement				Almost Adequate	2	1	2	
	LOW	Requirement / 3 < Total Kbps < Requirement / 1.3				LOW	0	0	1	
	BAD	Total Kbps < Requirement / 3				BAD	0	0	0	
							Total Sites			
							20	20	20	
Notes:	Flow Requirements include: TRMM, Terra, Aqua, Aura, ICESAT, QuikScat, GEOS						GPA			
							3.30	3.38	3.15	

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 (September '07 and January '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 **Almost Adequate**
 ERSDAC → EROS: Continued **Excellent**

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)			User Flow	Integrated
	Best	Median	Worst		
GSFC-DAAC → EROS LPDAAC	325.4	203.6	79.3	58.1	228.0
ERSDAC → EROS	87.9	85.0	75.9	2.6	
GSFC-PTH → EROS PTH	421.3	205.2	56.9		
GSFC-ENPL → EROS PTH	482.0	457.5	318.5		
NSIDC → EROS	92.9	90.4	84.9		
LaRC → EROS	92.9	92.9	92.5		
EROS LPDAAC → GSFC DAAC	118.9	108.8	60.9		
EROS PTH → GSFC PTH	464.7	439.7	396.7		

Requirements:

Source → Dest	Date	mbps	Rating
GSFC → EROS	→ Mar '08	285	Almost Adequate
ERSDAC → EROS	FY '06, '07	26.8	Excellent

Comments:

GSFC → EROS: The rating is based on the DAAC to DAAC measurement. 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 a bit higher than last month, but is far below the nominal requirement, apparently due to the use of compression on the MODIS collection 5 data (began at the end of 2006). The user flow had a small contribution to the integrated measurement on which the rating is based. This performance is predominantly limited by congestion on the EBnet to Doors Gig-E circuit, as shown by the large best:worst ratio seen from the GDAAC and GSFC-PTH hosts. The performance is about the same as last month, the rating continues "Almost Adequate". However, it appears that a reduction of the requirement will be forthcoming, due primarily to the MODIS collection 5 compression.

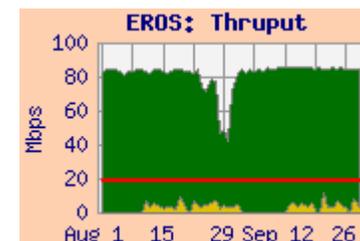
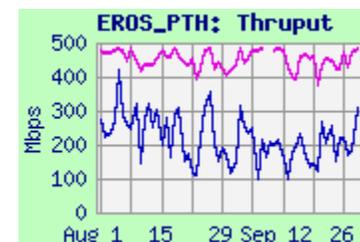
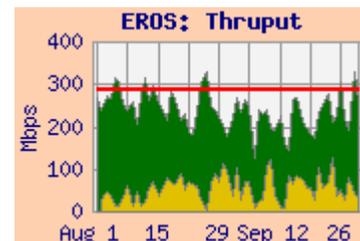
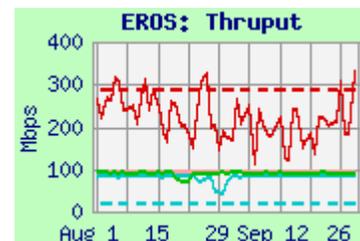
The GSFC-ENPL host has a direct connection to the MAX, bypassing the congested EBnet to Doors Gig-E circuit, and using the previous Internet2 route. It does not experience similar congestion to the DAAC. From ENPL, the performance would be rated "Good".

ERSDAC → EROS: The median thrupt from ERSDAC to EROS-PTH (in support of the ASTER flow) remained stable on the APAN / Internet2 route (limited by the ERSDAC 100 mbps tail circuit), and averages more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating. User flow averaged 2.6 mbps this month -- this is also considerably below the requirement.

NSIDC → EROS: The median thrupt from NSIDC-SIDADS to EROS-PTH was also stable this month.

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

EROS → GSFC: The thrupt 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.



2) JPL:

2.1) JPL ↔ GSFC:

Ratings: GSFC → JPL: Continued **Good**
 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	NET	Medians of daily tests (mbps)			User Flow	Integrated
		Best	Median	Worst		
GSFC-DAAC → JPL-AIRS	PIP	47.5	39.3	25.7	32.9	49.7
GSFC-CNE → JPL-AIRS	SIP	47.5	39.3	25.7		
GSFC-PTH → JPL-QSCAT	PIP	89.4	58.1	25.0		
GSFC-PTH → JPL-PODAAC	PIP	174.1	74.4	30.8		
GSFC-PTH → JPL-MLS	PIP	69.3	45.9	11.8		
GSFC-PTH → JPL-MISR	SIP	80.2	46.5	14.4		
JPL-PTH → GSFC PTH	PIP	64.2	63.9	63.1		
JPL-PODAAC → GSFC DAAC	PIP	38.9	27.0	9.4		

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JPL Combined	April-Dec '07	40.5	Good
JPL → GSFC combined	CY '06-09	7.4	Excellent

Comments:

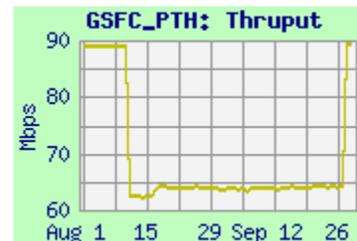
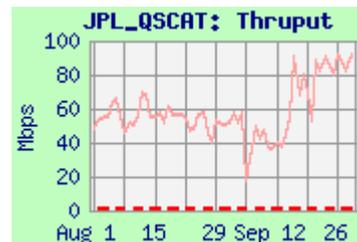
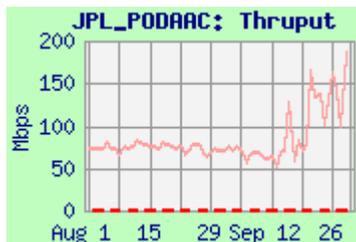
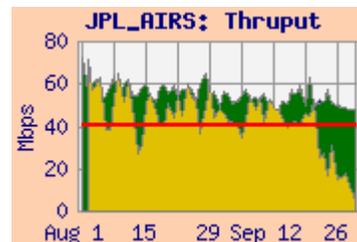
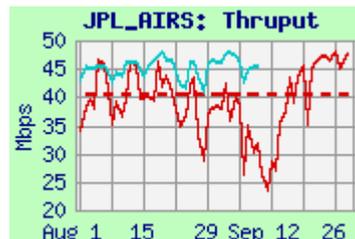
GSFC → JPL: On September 15, the NISN PIP to JPL campus connection was upgraded to a Gig-E from a Fast-E (100 mbps). This circuit is no longer a bottleneck for GSFC to JPL and LaRC to JPL flows. Improvements were noted on most flows.

AIRS: The AIRS TLCF is still limited by a Gig-E connection to the JPL campus LAN (expected to be upgraded in a month or so). However; thruput from GDAAC did improve and stabilize somewhat after the upgrade. User flow was still high, but less than the 45 mbps last month. The rating remains "Good".

QSCAT and PODAAC: Median thruput from GSFC-PTH increased with the upgrade – now over 100 mbps to PODAAC.

MISR, MLS: Testing from GSFC-PTH to MISR and MLS also increased with the upgrade. See section 2.2 (below) for the graphs.

JPL → GSFC: The previous JPL-PODAAC to GSFC-DAAC testing was replaced by JPL-PTH to GSFC-PTH testing to better reflect the network capabilities. Thruput was mostly stable at close to 90 mbps in July, but dropped to about 65 mbps on Aug 11 (thruput from JPL-PTH to LaRC-PTH also dropped at the same time), then recovered at the end of September. With the modest requirement, the rating remains "Excellent". The JPL → GSFC/EOS user flow is now measured – it was only 1.4 mbps in September.



2.2) JPL ↔ LaRC

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

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	117.5	90.0	62.9
LaRC PTH → JPL-TES	91.2	82.3	67.9
LaRC PTH → JPL-TES sftp	1.82	1.80	1.53
LaRC PTH → JPL-PTH sftp	32.5	32.5	31.9
LaRC PTH → JPL-MLS	91.0	83.9	77.5
LaRC DAAC → JPL-MISR	76.1	50.0	33.5
JPL-PTH → LaRC PTH	67.8	61.1	60.6

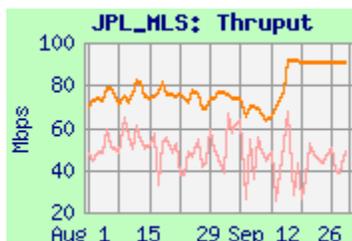
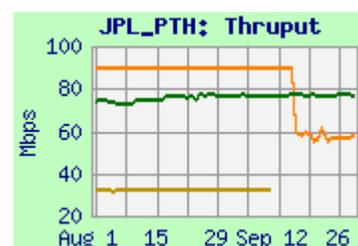
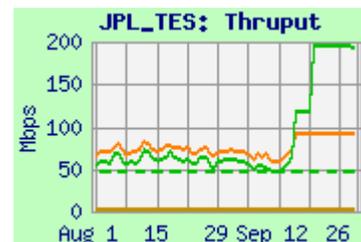
Requirements:

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

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 for these flows.

LaRC → JPL: Performance for most tests improved and stabilized on Sept. 15 with the NISN to JPL Ethernet upgrade; the rating remains "Good" (may improve next month with a full month of improvement). Sftp results are much lower than iperf, due to TCP window limitations, but improved in late April from LaRC-PTH to JPL-PTH via a patch to increase this window size.

JPL → LaRC: This requirement is primarily for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. Thruput was mostly stable at close to 90 mbps in July, but dropped to about 65 mbps on Aug 11, then recovered at the end of September (as did JPL-PTH to GSFC-PTH). The rating remains "Adequate". However, the user flow (measured from the NISN router at JPL), was only 1.8 mbps – way below the requirement.



2.3) JPL ASTER IST

Rating: n/a

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

Comments: The test from ERSDAC was initiated in March '05, via APAN replacing the EBnet circuit. The IST node was moved in late July – testing stopped at that time, but resumed from ERSDAC in October (results similar to previous tests). Testing from EROS and GSFC is currently being blocked by "stateful" firewalls and asymmetric routing. The performance was previously very stable at 83 mbps -- this must be well in excess of the [unstated] requirement (IST requirements are generally 311 kbps).

3) Boulder CO:

3.1) GSFC ← → NSIDC DAAC: Ratings: GSFC → NSIDC: Continued **Adequate**
 NSIDC → GSFC: Continued **Excellent**

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

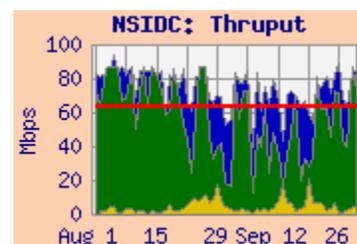
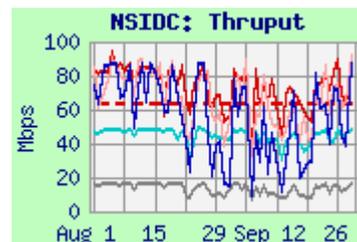
Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GSFC-DAAC → NSIDC-DAAC	97.8	72.7	25.5	4.7	72.7
GSFC-PTH → NSIDC-DAAC	94.8	60.6	21.4		
GSFC-ISIPS → NSIDC (iperf)	48.5	43.8	19.6		
GSFC-ISIPS → NSIDC (ftp)	19.6	12.8	4.4		
NSIDC DAAC → GSFC-DAAC	121.5	105.9	29.4		
NSIDC → GSFC-ISIPS (iperf)	86.4	55.0	25.7		

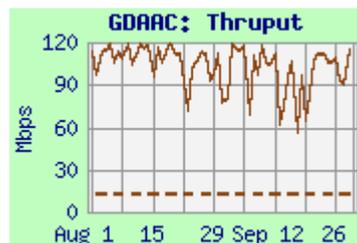
Requirements:

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

Comments: GSFC → NSIDC: This rating is based on testing from GDAAC to the NSIDC DAAC. The daily median and worst iperf and integrated thrupt values were lower this month (although the peaks were about the same). **This drop is attributed to increased congestion at GSFC.** The requirement varies, based on planned ICESAT reprocessing. Reprocessing **IS NOT** included in the requirements for CY '07. **The Integrated thrupt remains above this lower requirement but by less than 30%, so the rating remains "Adequate"**. Note that in November and December '06 the reprocessing **was** included – the requirement was higher (78 mbps), and the rating would also have been "Almost Adequate". **Note that the integrated graph shows that the user flow remains MUCH lower than the requirement.** This requirement is being re-evaluated.



NSIDC → GSFC: Performance from NSIDC to GSFC remained stable, after improving dramatically with the NISN WANR upgrade in August '06; the rating remains "Excellent". **The user flow on this path is now measured – it averaged only 40 kbps this month!**



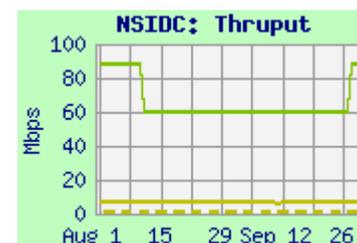
GSFC-ISIPS ← → NSIDC: Performance between ISIPS and NSIDC was at nominal levels for the circuit capacity **until it dropped in Mid-July.** FTP thrupt was much lower than iperf due to window size limitations.

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

Test Results:

Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
JPL PTH → NSIDC-PTH	59.8	59.8	22.3	1.34
JPL PODAAC → NSIDC	7.7	7.2	6.5	1.34

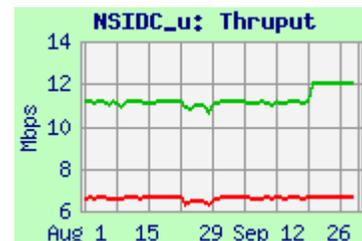
Comments: The test from JPL-PTH to NSIDC-SIDADS more fully assesses the true network capability – the thrupt is much higher than from PODAAC. Thrupt from JPL-PTH dropped on Aug 11 – then improved back to the previous value in late September – much like the JPL-PTH to GSFC and LaRC results. Thrupt from PODAAC to NSIDC-SIDADS was much lower but stable. **User flow is now measured on this path: only about 5 kbps this month! (Or maybe the flows are going via Internet?)** The rating remains "Excellent".



3.3) 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 ests (mbps)			Req.
	Best	Median	Worst	
GHRC → NSIDC DAAC (iperf)	11.2	11.2	3.2	7.5
GHRC → NSIDC DAAC (ftp)	6.7	6.7	3.7	

Comments: GHRC (NSSTC, UAH, Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. The throughput was stable this month, and the median remains more than 30 % over the requirement, so is rated "Good". The user flow averaged 550 kbps this month (was 530 kbps average in August).

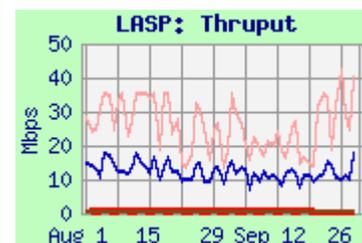
**3.4) LASP:**Ratings: GSFC → LASP: Continued **Excellent**ASF → LASP: Continued **Excellent**Web Page: <http://ensight.eos.nasa.gov/Organizations/production/LASP.shtml>**Test Results:**

Source → Dest	Medians of daily tests (mbps)			Req
	Best	Median	Worst	
ASF → LASP	1.33	1.02	0.37	0.024
GSFC EDOS → LASP	24.9	11.6	3.9	0.4
GSFC PTH → LASP (iperf)	35.8	23.4	6.4	
GSFC PTH → LASP (sftp)	0.50	0.50	0.48	

Comments: The requirements are divided into ASF and GSFC sources: Performance continues noisy from all sources.

ASF → LASP: Thruput from ASF to LASP is limited by ASF T1 circuit, rating "Excellent", due to the modest requirement.

GSFC → LASP: 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 was 80 kbps average in September – similar to August.

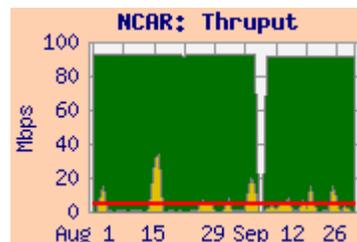
**3.5) NCAR:**Ratings: LaRC → NCAR: Continued **Excellent**GSFC → NCAR: Continued **Excellent**Web Pages: <http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml>**Test Results:**

Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
LaRC → NCAR	159.4	153.0	97.4	5.4
GSFC → NCAR	92.2	92.2	90.2	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 stabilized in July, and is well above 3 x the requirement, so the rating remains "Excellent".

From GSFC the median thruput is also well over 3 x the requirement, so that rating also remains "Excellent".

The Integrated graph shows that the peak user flow from GSFC is moderately consistent with the stated requirement. The average user flow for September was about 1.5 mbps (was 1.8 mbps last month).



4) GSFC ↔ LaRC:

Ratings: GSFC → LaRC: Continued **Excellent**
 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)			User Flow	Integrated
	Best	Median	Worst		
GDAAC → LDAAC	398.7	244.6	102.9	27.0	254.0
GSFC-PTH → LaRC-PTH	93.4	91.5	51.2		
GSFC-NISN → LaTIS	268.3	252.6	186.3		
GSFC-PTH → LaRC-ANGe	320.5	271.7	175.6		
LDAAC → GDAAC	344.1	184.2	70.6		
LARC-ANGe → GSFC-PTH	349.2	332.9	278.0		

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → LARC (Combined)	Nov '06 – Dec '07	67.2	Excellent
LDAAC → GDAAC	FY '07	0.2	Excellent

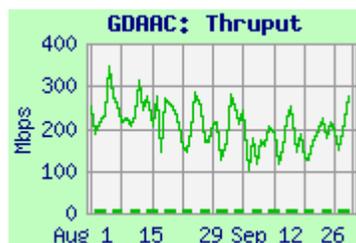
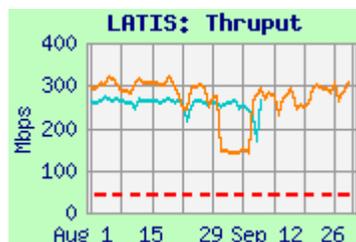
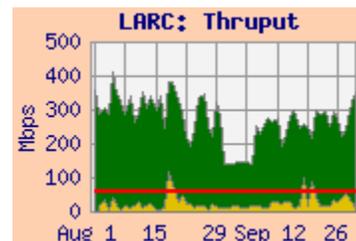
Comments:

GSFC → LaRC: The “Excellent” rating is based on the GDAAC to LaRC ECS DAAC thrupt, compared to the combined requirement. Note: the lower thrupt (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 average user flow was about the same as last month’s. The integrated graph shows it was somewhat steady, with a few short (but large volume) bursts (from MODIS).

LaTIS: The thrupt to LaTIS via PIP (from GSFC-PTH) was stable this month, except for a 1 week period, and stable via SIP (from GSFC-NISN), but testing stopped in September when node difficulties began.

LaRC → GSFC: Performance from LDAAC → GDAAC was mostly stable, and remained much more than 3 x the modest requirement, so the rating continues as “Excellent”. The user flow is now measured – it was only 800 kbps in September.



5) US ↔ JAXA:

Ratings: JAXA → US: Continued **Good**
 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)			User Flow	Integrated
	Best	Median	Worst		
GSFC-PTH → JAXA-DDS	4.11	3.80	2.49	0.41	3.91
GSFC-ENPL → JAXA-azusa	69.2	56.6	31.8		
GSFC-PTH → JAXA-azusa	45.2	29.3	11.3		
GSFC-PTH → JAXA (sftp)	0.83	0.82	0.72		
JAXA-DDS → JPL-QSCAT	3.49	3.46	2.47		
JAXA-DDS → GSFC-DAAC	1.80	1.78	1.04		
JAXA-azusa → GSFC-MAX	60.3	45.4	16.0		

Requirements:

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

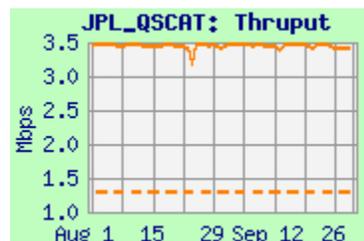
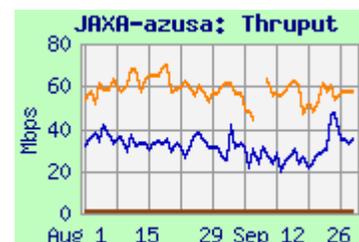
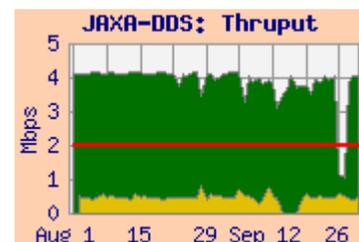
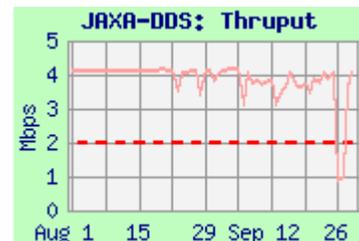
Comments:

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

The integrated graph shows very consistent user flow, about 25% of the requirement.

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. 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 from JAXA to JPL was more than 30% over the requirement, but less than 3 x, so the rating remains "Good". Thruput was much higher from Azusa to GSFC, with a 100 mbps Ethernet connection, and larger TCP windows.



6) ERSDAC ↔ US: Rating: Continued **Excellent**Web Page :<http://ensight.eos.nasa.gov/Organizations/production/ERSDAC.shtml>**US → ERSDAC Test Results**

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GSFC-EDOS → ERSDAC	84.2	71.1	24.7	4.3	73.1
GDAAC → ERSDAC	31.2	23.1	10.2		
GSFC ENPL (FE) → ERSDAC	88.2	88.1	80.3		

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'05 - '07	12.5	Excellent

Comments: Dataflow from GSFC to ERSDAC was switched to APAN in February '05, and the performance above is via that route.

Testing from EDOS to ERSDAC was switched to use a FastE interface around April 10 (was previously limited by a 10 mbps Ethernet at EDOS). This resulted in a big improvement in performance – this test is now used as the basis for the “Excellent” rating. Performance is now similar to GSFC-ENPL, but somewhat 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 thrupt 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 Abilene and APAN backbones are 10 Gbps), and thus exceeds 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 thrupt 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	n/a	n/a	n/a
ERSDAC → EROS	86.7	84.1	69.2

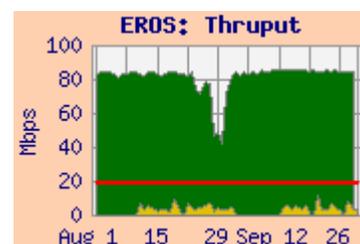
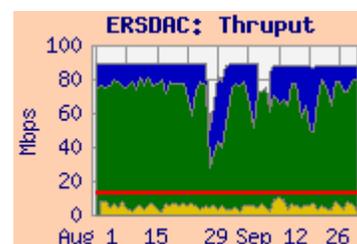
Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC → EROS	FY '07	26.8	Excellent

Comments:

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The JPL ASTER IST node was moved in late July. Testing stopped at that time, and resumed in October -- at similar performance to the previous 83 mbps. This 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. Thrupt improved to this present values in April '05. The median thrupt is more than 3 x the requirement, so the rating remains “Excellent”. This user flow averaged 2.6 mbps in September, well below the 4.7 mbps in August and the requirement.



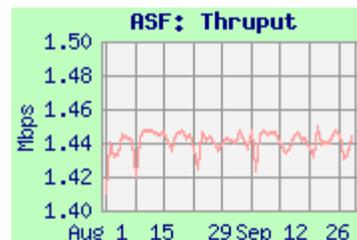
7) ASF

Rating: Continued **Excellent**

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

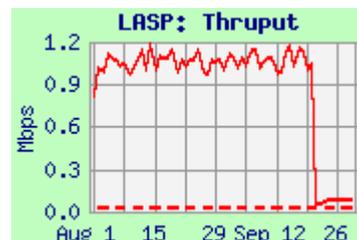
Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-PTH → ASF	1.46	1.44	1.31
ASF → LASP	1.33	1.02	0.37



Comments: **GSFC to ASF:** Testing to ASF transitioned to IOnet in April '06. Performance has 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. The ASF firewall was reconfigured in October, and testing stopped at that time.



Requirements:

Source → Dest	Date	Kbps	Rating
ASF → LASP	FY '07	24	Excellent

8) Other SIPS Sites:

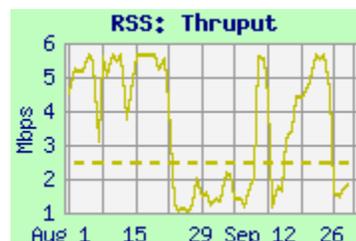
Web Pages <http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml>
http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
JPL → RSS	5.3	2.1	0.8	2.4	Good → Almost Adequate
OMISIPS → KNMI-ODPS	18.3	17.9	13.4	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) (Huntsville, AL). This month the thruput from JPL was very 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 dropped below the requirement, but within 30%, so the rating drops to "Almost Adequate"



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 Frankfurt, then Surfnet via Amsterdam. The rating is based on the results from OMISIPS at GSFC to the ODPS primary server, protected by a firewall. This was quite a bit lower than previously to the KNMI Backup server, which was outside the firewall. Thruput remains stable and well above 3 x the requirement, rating "Excellent". The user flow averaged 2.4 mbps in September (similar to August), mostly steady with occasional peaks, as shown on the integrated graph.

