

EOS Production Sites Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for August 2006 -- comparing the measured performance against the requirements.

Highlights:

- NISN WANR PIP switchover occurred late July
 - Several performance improvements and upgrades as a result
- JAXA Circuit switched to APAN / Sinet + Abilene on August 17
 - Ratings improved in both directions
- Patch is now available to increase effective tcp window size for sftp.
 - Possible use at JAXA, LASP, JPL-TES
 - But not implemented at those sites yet
- Requirements Basis:
 - December '03 requirements from BAH.
 - Updated to handbook 1.4.1 (3/22/06)
- Significant changes in testing are indicated in Blue, Problems in Red

Ratings:

Rating 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

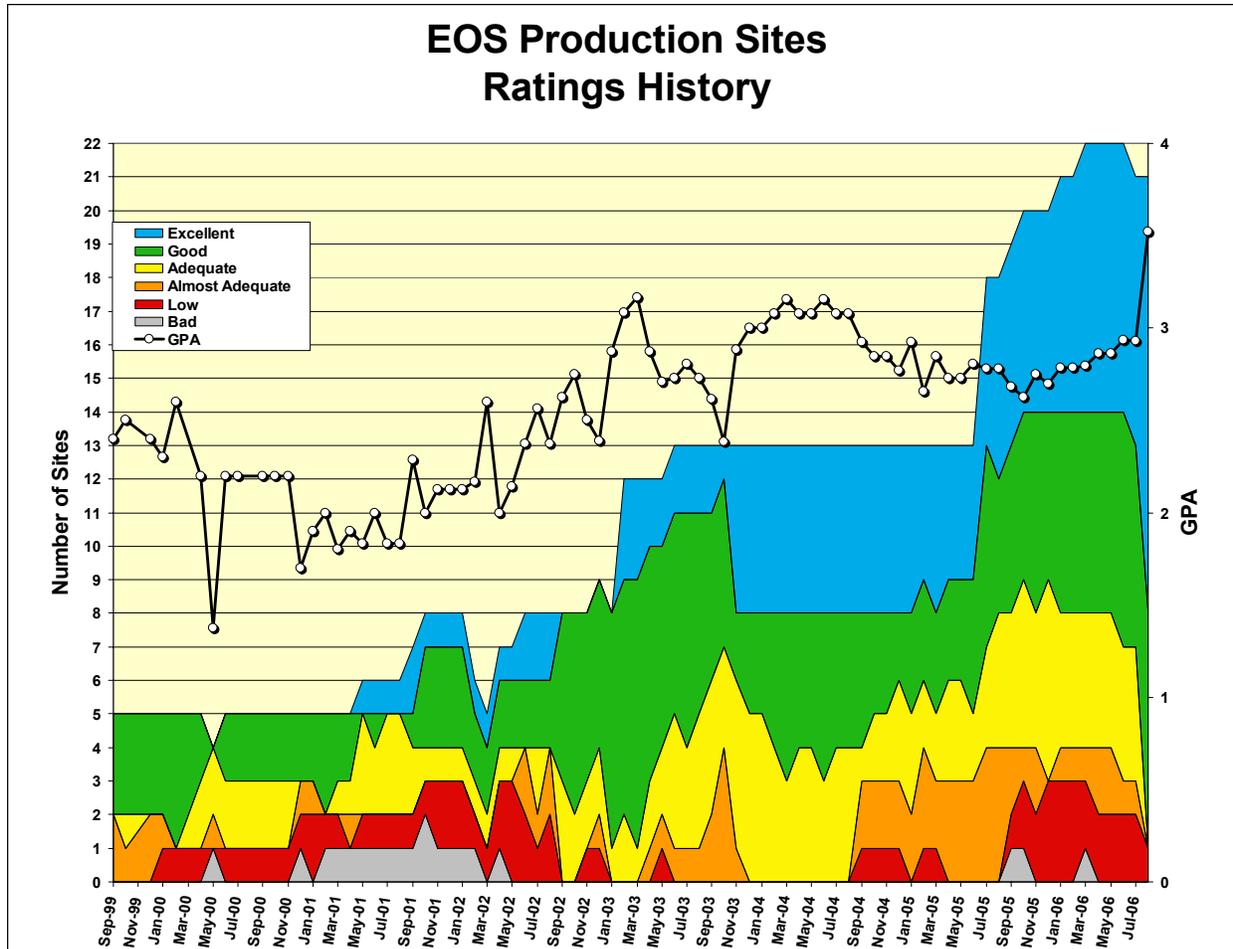
Where Total Kbps = Integrated Kbps (where available), otherwise just iperf

Ratings Changes:

Upgrades: ↑:

JPL → GSFC: Adequate → **Excellent**
 LaRC → JPL: Adequate → **Good**
 JPL → LaRC: Low → **Good**
 GSFC → LaRC: Good → **Excellent**
 JPL → NSIDC: Good → **Excellent**
 NSIDC → GSFC: Adequate → **Excellent**
 GSFC → JAXA: Almost Adequate → **Excellent**
 JAXA → US: Adequate → **Good**

Downgrades: ↓ : None



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.

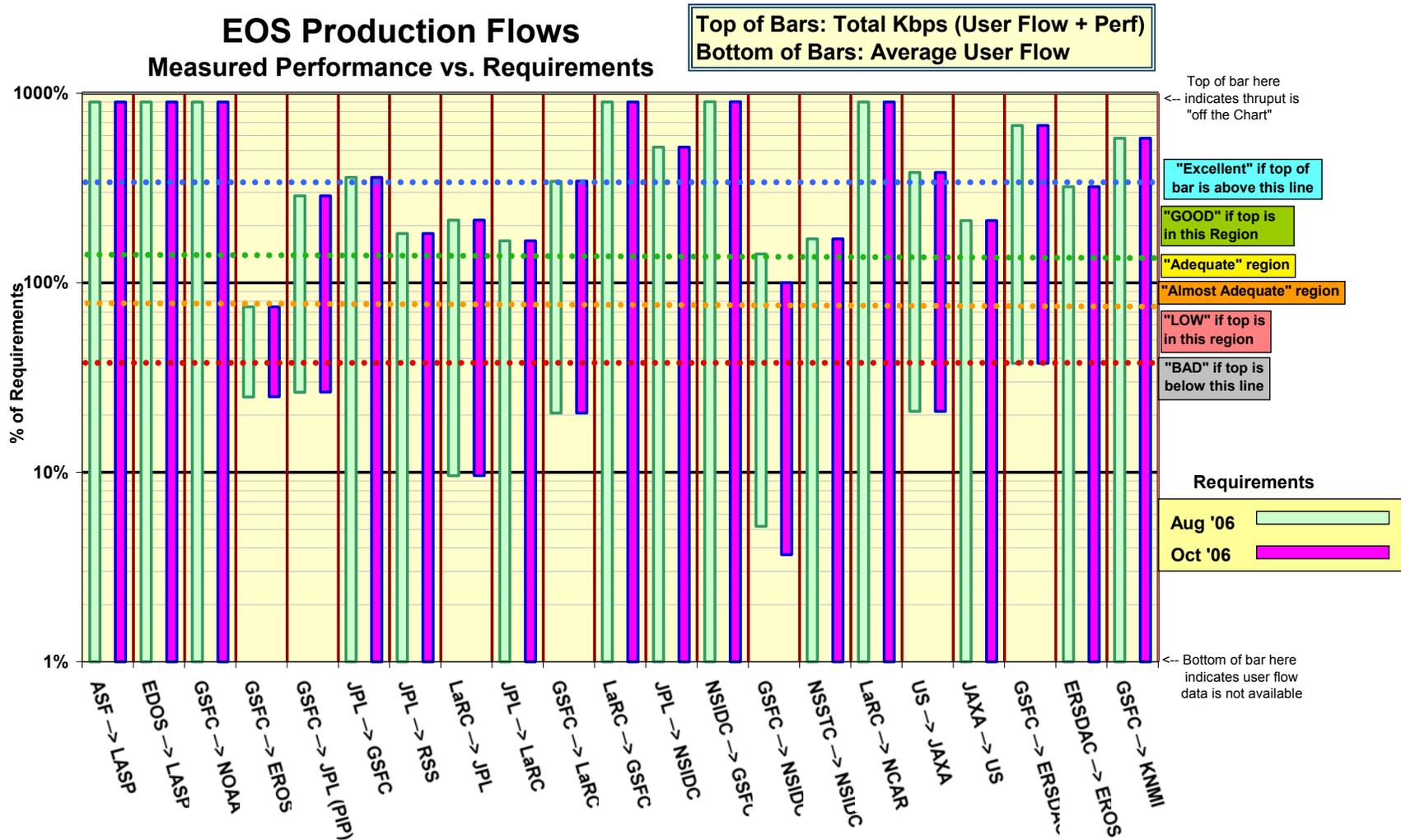
Notes:

- 1) GPA is now at 3.52 -- an all time high
 - a. due to NISN WANR PIP upgrade
 - b. And JAXA switch to APAN / Sinet
- 2) Drop in sites tested (from 22 to 21) is due to no longer testing via EBnet from GSFC to JPL (now only PIP)

Network Requirements vs. Measured Performance

August 2006		Requirements (mbps)		Testing					Ratings		
Source → Destination	Team (s)	Current	Future	Source → Dest Nodes	Avg User Flow mbps	iperf Avg mbps	Total Avg mbps	Integrated mbps	Rating re Current Requirements		Rating re
		Aug-06	Oct-06						Aug-06	Last Month	Oct-06
GSFC → ASF	QuikScat, Radarsat	n/a	n/a	GSFC-CSAFS → ASF	n/a	1.44	1.44		n/a	n/a	n/a
ASF → LASP	QuikScat	0.02	0.02	ASF → LASP [via IOnet]	n/a	1.06	1.06		Excellent	E	Excellent
EDOS → LASP	ICESat, QuikScat	0.4	0.4	EDOS → LASP [via IOnet]	n/a	10.9	10.9		Excellent	E	Excellent
GSFC → NOAA	QuikScat	0.2	0.0	GSFC-CSAFS → NESDIS	n/a	6.3	6.3		Excellent	E	Excellent
GSFC → EROS	MODIS, LandSat	285.4	285.4	GSFC-PTH → EROS PTH	71.3	199.2	270.4	213.1	LOW	L	LOW
GSFC → JPL (PIP)	AIRS, ISTs	18.9	18.9	GDAAC → JPL-AIRS	5.0	53.6	58.6	54.3	GOOD	G	GOOD
JPL → GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PODAAC → GDAAC	n/a	26.5	26.5		Excellent	A	Excellent
JPL → RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS	n/a	4.5	4.5		GOOD	G	GOOD
LaRC → JPL	TES, MISR	39.6	39.6	LARC-DAAC → JPL-TES	3.8	84.7	88.5	84.7	GOOD	A	GOOD
JPL → LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH	n/a	87.5	87.5		GOOD	L	GOOD
GSFC → LaRC	CERES, MISR, MOPITT	58.6	58.6	GDAAC → LDAAC	12.0	194.8	206.9	201.3	Excellent	G	Excellent
LaRC → GSFC	MODIS, TES	3.2	3.2	LDAAC → GDAAC	n/a	224.5	224.5		Excellent	E	Excellent
JPL → NSIDC	AMSR-E	1.3	1.3	JPL-PODAAC → NSIDC SIDADS	n/a	7.0	7.0		Excellent	G	Excellent
NSIDC → GSFC	MODIS, ICESAT, QuikScat	13.3	13.3	NSIDC DAAC → GDAAC	0.1	123.4	123.5	123.4	Excellent	A	Excellent
GSFC → NSIDC	MODIS, ICESAT, QuikScat	64.0	90.8	GDAAC → NSIDC-DAAC	3.3	90.8	94.1	90.8	GOOD	G	AA
NSSTC → NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	n/a	12.8	12.8		GOOD	G	GOOD
LaRC → NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR	n/a	85.3	85.3		Excellent	E	Excellent
US → JAXA	QuikScat, TRMM, AMSR	1.4	1.4	GSFC-CSAFS → JAXA	0.30	5.47	5.77	5.47	Excellent	AA	Excellent
JAXA → US	AMSR-E	1.3	1.3	JAXA → JPL-QSCAT	n/a	2.73	2.73		GOOD	A	GOOD
GSFC → ERSDAC	ASTER	12.5	12.5	ENPL-PTH → ERSDAC	4.7	84.2	88.9	84.2	Excellent	E	Excellent
ERSDAC → EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	n/a	86.2	86.2		Excellent	E	Excellent
GSFC → KNMI	OMI	3.3	3.3	GSFC-MAX → OMI-PDR	n/a	19.0	19.0		Excellent	E	Excellent
Notes: Flow Requirements include TRMM, Terra, Aqua, Aura, ICESAT, QuikScat											
								Ratings Summary			
								Aug-06	Req	Oct-06	
								Score	Prev	Score	
*Criteria:	Excellent	Total Kbps > Requirement * 3			Excellent			13	8	13	
	GOOD	1.3 * Requirement <= Total Kbps < Requirement * 1.3			GOOD			7	7	6	
	Adequate	Requirement < Total Kbps < Requirement * 1.3			Adequate			0	4	0	
	Almost Adequate	Requirement / 1.3 < Total Kbps < Requirement			Almost Adequate			0	1	1	
	LOW	Requirement / 3 < Total Kbps < Requirement / 1.3			LOW			1	2	1	
	BAD	Total Kbps < Requirement / 3			BAD			0	0	0	
								Total	21	22	21
								GPA	3.52	2.93	3.45

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 (August and October '06). 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 **Excellent**

Web Page: <http://ensight.eos.nasa.gov/Networks/production/EROS.shtml>

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GSFC-PTH → EROS PTH	231.2	199.2	68.6	71.3	270.4	213.1
GSFC-DAAC → EROS LPDAAC	213.2	176.0	86.7			
ERSDAC → EROS	86.5	86.2	22.1	(via APAN / Abilene / vBNS+)		
EROS LPDAAC → GSFC DAAC	106.6	81.2	66.8			
EROS LPDAAC → GSFC ECHO	79.4	64.4	44.5			
EROS PTH → GSFC PTH	359.6	345.3	285.8			

Requirements:

Source → Dest	Date	mbps	Rating
GSFC → EROS	FY '06	285.4	Low
ERSDAC → EROS	FY '06	26.8	Excellent

Comments:

The PTH hosts are outside the ECS firewalls, and therefore normally have higher thruput than between the DAACs. The problem from GSFC-PTH to EROS-PTH was fixed in late June, and this performance is now used as the basis of the rating.

The rating is based on the "Integrated" measurement, and as usual is lower than the sum of the User Flow + iperf. The user flow this month increased, and had only a modest contribution to the integrated measurement. This 213 mbps value is below 30% under the requirement, so the rating remains "Low".

The median thruput from ERSDAC to EDC-PTH (in support of the ERSDAC to EDC ASTER flow, replacing tapes) is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

Note: It is planned to discontinue use of vBNS+ in September, and switch to using a peering in Chicago between NISN and a dedicated OC-12 circuit from EROS.

2) JPL:**2.1) JPL ↔ GSFC:**Ratings: GSFC → JPL: PIP:Continued **Good**

EMSnet: Testing discontinued

JPL → GSFC: ↑ Adequate → **Excellent**

Web Pages:

http://ensight.eos.nasa.gov/Networks/emsnet/JPL_QSCAT.shtmlhttp://ensight.eos.nasa.gov/Networks/emsnet/JPL_PODAAC.shtmlhttp://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml

Test Results:

Source → Dest	NET	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
		Best	Median	Worst			
GSFC-DAAC → JPL-AIRS	PIP	54.7	53.6	31.9	5.0	58.6	54.3
GSFC-PTH → JPL-AIRS	PIP	47.6	47.3	27.3	6.7	54.0	47.5
GSFC-CNE → JPL-AIRS	SIP	47.1	42.3	14.9			
GSFC-CSAFS → JPL-QSCAT	PIP	7.5	7.3	4.4			
GSFC-CSAFS → JPL-QSCAT-BU	PIP	7.4	7.2	4.8			
GSFC-PTH → JPL-PODAAC	PIP	88.6	83.3	38.3			
GSFC-CNE → JPL-MISR	SIP	40.0	24.5	5.1			
JPL-PODAAC → GSFC DAAC	PIP	39.1	26.5	12.8			

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JPL Combined	FY '06	18.9	Good
JPL → GSFC combined	CY '06	7.4	Excellent

Comments:

GSFC → JPL: Most GSFC-JPL flows moved from EMSnet to NISN PIP in December '05 – the remaining flows were transitioned at the end of June '06 (red "PIP": above). Therefore, EMSnet testing is no longer performed, and the requirements are again combined.

AIRS: Performance from GSFC (DAAC and CNE) to JPL-AIRS improved dramatically with the NISN WANR upgrade (median was previously about 40 mbps from GDAAC, and 20 mbps from CNE). Performance from GSFC-PTH did not improve immediately, but was retuned later. This flow is used as the basis of the ratings, and is slightly below 3 x the requirement (all PIP flows combined), so continues to be rated "Good".

QSCAT: . The QSCAT Backup node problem was fixed in mid July – performance is again similar to the primary node (the Backup node had developed a performance problem in early June – probably an Ethernet duplex mismatch). The performance is now limited by the CSAFS 10 mbps Ethernet connection, and thus did not significantly benefit from the WANR upgrade.

JPL → GSFC: The MLS requirements increased in March '06 (total was 3.2 mbps in December '05). Performance improved dramatically with the NISN WANR upgrade (median was previously about 8.5 mbps prior to that). The rating improves to "Excellent".

2.2) JPL ↔ LaRC

Ratings: LaRC → JPL: ↑ Adequate → **Good**
 JPL → LaRC: ↑ Low → **Good**

Web Pages:

http://ensight.eos.nasa.gov/Networks/emsnet/JPL_TES.shtml

http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
LaRC PTH → JPL-PTH	89.6	89.4	88.3	3.7	93.1	89.5
LaRC DAAC → JPL-TES	90.2	84.7	52.2	3.8	88.5	84.7
LaRC DAAC → JPL-MISR	67.9	52.7	35.2			
JPL-PTH → LaRC PTH	88.5	87.5	86.8			

Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	FY '06	29.8	Good
LaRC DAAC → JPL-MISR	FY '06	18.5	Good
LaRC DAAC → JPL-Combined	FY '06	39.6	Good
JPL → LaRC	FY '06	52.6	Good

Comments:

LaRC → JPL: Performance improved dramatically with the NISN WANR upgrade (median was previously about 40 mbps). The rating improves to “Good” (close to “Excellent”).

JPL → LaRC: This requirement is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. The measured throughput improved dramatically with the NISN WANR upgrade (median was previously about 40 mbps). This performance is now above the requirement (increased from 35 mbps in December '05) by more than 30 %, so the rating improves to “Good”.

2.3) ERSDAC → JPL ASTER IST

Rating: Continued **Excellent**

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER-IST	85.6	82.5	16.6

Comments:

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The typical 78 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).

3) Boulder CO:

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

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

GSFC ↔ NSIDC Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GSFC-DAAC → NSIDC-DAAC	111.6	90.8	40.3	3.3	94.1	90.8
GSFC-PTH → NSIDC-DAAC	117.8	113.0	41.9			
NSIDC DAAC → GSFC-DAAC	123.9	123.4	99.2			

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → NSIDC	August '06	64.0	Good
NSIDC → GSFC	FY '06	13.3	Excellent

Comments: GSFC → NSIDC: This rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thrupt values (mostly the daily best) increased about 25% this month, due to the NISN WANR upgrade. This requirement varies from month to month, based on planned ICESAT reprocessing. This month the reprocessing **IS NOT** included. The Integrated thrupt is above this lower requirement by more than 30%, so the rating remains "Good".

NSIDC → GSFC: Performance from NSIDC to GSFC **improved dramatically with the NISN WANR upgrade** (median was previously about 17 mbps), so the rating improves to "Excellent".

Other Testing:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
JPL → NSIDC-SIDADS	7.5	7.0	4.3	1.34	Good → Excellent
GSFC-ISIPS → NSIDC (iperf)	115.6	105.2	32.2		
GSFC-ISIPS → NSIDC (ftp)	22.4	22.3	8.9		
NSIDC → GSFC-ISIPS (iperf)	89.5	83.7	32.1		
NSSTC → NSIDC DAAC	12.9	12.8	0.5	7.5	Continued Good
ASF → LASP	1.33	1.06	0.52	0.024	Continued Excellent
GSFC EDOS → LASP	21.7	10.9	3.2	0.4	Continued Excellent
GSFC PTH → LASP (iperf)	20.7	11.8	4.0		
GSFC PTH → LASP (sftp)	0.47	0.46	0.44		

Comments:

JPL → NSIDC-SIDADS: Thrupt improved dramatically with the NISN WANR upgrade (was 3.6 mbps last month); the rating improves to "Excellent"..

GSFC-ISIPS ↔ NSIDC: Performance from ISIPS to NSIDC is at nominal levels for the circuit capacity. Testing from NSIDC to ISIPS is stable and gets thrupt similar to NSIDC to GDAAC.

NSSTC (GHCC) → NSIDC: NSSTC (Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. Median thrupt is stable and more than 30 % over the requirement, so is rated "Good"

LASP: The requirements are now divided into ASF and GSFC sources:

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

GSFC → LASP: GSFC → LASP iperf thrupt is well above the requirement; the rating continues "Excellent. But sftp thrupt is MUCH lower than iperf, also lower than the 2.4 mbps window size limitation, similar to reports from POC. A patch was found for some versions of ssh to increase the TCP window size, which can greatly increase sftp thrupt, but it has not yet been applied at LASP.

4) GSFC ↔ LaRC:

Ratings: GSFC → LaRC: ↑ Adequate → **Excellent**
 LDAAC → GDAAC: Continued **Excellent**

Web Pages: <http://ensight.eos.nasa.gov/Networks/emsnet/LARC.shtml>
<http://ensight.eos.nasa.gov/Networks/emsnet/LATIS.shtml>

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GDAAC → LDAAC	239.4	194.8	93.0	12.0	206.8	201.3
GSFC-NISN → LaTIS	90.1	81.1	35.1			
GSFC-PTH → LaRC-PTH	93.0	91.9	80.3			
GSFC-PTH → LaRC-ANGe	82.6	81.6	65.7			
LDAAC → GDAAC	270.6	224.5	160.0			
LDAAC → GSFC-ECHO	83.4	77.6	48.2			

Requirements:

Source → Dest	Date	Mbps	Rating
GDAAC → LaRC ECS	FY '06	17.8	Excellent
GSFC → LATIS	FY '06	40.7	Good
GSFC → LARC (Combined)	FY '06	58.5	Excellent
LDAAC → GDAAC	FY '06	3.2	Excellent

Comments: Performance of all GSFC ↔ LaRC flows improved dramatically with the NISN WANR upgrade.

GSFC → LaRC: The combined 58.5 mbps requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. So the rating is now based on the GDAAC to LaRC ECS DAAC thruput, compared to the combined requirement. MRTG and LaTIS user flow data are also no longer available (but the enhanced ECS user flow data is used for the "User Flow" above).

So the **GSFC → LaRC ECS DAAC** thruput is now above 3 x the combined requirement, so the combined rating improves to "Excellent". Note: the lower peaks (around 90 mbps) to LaTIS, LaRC-PTH, and LaRC-ANGe are limited by their 100 mbps LAN connections.

LaRC → GSFC: Performance from LDAAC → GDAAC increased to much more than 3 x the 3.2 mbps requirement (with the backhaul flows removed), so the rating continues as "Excellent".

The thruput from LDAAC to GSFC-ECHO is lower than LDAAC to GDAAC due to a 100 mbps LAN connection.

5) ASFRating: Continued **Excellent**Web Page: http://ensight.eos.nasa.gov/Networks/emsnet/ASF_EMS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-CSAFS → ASF	1.45	1.44	1.26
ASF → LASP	1.33	1.06	0.52
ASF → GSFC-CSAFS	1.38	1.31	0.57

Comments: Testing to ASF transitioned to IONet in April '06 – accordingly, testing was discontinued from ASF to NOAA and JPL-SEAPAC; also user flow data is no longer available.

Performance is consistent with the T1 (1.5 mbps) circuit capacity.

Requirements:

Source → Dest	Date	kbps	Rating
ASF → LASP	FY '06	24	Excellent

6) NOAA NESDIS:Rating: Continued **Excellent**Web Page: http://ensight.eos.nasa.gov/Networks/emsnet/NOAA_NESDIS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-SAFS → NOAA	7.14	6.34	5.00
JAXA → NOAA	2.72	1.82	1.57
JPL → NOAA	4.09	3.84	1.80

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC-CSAFS → NESDIS	'06	0.19	Excellent

Comments: The NOAA EMSnet test host was discontinued in early August, so the values above reflect only a short period of testing. NOAA has been requested to provide a new test machine for the "Class" system.

The dominant flow to NOAA is Quikscat data, from GSFC CSAFS. Thruput was stable from all sources, and much higher than the requirement, rating "Excellent".

7) US ↔ JAXA:

Ratings: JAXA → US: ↑ Adequate → **Good**
 US → JAXA: ↑ Almost Adequate → **Excellent**

Web Pages http://ensight.eos.nasa.gov/Networks/emsnet/JAXA_EOC.shtml
http://ensight.eos.nasa.gov/Networks/emsnet/JPL_SEAPAC.shtml
http://ensight.eos.nasa.gov/Networks/emsnet/GSFC_SAFS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GSFC-CSAFS → JAXA-EOC	5.95	5.47	3.38	0.30	5.77	5.47
GSFC-EDOS → JAXA	8.05	7.85	4.79			
GSFC-PTH → JAXA (sftp)	0.84	0.83	0.79			
JPL → JAXA-EOC	2.50	2.40	1.55			
JAXA-EOC → JPL-QSCAT	2.89	2.73	2.12			
JAXA-EOC → GSFC-DAAC	2.01	1.97	1.33			

Requirements

Source → Dest	Date	mbps	Rating
GSFC → JAXA	FY '05, '06	1.43	Excellent
JAXA → US	FY '04 - '06	1.28	Good

Comments:

The JAXA flows were moved to APAN / Sinet on August 17 – The values above reflect testing after that switch. Prior to this switch the flows used a dedicated 2 mbps ATM circuit from JPL to JAXA, using NISN PIP between GSFC and JPL. Performance on that circuit was stable at about 1.5 mbps as previously.

US → JAXA: Performance from GSFC improved substantially with the switch to APAN / Sinet, and is now limited by TCP window size and 10 mbps Ethernets. Thruput is now more that 3 x the requirement, so the rating improves to “Excellent”.

Performance from JPL also improved initially to the values above. It was subsequently retuned to achieve similar performance to GSFC → JAXA.

Performance from GSFC-PTH using sftp is much lower, limited by ssh window size. A patch is available, but is not installed.

JAXA → US: Performance improved with the switch to APAN / Sinet, and is now also limited by TCP window size and 10 mbps Ethernets. But it has not yet been retuned to fully utilize the increased network capability. The thruput from JAXA to JPL was more than 30% over the requirement, so the rating improves to “Good”.

Other Testing:

The following tests are run via APAN / Sinet with a test host at JAXA with a Fast Ethernet (100 mbps) interface and which has been tuned to use larger TCP windows. It shows the capabilities which can be achieved with this configuration.:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-PTH → JAXA	44.2	31.1	18.4
JAXA → GSFC	8.8	8.7	7.4

Comments: The connection between GSFC and JAXA was fixed at the end of June, and tuned in July, to get the values above.

8) ERSDAC ↔ US:Rating: Continued **Excellent**Web Page : <http://ensight.eos.nasa.gov/Networks/emsnet/ERSDAC.shtml>

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GDAAC → ERSDAC	21.5	16.8	9.8			
GSFC ENPL (Fast Ethernet) → ERSDAC	89.0	84.2	16.1	4.7	88.8	84.2
GSFC-EDOS → ERSDAC	5.8	2.6	1.5			

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'03 - '06	12.5	Excellent

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

The thrupt from GDAAC is apparently 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 GSFC-ENPL node is limited to 100 mbps by its own interface, so does not suffer performance degrading packet loss – its performance is much higher. Testing from EDOS to ERSDAC is apparently limited by a 10 mbps Ethernet in its path.

The requirement now includes the level 0 flows which used to be sent by tapes. The thrupt is still more than 3 x this increased requirement, so the rating remains "Excellent".

Other Testing:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER IST	85.6	82.5	16.6
ERSDAC → EROS	86.5	86.2	22.1

Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC → EROS	FY '06	26.8	Excellent

Comments:

ERSDAC → EROS: The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were stable this month. Thrupt improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thrupt is more than 3 x the requirement, so the rating remains "Excellent"

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered "Excellent" (no requirement is specified at this time – but other IST requirements are 311 kbps)

9) SIPS Sites:

Web Pages <http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml>
<http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml>
<http://ensight.eos.nasa.gov/Missions/aqua/NSSTC.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		
LaRC → NCAR	91.2	85.3	38.3	5.4	Excellent
GSFC → NCAR	130.9	120.6	72.8	5.1	Excellent
JPL → RSS	5.5	4.5	1.8	2.4	Good
GHCC → NSIDC	12.9	12.8	0.5	7.5	Good
GSFC → KNMI-ODPS	21.8	19.0	15.3	3.3	Excellent
GSFC → KNMI-ODPS-B/U	84.4	82.8	80.1		

Comments:

NCAR: NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. Performance from LaRC (via NISN to MAX to Abilene) improved (from 22 mbps previously) with the NISN WANR SIP upgrade in late July. Thruput is now well above 3 x the requirement, so the rating remains "Excellent".

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

RSS: RSS (Santa Rosa, CA) is a SIPS for AMSR-E, receiving data from JPL, and sending its results to GHCC (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. Thruput improved to the above values at that time – more that 30% above the requirement, the rating remains "Good".

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

GHCC (NSSTC) → NSIDC: This flow represents Level 2 and 3 AMSR-E products produced at GHCC, and sent to NSIDC for archiving. Median thruput is more than 30% over the requirement, rating "Good".

KNMI: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in NY with Surfnet's 10Gbps circuit to Amsterdam. Thruput to the ODPS backup server at KNMI is limited only by a Fast Ethernet connection at KNMI, and gets over 80 mbps steady! The rating is based on the results to the ODPS primary server, protected by a firewall, and are quite a bit lower. Thruput remains well above 3 x the requirement, rating "Excellent".

Testing to the Backup server was discontinued at the end of August, on request from KNMI.