

EOS Production Sites Network Performance Report

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

Highlights:

- **Mostly stable flows** – GPA 3.35 (Last month: 3.30)
- **3 flows below “Adequate”:**
 - GSFC GES DAAC to EROS (“**Low**”)
 - GSFC GES DAAC to NSIDC (“**Almost Adequate**”)
 - Due to congestion at GSFC
 - Requirements are under review
 - JPL to RSS (“**Almost Adequate**”)
 - Appears due to high user flow – flow data unavailable
- **Upgrade:** NISN PIP to JPL Campus (Sept 15)
 - Affects all of October (vs half of September)
- **Bottlenecks:**
 - GSFC: EBnet to Doors Gig-E
 - JPL: AIRS TLCF to campus LAN
- **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: ↑:

JPL → LaRC: Adequate → **Good**
LaRC → JPL: Good → **Excellent**

Downgrade: ↓:

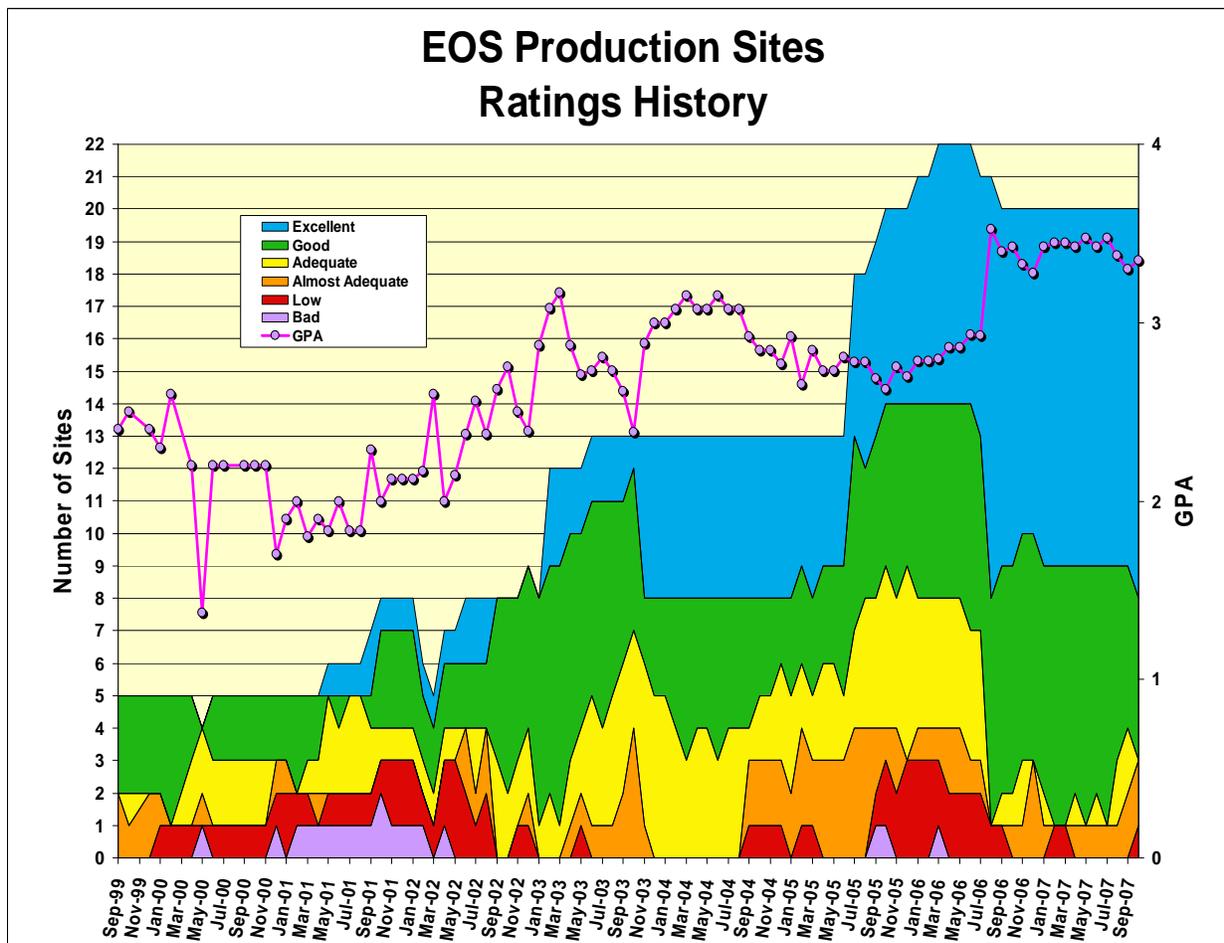
GSFC → NSIDC: Adequate → **Almost Adequate**
GSFC → EROS: Almost Adequate → **Low**

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:



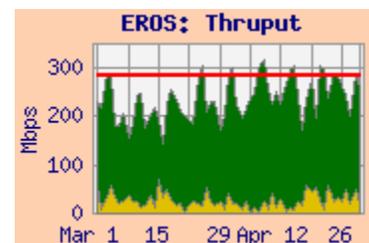
The chart above shows the number of sites in each classification since EOS Production Site testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

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:

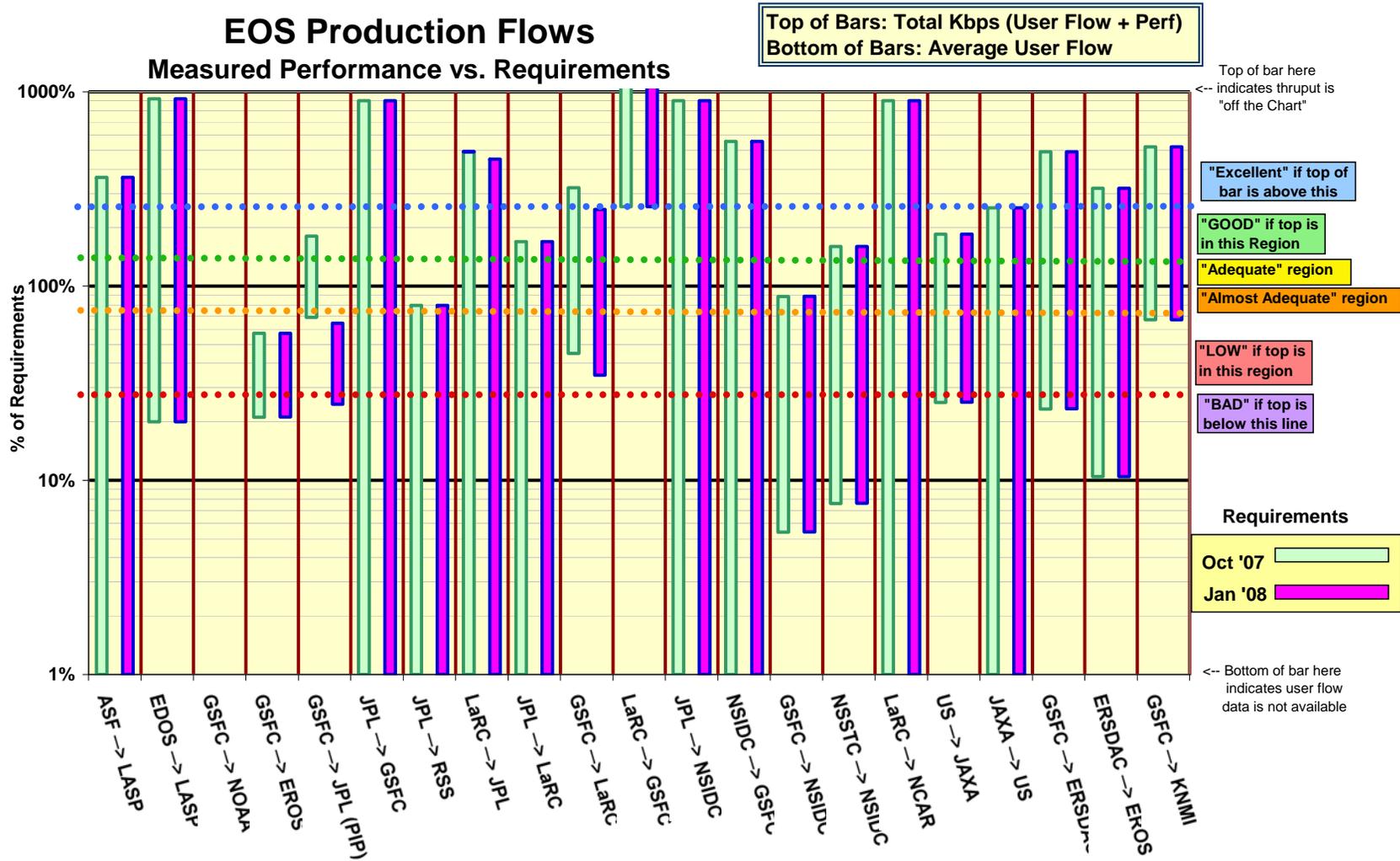
Integrated charts are included with site details, where available. These charts are “Area” charts, with a pink background. A sample Integrated chart is shown here. The yellow area at the bottom represents the daily average of the user flow from the source facility (e.g., GSFC, in this example) to the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

October 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
		Oct-07	Jan-08					Oct-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]		0.09		Excellent	E	Excellent
EDOS → LASP	ICESat, QuikScat	0.4	0.4	EDOS → LASP [via IOnet]	0.08	7.7		Excellent	E	Excellent
GSFC → EROS	MODIS, LandSat	285.4	285.4	GDAAC → EROS LPDAAC	60.3	136.1	162.9	LOW	AA	LOW
GSFC → JPL (PIP)	AIRS, ISTs	40.5	113.8	GSFC-PTH → JPL-PODAAC	28.0	64.5	73.2	GOOD	G	LOW
JPL → GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PTH → GSFC-PTH		89.1		Excellent	E	Excellent
JPL → RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS		1.98		AA	AA	AA
LaRC → JPL	TES, MISR	39.6	43.2	LARC-DAAC → JPL-TES		194.7		Excellent	G	Excellent
JPL → LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH		88.9		GOOD	A	GOOD
GSFC → LaRC	CERES, MISR, MOPITT	67.2	86.9	GDAAC → LDAAC	30.2	201.0	215.3	Excellent	E	GOOD
LaRC → GSFC	MODIS, TES	0.2	0.2	LDAAC → GDAAC	0.5	143.0	143.0	Excellent	E	Excellent
JPL → NSIDC	AMSR-E	1.3	1.3	JPL-PTH → NSIDC SIDADS		88.5		Excellent	E	Excellent
NSIDC → GSFC	MODIS, ICESAT, QuikScat	13.3	13.3	NSIDC DAAC → GDAAC	0.04	73.9	73.9	Excellent	E	Excellent
GSFC → NSIDC	MODIS, ICESAT, QuikScat	64.1	64.1	GDAAC → NSIDC-DAAC	3.5	54.9	56.7	AA	A	AA
NSSTC → NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	0.6	12.0	12.0	GOOD	G	GOOD
LaRC → NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR		140.4		Excellent	E	Excellent
US → JAXA	QuikScat, TRMM, AMSR	2.0	2.0	GSFC-PTH → JAXA DDS	0.5	3.53	3.68	GOOD	G	GOOD
JAXA → US	AMSR-E	1.3	1.3	JAXA DDS → JPL-QSCAT		3.24		GOOD	G	GOOD
GSFC → ERSDAC	ASTER	12.5	12.5	EDOS → ERSDAC	2.9	56.6	61.2	Excellent	E	Excellent
ERSDAC → EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	2.8	85.3	85.5	Excellent	E	Excellent
GSFC → KNMI	OMI	3.3	3.3	GSFC-OMISIPS → OMI-PDR	2.2	16.5	17.1	Excellent	E	Excellent
								Ratings Summary		
								Oct-07 Req		Jan-08
								Score	Prev	Score
*Criteria:	Excellent	Total Kbps > Requirement * 3				Excellent		12	11	11
	GOOD	1.3 * Requirement <= Total Kbps < Requirement * 3				GOOD		5	5	5
	Adequate	Requirement < Total Kbps < Requirement * 1.3				Adequate		0	2	0
	Almost Adequate	Requirement / 1.3 < Total Kbps < Requirement				Almost Adequate		2	2	2
	LOW	Requirement / 3 < Total Kbps < Requirement / 1.3				LOW		1	0	2
	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		3.35	3.30	3.20	

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: ↓ Almost Adequate → **Low**
 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	261.9	136.1	51.9	60.3	162.9
ERSDAC → EROS	87.9	85.3	74.4	2.8	
GSFC-PTH → EROS PTH	309.7	124.2	36.3		
GSFC-ENPL → EROS PTH	482.6	449.1	353.1		
NSIDC → EROS	90.2	88.8	86.7		
LaRC → EROS	92.9	92.9	92.9		
EROS LPDAAC → GSFC DAAC	139.9	101.9	38.5		
EROS PTH → GSFC PTH	465.9	440.3	396.1		

Requirements:

Source → Dest	Date	mbps	Rating
GSFC → EROS	→ Mar '08	285	Low
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 fairly 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 lower than last month, due to increased loading on this GigE; the rating drops to "Low". However, it appears that a reduction of the requirement will be forthcoming, due primarily to the MODIS collection 5 compression.

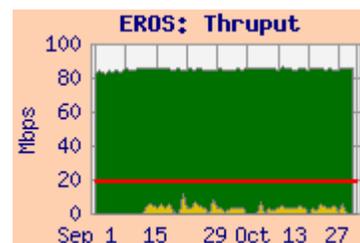
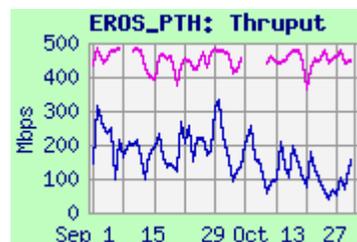
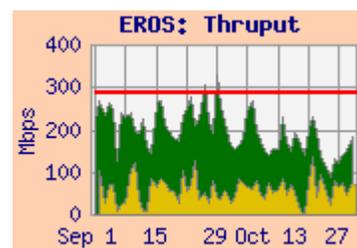
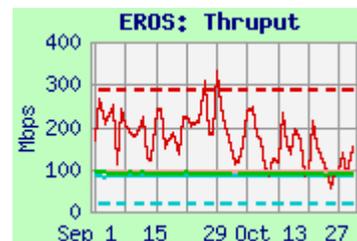
The GSFC-ENPL host has a direct connection to the MAX, bypassing the congested EBnet to Doors Gig-E circuit, and using the previous Internet2 route. It does not experience similar congestion to the DAAC. From ENPL, the performance would be rated "Good".

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 2.8 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 (compared to the EROS-PTH to GSFC-PTH results).



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	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GSFC-PTH → JPL-PODAAC	181.8	64.5	17.4	28.0	73.2
GSFC-DAAC → JPL-AIRS	48.7	43.0	19.8		
GSFC-PTH → JPL-QSCAT	91.3	59.9	13.9		
GSFC-PTH → JPL-MLS	61.7	26.3	6.1		
GSFC-PTH → JPL-MISR	81.1	33.6	11.1		
JPL-PTH → GSFC PTH	89.2	89.1	63.4		
JPL-PODAAC → GSFC DAAC	37.2	23.3	6.5		

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: 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. However, the increased congestion at GSFC created large variations in performance.

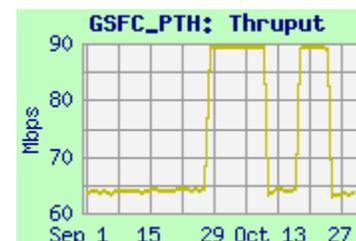
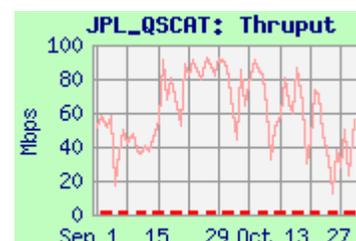
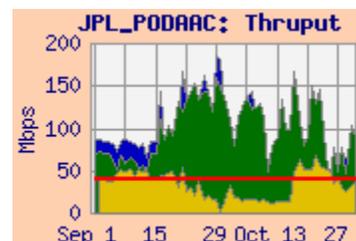
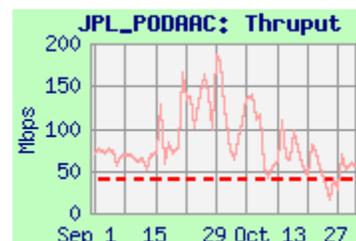
PODAAC: Median thruput from GSFC-PTH increased with the upgrade – now often over 100 mbps. The rating is now based on this flow, since the AIRS node (below) did not benefit from the upgrade. The user flow was a bit lower than the 33 mbps last month; the rating remains “Good”.

AIRS: The AIRS TDCF 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 that the 45 mbps last month.

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

MISR, MLS: Testing from GSFC-PTH to MISR and MLS also increased with the upgrade, but is affected by the GSFC congestion. 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 60 mbps in September, but increased to about 90 mbps for most of October (thruput from JPL-PTH to LaRC-PTH is also bimodal). With the modest requirement, the rating remains “Excellent”. The JPL → GSFC/EOS user flow is now measured – it was only 1.8 mbps this month – up from 1.4 mbps in September.



2.2) JPL ↔ LaRC

Ratings: LaRC → JPL: ↑ Good → **Excellent**
 JPL → LaRC: ↑ Adequate → **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	196.0	194.7	174.6
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	32.6	32.6	32.5
LaRC PTH → JPL-MLS	91.1	90.9	90.4
LaRC DAAC → JPL-MISR	86.0	72.3	32.8
JPL-PTH → LaRC PTH	89.0	88.9	61.5

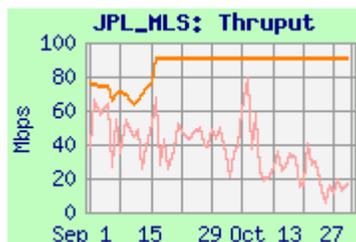
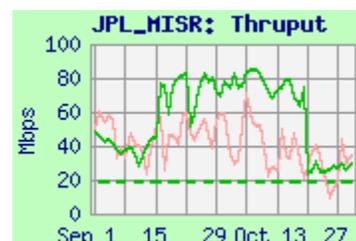
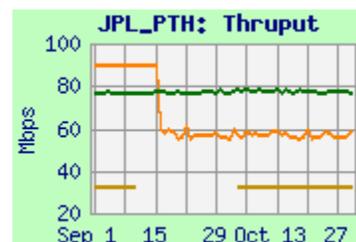
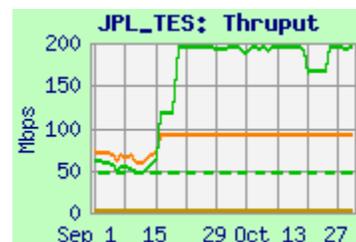
Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	FY '07	29.8	Excellent
LaRC DAAC → JPL-MISR	FY '07	18.5	Excellent
LaRC DAAC → JPL-Combined	FY '07	45.8	Excellent
JPL → LaRC	FY '07	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 for these flows.

LaRC → JPL: Performance for most tests improved and stabilized on Sept. 15 with the NISN to JPL Ethernet upgrade; the rating improved with a full month of this upgrade. 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 bimodal (along with JPL-PTH to GSFC-PTH). The rating improves to "Good". However, the user flow (measured from the NISN router at JPL), was only 0.2 mbps – way below the requirement.



2.3) JPL ASTER IST

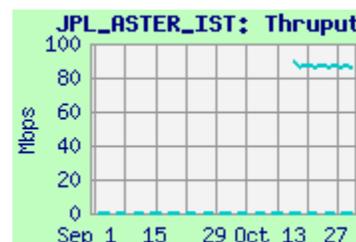
Rating: **Excellent**

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	88.6	86.7	50.6

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. The performance must be well in excess of the [unstated] requirement (IST requirements are generally 311 kbps).



3) Boulder CO:

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

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	92.1	54.9	15.4	3.5	56.7
GSFC-PTH → NSIDC-DAAC	90.1	40.1	13.7		
GSFC-ISIPS → NSIDC (iperf)	46.1	34.6	12.6		
GSFC-ISIPS → NSIDC (ftp)	17.2	8.0	3.4		
NSIDC DAAC → GSFC-DAAC	115.9	73.9	16.1		
NSIDC → GSFC-ISIPS (iperf)	86.6	55.1	13.1		

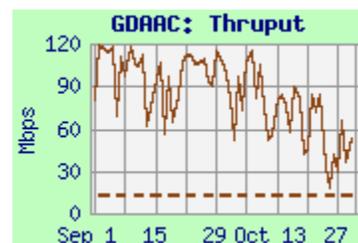
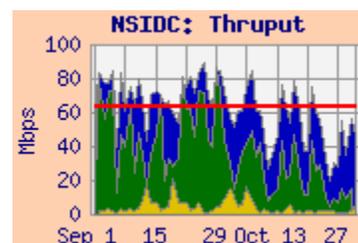
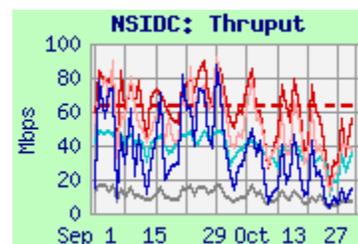
Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → NSIDC	CY '07	64.1	Almost Adequate
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 is now BELOW this lower requirement but by less than 30%, so the rating drops to "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 also deteriorated with the increased congestion at GSFC; with the low requirement the rating remains "Excellent". **The user flow on this path is now measured – it averaged only 40 kbps again 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.



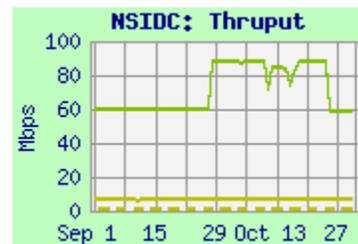
3.2) JPL → NSIDC:

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

Test Results:

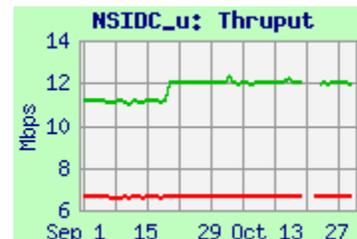
Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
JPL PTH → NSIDC-PTH	88.8	88.5	27.7	1.34
JPL PODAAC → NSIDC	7.7	7.2	7.1	1.34

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 1.5 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:**

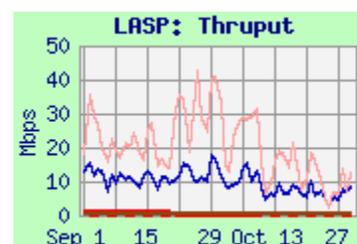
Source → Dest	Medians of daily ests (mbps)			Req.
	Best	Median	Worst	
GHRC → NSIDC DAAC (iperf)	12.5	12.0	3.4	7.5
GHRC → NSIDC DAAC (ftp)	6.7	6.7	3.5	



Comments: GHRC (NSSTC, UAH, Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. The thrupt was stable this month, and the median remains more than 30 % over the requirement, so is rated "Good". The user flow averaged 570 kbps this month (was 550 kbps in September and 530 kbps 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	0.97	0.09	0.01	0.024
GSFC EDOS → LASP	18.2	7.7	2.8	0.4
GSFC PTH → LASP (iperf)	29.3	14.5	2.6	
GSFC PTH → LASP (sftp)	0.50	0.49	0.47	



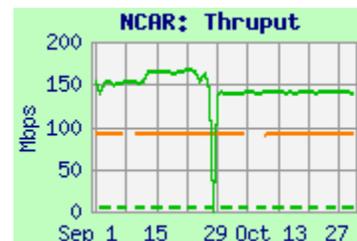
Comments: The requirements are divided into ASF and GSFC sources: Performance continues noisy from all sources.

ASF → LASP: Thrupt from ASF to LASP is limited by ASF T1 circuit. However, in late September, the packet loss rate increased dramatically, with a corresponding drop of the typical thrupt. The ASF IONet test node stopped working in mid October, due to reconfiguration at ASF. The rating remains "Excellent", due to the modest requirement.

GSFC → LASP: GSFC → LASP iperf thrupt is noisy (attributed to congestion at GSFC), but well above the requirement; the rating continues "Excellent". But sftp thrupt is MUCH lower than iperf, due to window size limitations. A patch is available. The user flow was 83 kbps average in October – similar to last month.

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:**

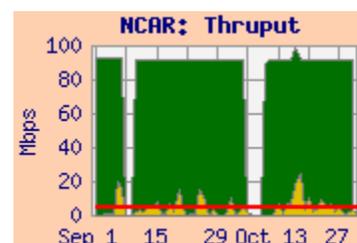
Source → Dest	Medians of daily tests (mbps)			Requirement
	Best	Median	Worst	
LaRC → NCAR	141.2	140.4	88.5	5.4
GSFC → NCAR	92.2	92.2	91.3	5.1



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

From GSFC the median thrupt 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 October was about 2.6 mbps (was 1.5 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	368.3	201.0	80.5	30.2	215.3
GSFC-PTH → LaRC-PTH	93.4	88.1	34.8		
GSFC-PTH → LaRC-ANGe	309.1	247.5	120.6		
LDAAC → GDAAC	284.8	143.0	46.6	0.5	
LARC-ANGe → GSFC-PTH	349.6	334.8	285.3		

Requirements:

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

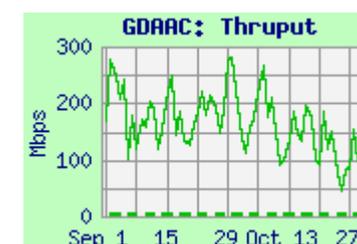
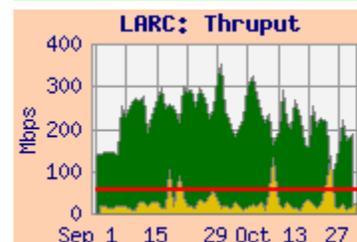
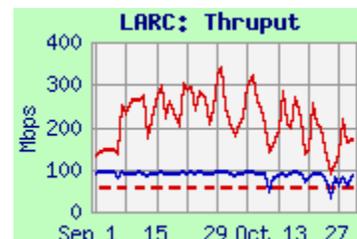
Comments:

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 mostly stable this month. Testing from GSFC-NISN stopped in September when node difficulties began.

LaRC → GSFC: Performance from LDAAC → GDAAC deteriorated somewhat with the increased congestion at GSFC, but remained much more than 3 x the modest requirement, so the rating continues as “Excellent”. The user flow is now measured – it was only 500 kbps in October (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	3.53	2.30	0.50	3.68
GSFC-ENPL → JAXA-azusa	75.2	62.4	30.6		
GSFC-PTH → JAXA-azusa	42.2	23.5	8.2		
GSFC-PTH → JAXA (sftp)	0.85	0.83	0.71		
JAXA-DDS → JPL-QSCAT	3.43	3.24	2.45		
JAXA-DDS → GSFC-DAAC	1.83	1.73	1.06		
JAXA-azusa → GSFC-MAX	86.1	78.2	22.3		

Requirements:

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

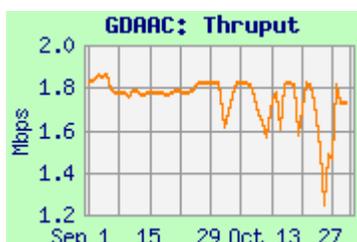
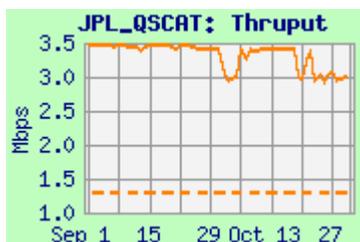
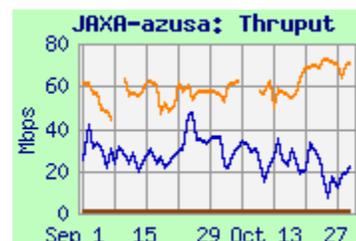
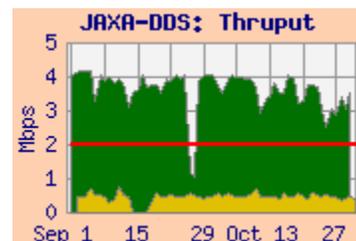
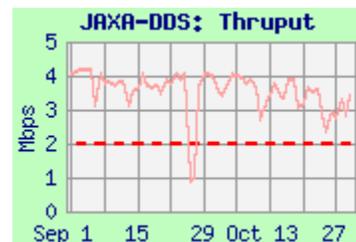
Comments:

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 thrupt 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 thrupt 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. However, thrupt characteristics appear bimodal, but no routing changes are observed.



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	83.2	56.6	18.2	4.6	61.2
GDAAC → ERSDAC	29.6	18.1	7.6		
GSFC ENPL (FE) → ERSDAC	88.5	88.4	77.5		

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 in April '07 (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. 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 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	88.6	86.7	50.6
ERSDAC → EROS	87.9	85.3	74.4

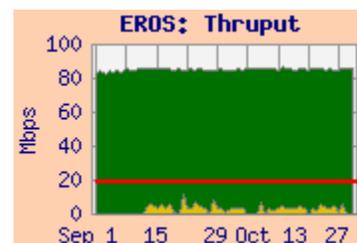
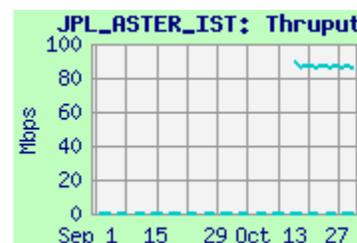
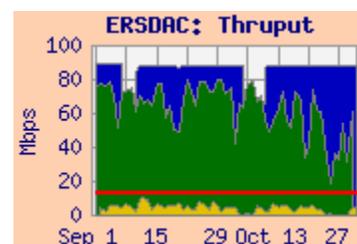
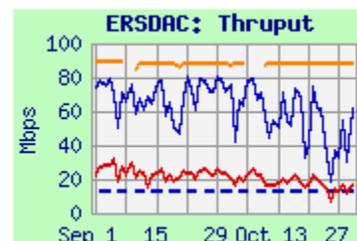
Requirements:

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 mid 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 2.8 mbps in October, well below the requirement.



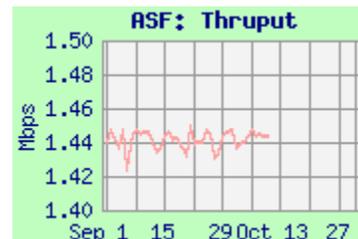
7) ASF

Rating: Continued **Excellent**

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

Test Results:

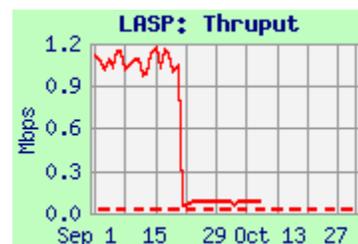
Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-PTH → ASF	1.46	1.44	1.35
ASF → LASP	0.97	0.09	0.01



Comments: The ASF firewall was reconfigured in October, and all IOnet testing stopped at that time.

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.



Requirements:

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

8) Other SIPS Sites:

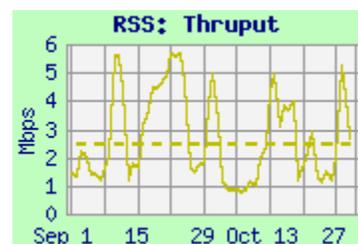
Web Pages <http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml>
http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
JPL → RSS	4.9	2.0	0.7	2.4	Continued Almost Adequate
OMISIPS → KNMI-ODPS	18.8	16.5	7.8	3.3	Continued Excellent

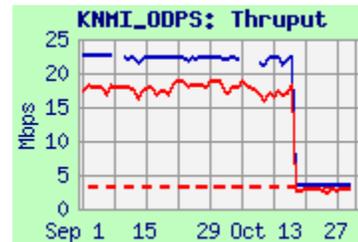
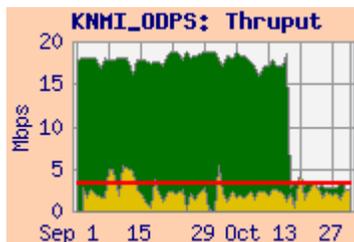
Comments:

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 remained below the requirement, but within 30%, so the rating remains "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, Netherland s) 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. Performance



dropped dramatically in mid October – due to TCP window size reconfiguration on the KNMI machine (no response from POC). Since the problem started in the last half of the month, the rating remains "Excellent" – for now. The user flow averaged 2.2 mbps in October (similar to September), mostly steady with occasional peaks, as shown on the integrated graph.