

EOS Production Sites Network Performance Report: July 2015

This is a monthly summary of EOS network performance testing between production sites – comparing the measured performance against the requirements. **Significant improvements are noted in Green, Network problems in Red, System problems and Requirements issues in Gold, Issues in Orange, and other comments in Blue.**

Highlights:

- **Mostly stable flows**
 - **GPA: 3.67** (was 3.69 last month)
- **MODIS Reprocessing Continues** (since February)
 - mostly to EROS (averaged about 600 mbps)
- The CSO Route Symmetry project increased the RTT from EBnet sources to some destinations on June 13, causing some reductions in performance.
- **Requirements:** using the Network Requirements Database for 2014
 - Including GPM, OCO2, and SMAP missions
 - MODIS and AMSR Reprocessing requirements included
 - TRMM Requirements removed (except reprocessing)
- **Only 2 flows below Good**
 - **GSFC → EROS: Low**
 - **NOAA → GSFC-NPP-SD3E: Low**
 - Probably just a problem with the NOAA test node

Ratings Changes:

Upgrades: ↑ None

Downgrades: ↓ **GSFC → EROS: Almost Adequate → Low**

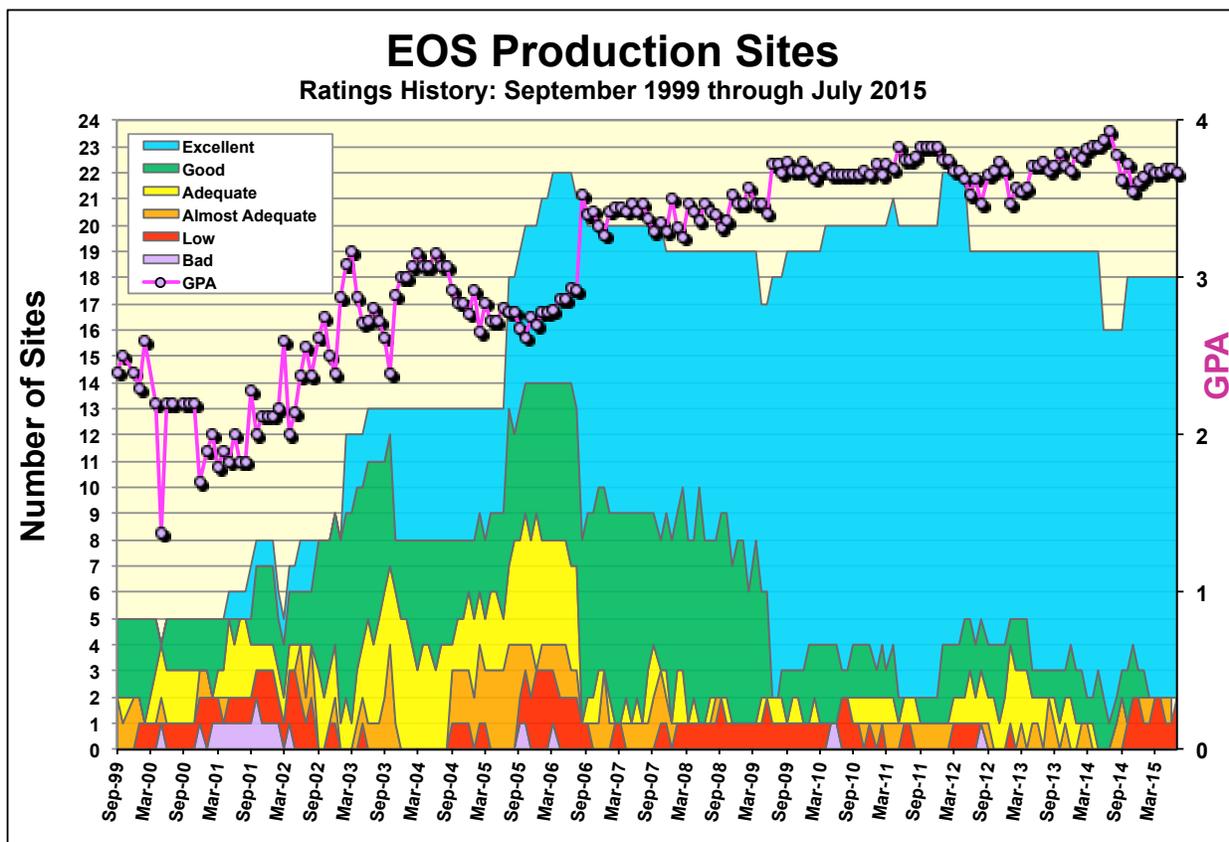
Ratings Categories:

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 / 1.5 < Total Kbps < Requirement
Low:	1	Requirement / 3 < Total Kbps < Requirement / 1.5
Bad:	0	Total Kbps < Requirement / 3

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

Note that “**Almost Adequate**” implies meeting the requirement excluding the usual 50% contingency factor.

Ratings History:



The chart above shows the number of sites in each rating category 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.

Additions and deletions:

- 2011 April: Added RSS to GHRC
- 2011 May: Deleted WSC to ASF for ALOS
- 2012 January: Added NOAA → GSFC-SD3E
Added GSFC-SD3E → Wisconsin
- 2012 June: Deleted GSFC → LASP
Deleted GSFC ← → JAXA
- 2014 June: AMSR-E no longer producing data
Deleted JPL to RSS and RSS to GHRC
Deleted JPL to NSIDC
- 2014 October: Added JPL to NSIDC requirement for SMAP
Added GSFC to GHRC requirement for LANCE

Requirements Basis:

In June 2014, the requirements were updated to the latest values in the database!

- Added flows for GPM, OCO2, and SMAP (effective FY '15) missions
- Removed AMSR-E, ICESAT flows (AMSR-E reprocessing remains included)
- MODIS reprocessing incorporated month-by-month
 - Reprocessing requirement began 2014 August
- June 2015: TRMM Requirements removed

In June 2012, the requirements were switched, to use the EOSDIS network requirements database.

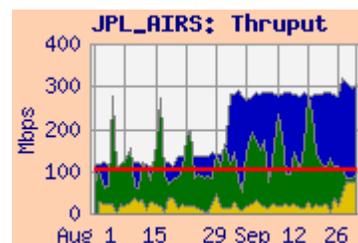
Previously, the requirements were based on the EOS Networks Requirements Handbook, Version 1.4.3 (from which the original database requirements were derived). Prior to that, the requirements were derived from version 1.4.2.

One main difference between Handbooks 1.4.2 and 1.4.3 is that in 1.4.3 most flows which occur less than once per day were averaged over their production period. These flows were typically monthly Level 3 data transfers, which were specified to be sent in just a few hours. However, they could easily be accommodated either between the per-orbit flows, or within the built-in contingency. Previously, these flows were added in linearly to the requirements, making the requirements unrealistically high.

Additionally, the contingency for reprocessing flows greater than 2X reprocessing was reduced. These flows WERE a major component of the contingency, so adding additional contingency on top of these flows was considered excessive.

Integrated Charts:

Integrated charts are included with site details, where available. These charts are “Area” charts, with a “salmon” 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 – unless otherwise stated, not the flows to the specific nodes) to the destination facility (JPL, 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. Adjustments are made to compensate for various systematic effects, and are best considered as an approximation.

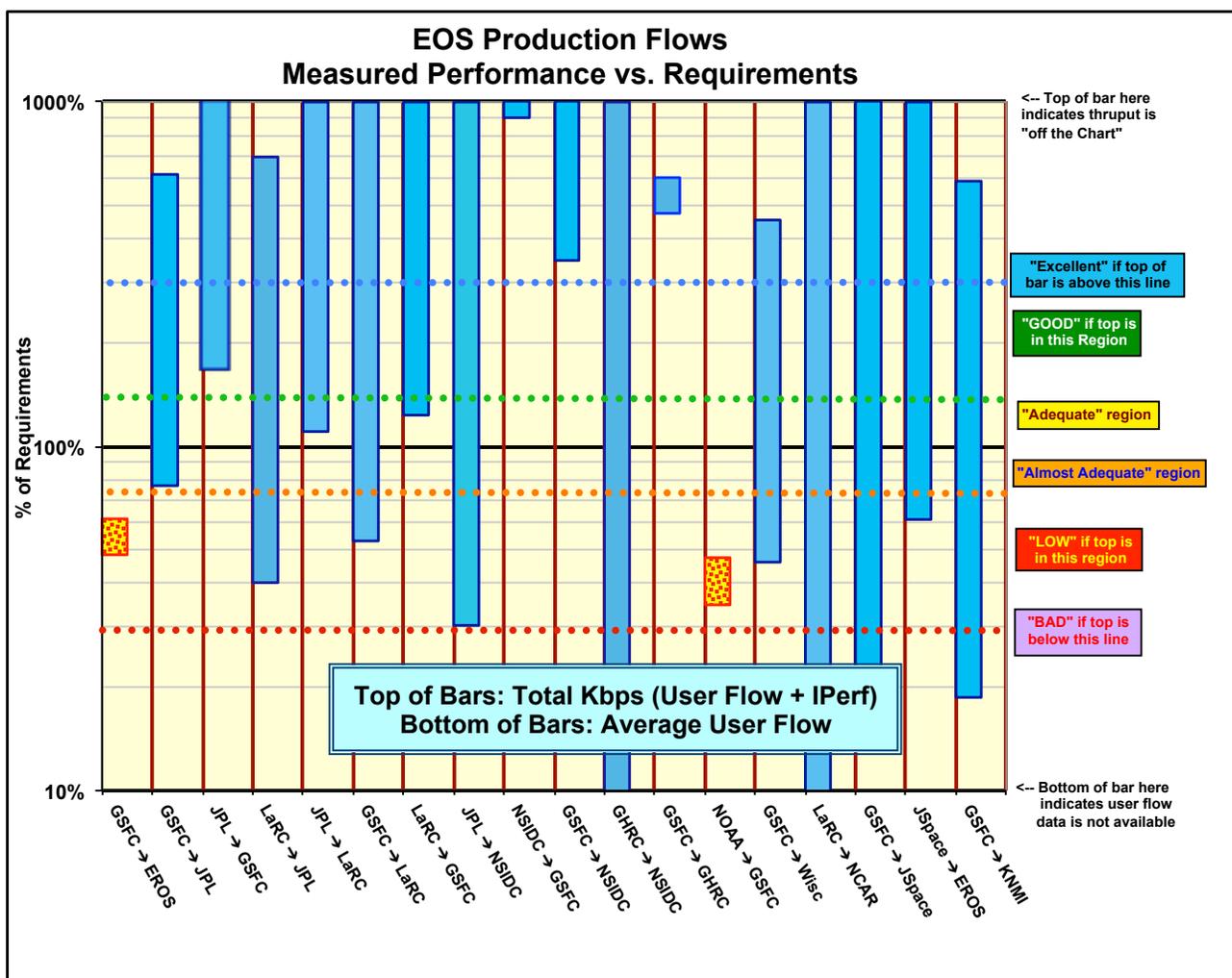
The red line is the requirement for the flow from the source to destination facilities. On some charts a blue area is also present – usually “behind” the green area – representing adjusted iperf measurements from a second source node at the same facility.

Network Requirements vs. Measured Performance

July 2015		Requirements (mbps)		Testing				Ratings			
Source → Destination	Instrument (s)	Current	Old	Source → Dest Nodes	Average User Flow mbps	iperf Median mbps	Integrated mbps	Ratings re FY '15 Requirements			
		FY '15	FY '12					This Month	Last Month		
GSFC → EROS	MODIS, LandSat	1016.2	548.4	MODAPS-PDR → EROS LPDAAC	492.1	187.5	625.8	Low	AA		
GSFC → JPL	AIRS, MLS, NPP, TES, OCO2, SMAP	121	63.0	NPP SD3E OPS1 → JPL-AIRS	92.5	740.3	750.0	Excellent	Ex		
JPL → GSFC	MLS, OCO2	11.9	0.57	JPL-PODAAC → GSFC GES DISC	20.0	519.9	519.9	Excellent	Ex		
LaRC → JPL	TES, MISR	83.5	83.5	LARC-ASDC → JPL-TES	33.6	578.4		Excellent	Ex		
JPL → LaRC	TES	1.1	1.1	JPL-TES → LARC-PTH	1.21	755.6	755.6	Excellent	Ex		
GSFC → LaRC	CERES, MISR, MOPITT, TES, MODIS	60.7	52.2	GSFC EDOS → LaRC ASDC	32.2	848.0	848.9	Excellent	Ex		
LaRC → GSFC	MISR	0.6	0.6	LARC-ASDC → GES DISC	0.74	932.2	932.2	Excellent	Ex		
JPL → NSIDC	AMSR-E, SMAP	17.1	0.16	JPL-SMAP → NSIDC	5.16	478.0		Excellent	Ex		
NSIDC → GSFC	AMSR-E, MODIS, ICESAT	0.009	0.017	NSIDC DAAC → GES DISC	6.36	660.0	660.0	Excellent	Ex		
GSFC → NSIDC	AMSR-E, MODIS, ICESAT, GBAD	38.5	8.4	MODAPS PDR → NSIDC-DAAC	133.4	423.9	449.1	Excellent	Ex		
GHRC → NSIDC	AMSR-E	5.14	2.08	GHRC → NSIDC DAAC	0.028	80.6	80.6	Excellent	Ex		
GSFC → GHRC	AMSR-E, MODIS	2.9	0.00	GSFC EDOS → GHRC via NISN	13.8	15.0	17.5	Excellent	Ex		
NOAA → GSFC	NPP	601.3	522.3	NOAA-PTH → GSFC NPP-SD3E OPS1	208.3	240.7	285.5	Low	Low		
GSFC → Wisc	NPP, MODIS, CERES, AIRS	264.2	259.1	GSFC NPP-SD3E OPS1 → WISC	121.8	1179.8	1200.3	Excellent	Ex		
LaRC → NCAR	MOPITT	0.044	0.044	LaRC-PTH → NCAR		182.6		Excellent	Ex		
GSFC → JAXA	TRMM, AMSR-E, MODIS, GPM	15.4	3.5	GSFC-EBnet → JAXA	29.5	n/a		n/a	n/a		
JAXA → GSFC	AMSR-E, GPM	3.3	0.16	JAXA → GSFC-EBnet	7.6	n/a		n/a	n/a		
GSFC → JSpace	ASTER	16.4	6.8	GSFC-EDOS → JSpace-ERSD	3.7	377.9	433.7	Excellent	Ex		
JSpace → EROS	ASTER	8.3	8.3	JSpace-ERSD → EROS PTH	5.1	327.4	327.4	Excellent	Ex		
GSFC → KNMI	OMI	13.4	13.4	GSFC-OMISIPS → KNMI ODPS	2.49	78.5	78.7	Excellent	Ex		
		Significant change from FY '12 to FY '14						Ratings Summary			
		Changed in 2014		Value used for ratings				FY '15 Req			
								Score	Prev		
*Criteria:	Excellent	Total Kbps > Requirement * 3					Excellent		16	16	
	Good	1.3 * Requirement <= Total Kbps < Requirement * 3					Good		0	0	
	Adequate	Requirement < Total Kbps < Requirement * 1.3					Adequate		0	0	
	Almost Adequate	Requirement / 1.5 < Total Kbps < Requirement					Almost Adequate		0	1	
	Low	Requirement / 3 < Total Kbps < Requirement / 1.5					Low		2	1	
	Bad	Total Kbps < Requirement / 3					Bad		0	0	
								Total Sites		18	18
Notes:	Flow Requirements include: TRMM, Terra, Aqua, Aura, ICESAT, QuikScat, GEOS, NPP, GPM, SMAP, OCO2							GPA		3.67	3.69

Performance vs Requirements Chart

This graph shows a bar for each source-destination pair – relating the measurements to the requirements for that pair. The bottom of each bar represents the average measured user flow from the source site to the destination site (as a percent of the requirement) – it indicates the relationship between the requirements and actual flows. Note that the requirements generally include a 50% contingency factor above what was specified by the projects, so a value of 67% (dotted orange line) would indicate that the project is flowing as much data as requested. The top of each bar similarly represents the integrated measurement, combining the user flow with Iperf measurements – this value (when available) is used to determine the ratings.



1) EROS:

Ratings: GSFC → EROS: ↓ **Almost Adequate** → **Low**
 JSpace → EROS: Continued **Excellent**

1.1 GSFC → EROS:

Web Pages: <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		
MODAPS-PDR → EROS LPDAAC	516.3	187.5	128.4	492.1	625.8
GSFC-EDOS → EROS LPDAAC	172.8	61.4	36.7		
GES DISC → EROS LPDAAC	315.6	130.3	81.9		
GSFC-ENPL → EROS LPDAAC	1445.0	1315.0	813.0		
GSFC-ENPL → EROS PTH	2108.9	1537.6	1103.5		
GSFC-EDOS → EROS PTH	393.3	16.9	6.0		
GSFC-NISN-PTH → EROS PTH	379.2	84.8	13.6		
ESDIS-PS → EROS PTH	472.7	60.2	35.2		

Requirements:

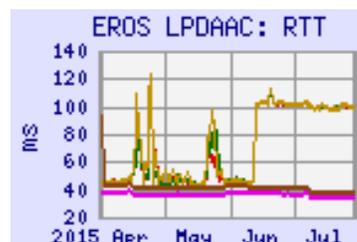
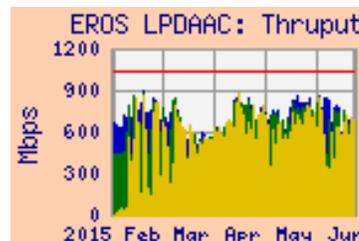
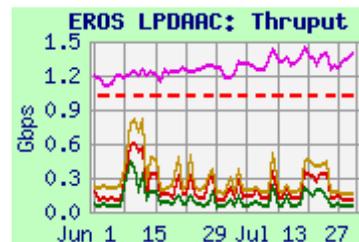
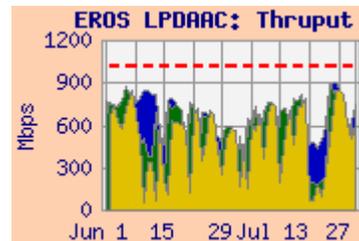
Source → Dest	Date	Mbps	prev	Rating
GSFC → EROS	8/14	1016.1	49.8	↓ Low

Comments: The rating is based on the MODAPS-PDR Server to EROS LP DAAC measurement, since that is the primary flow.

The reprocessing flow requirement began in August 2014, so the requirement increased from 49.8 to 1016.1 mbps at that time. But the reprocessing flow actually began in February. The user flow this month averaged 492 mbps –the same as the 491 mbps last month.

The integrated thrupt from all sources was a bit lower but mostly stable this month, while the iperf tests were much lower during peak MODIS flows. The median integrated thrupt from MODAPS-PDR to LPDAAC dropped below 2/3 of the requirement (including reprocessing), so the rating drops to **Low**.

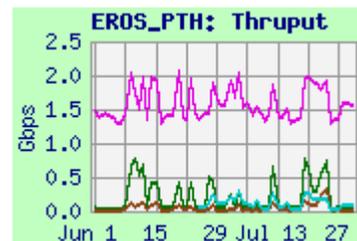
The median thrupt to LPDAAC from GSFC-EDOS and GES DISC (also on EBnet) was similar to last month, and was similarly affected by MODAPS. The RTT to EROS from EBnet sources (EDOS, MODIS, GES DISC) increased from approx. 45 ms to 100 ms on June 13, due to CSO Route Symmetry reconfiguration, also reducing performance. The route from EBnet sources is via the Doors, to NISN SIP, onto the NISN 10 gbps backbone, to the NISN Chicago CIEF, then via a NISN GigE, peering at the StarLight Gigapop with the EROS OC-48 (2.5 gbps) tail circuit. The route after the Route Symmetry upgrade appears similar, but details are not available from these sources.



1) **EROS:** (continued)

Iperf testing for comparison is performed from **GSFC-ENPL** to LPDAAC. This route is via a direct 10 gig connection from ENPL to the MAX, to the Internet2 100 gbps backbone, to StarLight in Chicago, then via the EROS OC-48 tail circuit. **Thruput from GSFC-ENPL to LPDAAC is much steadier than from EBnet sources, and is not much affected by the MODAPS reprocessing flow.**

Iperf testing is also performed from **GSFC-ENPL, GSFC-NISN-PTH, GSFC-EDOS,** and **ESDIS-PS** to the EROS-PTH 10 gig test host. **GSFC-ENPL to EROS-PTH now typically gets over 1.5 gbps -- somewhat affected by the MODIS reprocessing.** This shows that the capacity of the EROS connection to StarLight is well in excess of the requirement (including reprocessing) – it would be rated **Good**..



The combined results show that all EBnet sources have poor iperf performance to both EROS and EROS-PTH during high MODIS reprocessing flows.

Additional Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
JSpace-ERSD → EROS PTH	333.8	327.4	271.7	5.11
LaRC PTH → EROS PTH	182.8	53.2	7.2	
NSIDC SIDADS → EROS PTH	847.0	734.5	538.0	

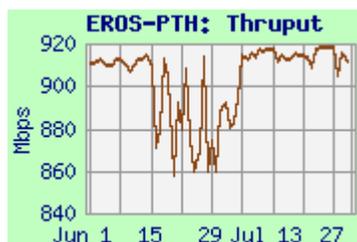
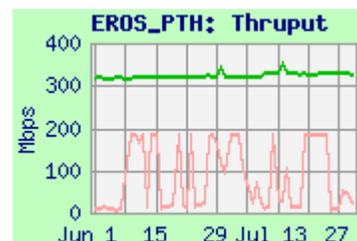
Requirements:

Source → Dest	Date	mbps	prev	Rating
JSpace → EROS	FY '06 –	8.3	8.3	Excellent

1.2 JSpace-ERSD → EROS: **Excellent**. See section 9 (ERSD) for further discussion.

1.3 LaRC → EROS-PTH: The route from **LaRC-PTH** is via NISN SIP to the Chicago CIEF to StarLight – similar to EBnet sources. **Performance was greatly affected by the large MODIS reprocessing flows.** Note that **LaRC-PTH** has a 200 mbps outflow limitation.

1.4 NSIDC → EROS-PTH: Performance was very stable and excellent again this month. (Note the expanded scale on the graph).



2) to GSFC**2.1) to NPP, GES DISC, etc.**Ratings: JPL → GSFC: Continued **Excellent**NSIDC → GES DISC: Continued **Excellent**LDAAC → GES DISC: Continued **Excellent**NOAA → NPP SD3E: Continued **Low**

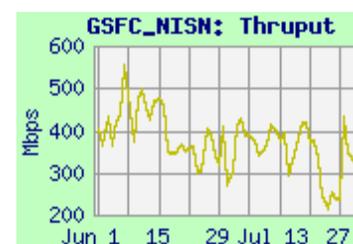
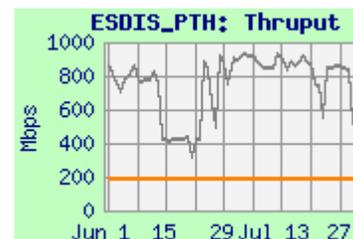
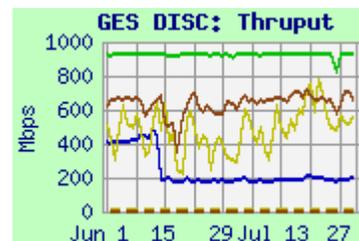
Web Pages:

http://ensight.eos.nasa.gov/Missions/NPP/GSFC_SD3E.shtml<http://ensight.eos.nasa.gov/Organizations/production/GDAAC.shtml>http://ensight.eos.nasa.gov/Organizations/production/ESDIS_PTH.shtmlhttp://ensight.eos.nasa.gov/Missions/icesat/GSFC_ISIPS.shtml**Test Results:**

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
EROS LPDAAC → GES DISC	211.9	186.7	161.8		
EROS PTH → GSFC-ESDIS PTH	925.0	856.0	564.0		
JPL-PODAAC → GES DISC	835.1	519.9	132.2	20.0	
JPL-NISN-PTH → GSFC-NISN	566.2	360.5	141.5		
NSIDC DAAC → GES DISC	755.0	660.0	507.2	6.4	
LaRC ASDC → GES DISC	936.0	932.2	882.4	0.74	
LaRC-PTH → GSFC-ESDIS PTH	193.1	193.0	192.8		
NOAA-PTH → NPP-SD3E-OPS1	242.1	240.7	236.9	208.3	285.5

Requirements:

Source → Dest	Date	FY '15	FY '12	Rating
JPL → GSFC combined	FY '15 –	11.9	0.57	Excellent
NSIDC → GSFC	FY '15 –	0.009	0.017	Excellent
LaRC ASDC → GES DISC	CY '12 –	0.6	0.6	Excellent
NOAA → NPP SD3E	FY '15 –	601.3	522.3	Low

**Comments:**

2.1.1 EROS LPDAAC, EROS-PTH → GSFC: Thruput from EROS LPDAAC to GES DISC dropped on June 13, due to increased RTT, due in turn to the CSO Route Symmetry reconfiguration. Performance from EROS-PTH to ESDIS-PTH stabilized. The results between the PTH's were better than between the DAACs.

2.1.2 JPL → GSFC: Thruput from JPL-PODAAC to GES DISC remains somewhat noisy. Note that JPL campus nodes → EBnet flows take Internet2 instead of NISN, based on JPL routing policies. Thruput was well above 3 x the requirement, so the rating remains **Excellent**. The 20 mbps average user flow was above the requirement and the 36 mbps last month. Testing from JPLNISNPTH to GSFC-NISN is routed via NISN PIP, and was stable this month.

2.1.3 NSIDC → GSFC: Performance from the NSIDC DAAC to GES DISC remained way above the tiny requirement, so the rating remains **Excellent**. The user flow was again well above both the old and lower new requirement.

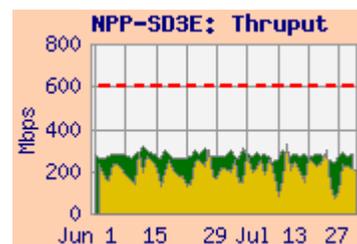
The **GSFC-ISIPS** node was retired in June, so testing from NSIDC was discontinued.

2.1.4 LaRC → GSFC: Performance from LaRC ASDC to GES DISC was very stable this month. The results remained way above 3 x the modest requirement, so the rating continues as **Excellent**. Testing from LaRC-PTH to ESDIS-PTH was very stable, and consistent with its 200 mbps outflow limitation.

The user flow this month was again above the requirement.

2.1) to NPP, GES DISC continued.

2.1.5 NOAA → NPP-SD3E: Performance from NOAA-PTH to GSFC NPP-SD3E-OPS1 dropped dramatically in early November 2014. The user flow was close to usual, at about 53% of the requirement (without contingency), and appeared unaffected, leading to the inference that the problem was with the test node at NOAA, not the network. Investigation continues.

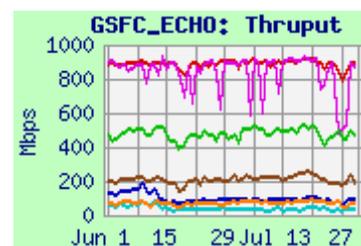


2.2 GSFC-ECHO: EOS Metadata Clearinghouse

Web Page: http://ensight.eos.nasa.gov/Organizations/gsfcc/GSFC_ECHO.shtml

Test Results:

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
EROS LPDAAC	107.2	90.5	62.9
EROS LPDAAC ftp	56.7	35.4	15.3
GES DISC	929.3	897.2	794.3
GES DISC ftp	941.2	893.9	470.6
LaRC ASDC DAAC	556.7	492.1	362.5
NSIDC DAAC	270.6	219.6	141.4
NSIDC DAAC ftp	115.6	76.7	32.5
EROS LPDAAC → CMR	5.1	5.0	4.9
GES DISC → CMR	426.6	391.0	317.5



Comments: Performance was mostly stable from all sources, except from EROS, where throughput dropped on June 13, due to increased RTT due to CSO Route Symmetry reconfiguration. FTP performance is mostly limited by TCP window size – especially from sites with long RTT.

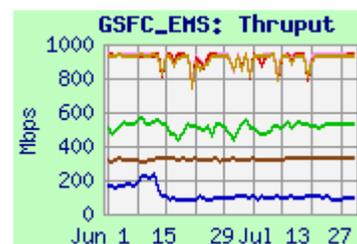
Testing to the “Common Metadata Repository” (CMR), which will replace ECHO, was started in November. Performance is erratic – new server software has been requested.

2.3 GSFC-EMS: EOS Metrics System

Web Page: http://ensight.eos.nasa.gov/Organizations/gsfcc/GSFC_EMS.shtml

Test Results:

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
EROS LPDAAC	112.4	95.1	54.4
ESDIS-PTH	939.0	937.0	665.8
GES DISC	937.9	933.8	650.4
LARC ASDC	564.0	518.6	370.6
MODAPS-PDR	938.5	931.0	577.5
NSIDC-SIDADS	333.6	329.6	223.4



Comments: Iperf testing is performed to GSFC-EMS from the above nodes. Performance was mostly stable from all sources (except EROS – see above).

3) JPL:

3.1) GSFC → JPL:

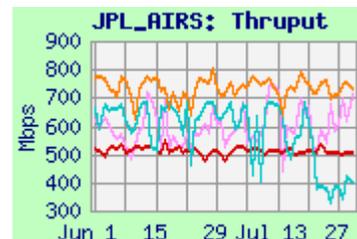
Ratings: GSFC → JPL: Continued **Excellent**

Test Results: (additional results on next 2 pages)

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
NPP-SD3E-OPS1 → JPL-AIRS	822.6	740.3	556.2	92.5	750.0
GSFC-GES DISC → JPL-AIRS	570.2	508.1	441.0		
ESDIS-PTH → JPL-AIRS	743.7	595.0	321.9		
GSFC-NISN-PTH → JPL-AIRS	689.0	553.4	72.3		
NPP-SD3E-OPS1 → JPL-Sounder	839.0	758.0	558.6		
GSFC-NISN-PTH → JPL-Sounder	676.7	522.8	454.1		

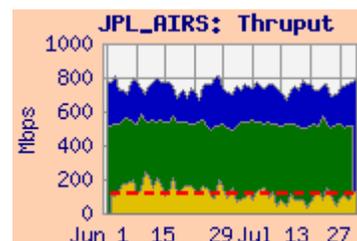
Requirements:

Source → Dest	Date	Mbps	Prev	Rating
GSFC → JPL Combined	FY '15	121.0	63	Excellent
GSFC → JPL AIRS	FY '15	11.4	40	Excellent
GSFC NPP → JPL Sounder	FY '15	15.9	15	Excellent



Comments: 3.1.1 Overall GSFC to JPL:

Overall user flow decreased a bit last month – the 92.5 mbps average flow (for all EBnet to JPL flows) is very close to the requirement, without contingency, and is below the 133 mbps last month.



The overall rating is based on the **NPP-SD3E-OPS1** to JPL AIRS thrupt, compared with the sum of all the GSFC to JPL requirements. The median thrupt remained well above 3 x this requirement, so the overall rating remains **Excellent**.

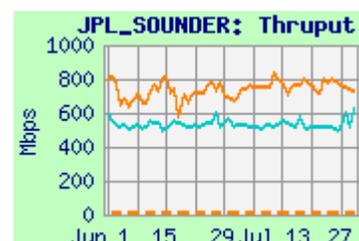
Most GSFC to JPL flows use the NISN PIP network, and are thus not affected by the NISN SIP congestion due to large MODIS reprocessing flows to EROS.

3.1.2 AIRS: http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml

The median integrated thrupt from **NPP-SD3E-OPS1** to JPL-AIRS remains well above 3 x the AIRS requirement, so the AIRS rating remains **Excellent**. Performance from **GES DISC**, **ESDIS-PTH**, and **GSFC-NISN-PTH** was lower but similar. Note that **ESDIS-PTH**, **GES DISC**, and **NPP-SD3E-OPS1** are on EBnet, and connect through the Doors, while **GSFC-NISN** does not.

3.1.3 NPP to JPL Sounder: http://ensight.eos.nasa.gov/Missions/NPP/JPL_SOUNDER.shtml

Performance from **NPP-SD3E-OPS1** was stable. Thrupt was well above the requirement, rating **Excellent**. From **GSFCNISNPTH**, performance was a bit lower, but also stable.



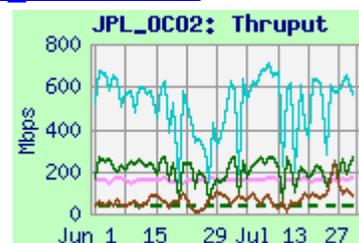
3.1) GSFC → JPL: continued

Test Results: continued

Source → Dest		Medians of daily tests (mbps)			Requirement (mbps)	Rating
		Best	Median	Worst		
GSFC-EDOS B13 → JPL-OCO2	1 stream	269.6	217.6	16.0	36.6	Excellent
	6 streams	749.0	602.3	83.9		
GSFC-EDOS B32 → JPL-OCO2		209.2	77.7	3.6		
ESDIS-PTH → JPL-OCO2		168.6	161.6	51.7		
GSFC-EDOS B13 → JPL-SMAP	1 stream	393.7	306.3	21.7	49	Excellent
	6 streams	459.1	204.2	35.3		
GSFC-EDOS B32 → JPL-SMAP		235.8	81.8	3.8		
ESDIS-PTH → JPL-SMAP		170.0	162.5	128.0		

3.1.4 OCO2: http://ensight.eos.nasa.gov/Organizations/daac/JPL_OCO2.shtml

Testing from **EDOS-B13** to OCO2 is done using both a **single stream** and **6 streams**. Performance has been noisy but stable since early December. Median thruput from EDOS (using both single stream and 6 streams) is well above 3 x the requirement, so is rated **Excellent**. Testing was added in February from **ESDIS-PTH**, which was more stable but lower than from **EDOS-B13**, and from **EDOS-B32**, with quite noisy and worse performance than from **EDOS-B13**.

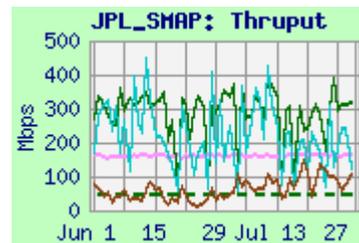
**3.1.5 SMAP:** http://ensight.eos.nasa.gov/Organizations/daac/JPL_SMAP.shtml

Performance from **EDOS-B13 (single stream)** was stable and well above 3 x the requirement, so the rating remains **Excellent**.

EDOS-B13 6 stream testing was not much better than the single stream results.

Testing was added in December from **ESDIS-PTH**, initially using 3 streams, but was switched to a single stream in late March, for a better comparison with **EDOS**. Performance was stable, but lower than from EDOS.

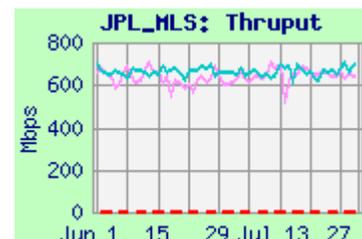
Testing was added in February from **EDOS-B32**, with noisy performance, worse than from **EDOS-B13** – like its performance to SMAP.



3.1) GSFC → JPL: continued

Test Results: continued

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ESDIS-PTH → JPL-MLS	728.3	644.5	401.8
GSFC-NISN-PTH → JPL-MLS	740.0	656.6	531.1
ESDIS-PTH → JPL-PODAAC	567.3	541.6	344.2
GSFC-NISN-PTH → JPL-PODAAC	757.8	583.6	486.3
ESDIS-PS → JPL-QSCAT	92.7	92.4	89.2
GSFC-NISN-PTH → JPL-QSCAT	74.2	74.0	73.8
ESDIS-PTH → JPL-NISN-PTH	205.6	127.7	64.4
EDOS-B13 → JPL-NISN-PTH	157.0	138.5	22.1
EDOS-B32 → JPL-NISN-PTH	152.1	99.6	5.2
GSFC-NISN-PTH → JPL-NISN-PTH	265.9	146.3	60.6

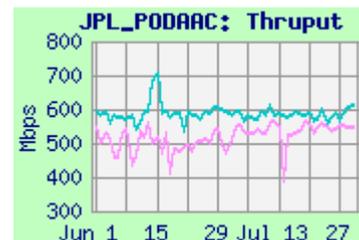
**3.1.6 MLS:** http://ensight.eos.nasa.gov/Missions/aura/JPL_MLS.shtml

The old MLS test server at JPL was retired in mid-March. A replacement was installed in April, and firewall rules were implemented in late April.

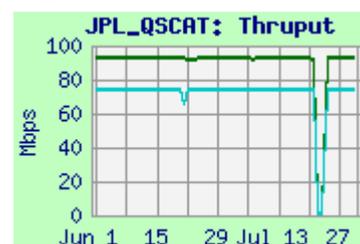
Thruput from both **ESDIS-PTH** and **GSFC-NISN** was very stable, better than to the old node, and way above the modest 1.2 mbps requirement, so the rating was **Excellent**.

3.1.7 PODAAC: http://ensight.eos.nasa.gov/Organizations/production/JPL_PODAAC.shtml

There is no longer a requirement from GSFC to JPL PODAAC in the database. Performance from **ESDIS-PTH** stabilized in early December, but from **GSFC-NISN** was apparently affected by the etherchannel problem March 15-23 and most of April. Thruput stabilized after that, and was way above the previous 1.5 mbps PODAAC requirement.

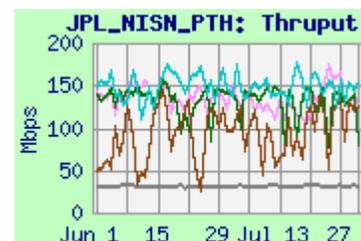
**3.1.8 QSCAT:** http://ensight.eos.nasa.gov/Organizations/daac/JPL_QSCAT.shtml

There is no longer a requirement from GSFC to JPL QSCAT in the database. Thruput from **ESDIS-PS** and **GSFC-NISN-PTH** to QSCAT also stabilized in early December, then dropped at the end of March, but recovered in late April. Thruput from both sources was stable, and remained well above the modest previous 0.6 mbps requirement.

**3.1.9 JPL-NISN-PTH:** http://ensight.eos.nasa.gov/Organizations/daac/JPL_NISN_PTH.shtml

The JPL-NISN-PTH node is directly connected to the NISN SIP router at JPL, so flows from GSFC use the NISN SIP network. Thruput from **ESDIS-PTH** and **GSFC-NISN-PTH** was somewhat noisy but mostly stable.

Testing was added from **EDOS-B32** in late February – thruput was very noisy. Testing was added from **EDOS-B13** in April – its performance was more stable than from **EDOS-B32**, and lower than but similar to **ESDIS-PTH**.



3.2) LaRC → JPL

Rating: Continued **Excellent**

Web Pages:

- http://ensight.eos.nasa.gov/Organizations/production/JPL_TES.shtml
- http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml
- http://ensight.eos.nasa.gov/Organizations/production/JPL_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
LaRC ASDC → JPL-TES	657.4	578.4	353.0	33.6
LaRC ANGE → JPL-PTH	312.6	221.2	146.3	
LaRC PTH → JPL-PTH	179.1	135.4	58.1	

Requirements:

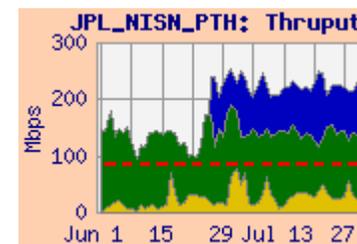
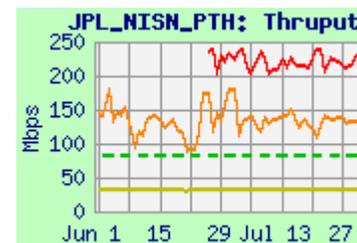
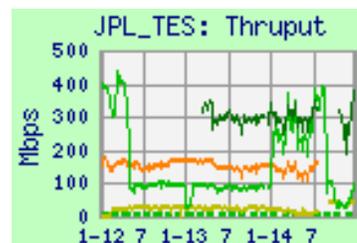
Source → Dest	Date	Mbps	Prev	Rating
LaRC → JPL-Combined	CY '12 –	83.5	69.3	Excellent
LaRC ASDC → JPL-TES	CY '12 –	5.5	7.0	Excellent

3.2.1 LaRC→ JPL (Overall, TES): Performance from LaRC ASDC to JPL-TES recovered in late February with the JPL Ethernet fix, (and was retuned with further improvement in March). Performance had dropped dramatically in mid August 2014, when the JPL Ethernet problem apparently began. Before that, LaRC ASDC to JPL-TES had improved dramatically in early January 2014 with the ASDC node upgrade.

The LaRC to JPL Overall rating is based on the results from LaRC ASDC to JPL-TES. The median thrupt was well above 3 x the combined requirements, so the overall rating remains **Excellent**. Total LaRC to JPL user flow increased this month, and was about 60% of the requirement (without contingency).

The TES rating also remains **Excellent**. User flow to TES is very low.

3.2.2 LaRC→ JPL-NISN-PTH: Performance from LaRC-PTH to JPL-NISN-PTH was stable a bit below its 200 mbps limitation JPL-NISN-PTH is directly connected to the NISN router at JPL, so it was not affected by the congestion between NISN and the JPL campus (or the JPL ethernet problem). The LaRC ANGe node was restored last month; thrupt was stable and higher than from LaRC-PTH.



3.2) LaRC → JPL (continued)

3.2.3 LaRC → JPL-MISR: http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
LaRC ASDC → JPL-MISR	39.6	23.1	1.6	
LaRC PTH → JPL-MISR	48.0	14.5	0.3	9.8
JPL-NISN-PTH → JPL-MISR	88.9	85.4	57.3	

Requirements:

Source → Dest	Date	Mbps	Prev	Rating
LaRC ASDC → JPL-MISR	CY '12 –	78.1	62.3	Bad

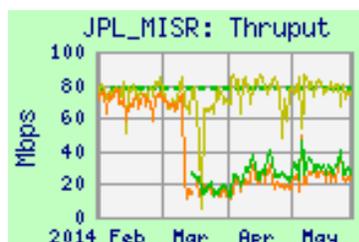
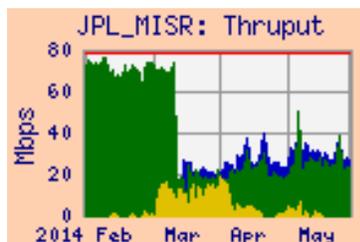
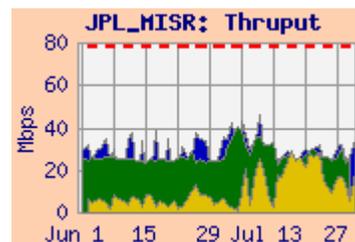
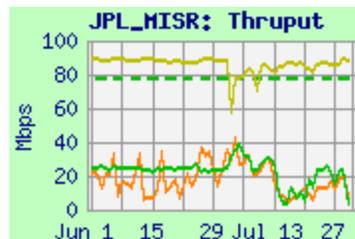
Performance from **LaRC ASDC** to JPL-MISR is similar to that from **LaRC PTH**, limited by the Fast-E connection to the MISR node. Thruput to MISR from both sources dropped severely in March 2014, after improving in December 2013.

This month, the median integrated thruput from **LaRC ASDC** remained below 1/3 the MISR requirement, so the MISR rating remains **Bad**. User flow this month was higher than last month, but averaged only about 19% of the requirement, without contingency.

Note that there was a user flow peak, beginning in late February 2014, BEFORE the measured thruput dropped in March, suggesting that the user flow is not the cause of the thruput drop.

Performance to JPL-MISR from **JPL-NISN-PTH** improved in April, when CSO fixed a routing problem, which had increased the RTT between these nodes to about 100 ms, similar to GSFC to JPL RTT.

The LaRC → JPL Overall rating is not based on this result, however, since it not indicative of the capability of the network.



4) LaRC

4.1) JPL → LaRC

Rating: Continued **Excellent**

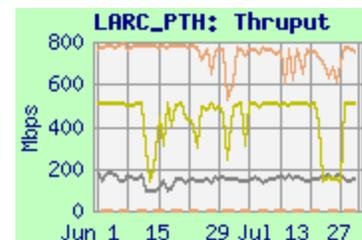
Web Page: http://ensight.eos.nasa.gov/Organizations/production/LARC_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
JPL- TES → LaRC PTH	794.1	755.6	173.0	1.21
JPL- NISN-PTH → LaRC PTH	513.8	503.7	110.0	
JPL- PS → LaRC PTH	227.0	149.5	99.5	
JPL- TES → LaRC ANGe	67.7	66.9	46.7	

Requirements:

Source → Dest	Date	Mbps	Prev	Rating
JPL → LaRC	CY '12 –	1.1	1.5	Excellent



Comment: This requirement is primarily for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. The route from JPL to LaRC is via NISN PIP.

Note that NASA Ames to JPL flows were diverted off NISN (onto CalREN) in December 2014, reducing congestion on the NISN to JPL campus interconnection.

The JPL to LaRC user flow was only 1.2 mbps this month. This is the entire NISN flow from JPL to LaRC – it may not all be EOS related. But it is about equal to the EOS requirement.

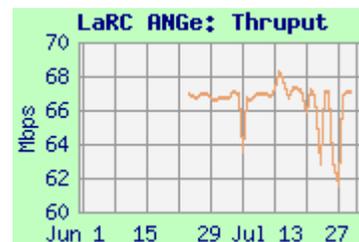
4.1.1 LaRC-PTH: This month, performance from **JPL-**TES**** to LaRC-PTH was stable. Thruput remained much higher than the requirement; the rating remains **Excellent**.

Thruput from **JPL-**NISN-PTH**** to LaRC-PTH was also stable this month.

Thruput from both JPL sources to LaRC-PTH had increased in September 2014, when LaRC-PTH was upgraded.

An additional test was added in February to LaRC-PTH from a new JPL node, **JPL-PerfSonar (JPL-PS)**. Thruput was lower than the other nodes – will be investigated.

4.1.2 LaRC-ANGe: The LaRC-ANGe node was restored in late June; testing was initiated to it from **JPL-**TES****. Performance was quite stable, well above the requirement, but much lower than to LaRC-PTH.



4.2) GSFC → LaRC:

Rating: Continued **Excellent**

Web Pages : <http://ensight.eos.nasa.gov/Organizations/production/LARC.shtml>
http://ensight.eos.nasa.gov/Organizations/production/LARC_ANGe.shtml
http://ensight.eos.nasa.gov/Organizations/production/LARC_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
GES DISC → LaRC ASDC	936.3	935.2	800.9	32.2	935.8
GSFC-EDOS-B13 → LaRC ASDC	903.7	848.0	385.4		
ESDIS-PTH → LaRC-ANGe	220.8	217.7	214.4		
GSFC-NISN-PTH → LaRC-ANGe	153.0	106.5	43.2		
GES DISC → LaRC-PTH	939.2	934.6	667.3		
GSFC-NISN-PTH → LaRC-PTH	930.8	901.1	681.1		
NPP-SD3E → LaRC-PTH	803.1	687.3	509.6		

Requirements:

Source → Dest	Date	Mbps	Prev	Rating
GSFC → LARC (Combined)	CY '12 –	60.7	52.2	Excellent

Comments:

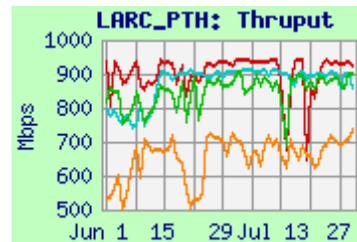
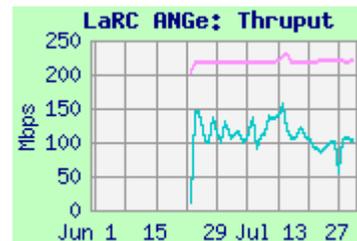
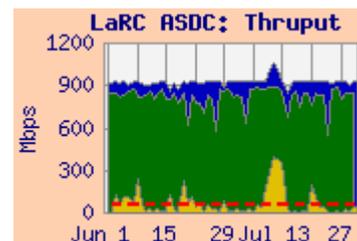
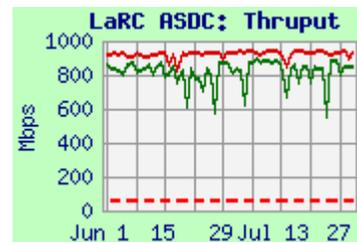
GSFC → LaRC ASDC: Thruput from **GES DISC** to LaRC ASDC DAAC remained well above 3 x the increased combined requirement, close to the circuit limitation, so the rating remains **Excellent**. Thruput to ASDC from **GSFC-EDOS** was slightly lower and noisier.

As seen on the integrated graph, the 32 mbps average user flow this month was above typical and close to the requirement (without contingency), with occasional peaks.

GSFC → ANGe: Testing to ANGe from both **ESDIS-PTH** and **GSFC-NISN-PTH** was restored in late June, to a new virtual server. Performance was stable, but was much lower than the previous testing to “Bob”, which went down in mid February. Under investigation.

GSFC → LaRC-PTH: Testing to LaRC-PTH from EBnet sources (**GES DISC**, **NPP-SD3E**) improved back to near the circuit limitation in mid April. It had become quite noisy in late February, when the MODIS reprocessing began, congesting the EBnet to NISN connection. Performance from **GSFC-NISN-PTH**, outside of EBNet, remained stable.

Performance from all sources had improved from all sources in late September 2014, when the LaRC-PTH node was upgraded.



5) Boulder CO sites:

5.1) NSIDC:

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

Web Pages: <http://ensight.eos.nasa.gov/Organizations/production/NSIDC.shtml>
http://ensight.eos.nasa.gov/Organizations/production/NSIDC_SIDADS.shtml
http://ensight.eos.nasa.gov/Organizations/production/NSIDC_PTH.shtml

Test Results: NSIDC S4PA

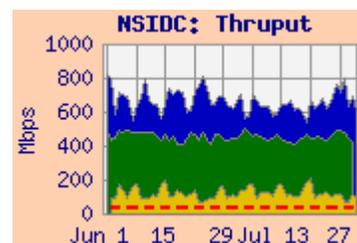
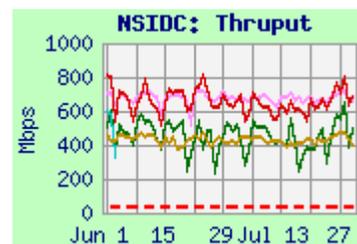
Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
MODAPS-PDR → NSIDC DAAC	524.4	423.9	272.8	133.4	449.1
GES-DISC → NSIDC DAAC	849.4	628.9	315.9		
GSFC-EDOS-B13 → NSIDC DAAC	731.2	424.6	137.7		
ESDIS-PTH → NSIDC DAAC	742.8	671.4	496.0		
JPL SMAP → NSIDC DAAC	774.0	478.0	285.0	5.2	
JPL PS → NSIDC DAAC	668.0	313.5	131.0		

Requirements:

Source → Dest	Date	Mbps	Prev	Rating
GSFC → NSIDC	8/14 –	38.5	16.8	Excellent
JPL → NSIDC	FY '15 –	17.1	0.16	Excellent
GHRC → NSIDC	FY '15 –	5.14	2.08	Excellent

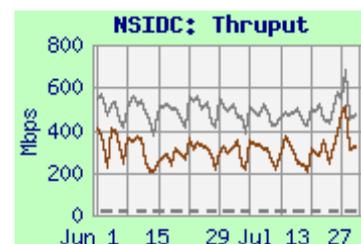
Comments: The requirements were updated in June 2014 to use the FY '14 database, and include MODIS reprocessing, which is now in process. AMSR-E flows from EDOS and JPL have been removed, and SMAP flows from JPL were added.

5.1.1 GSFC → NSIDC S4PA: The rating is based on testing from the MODAPS-PDR server to the NSIDC DAAC, since that is the primary flow. The median thrupt from MODAPS-PDR was stable, and remained well above 3 x the increased requirement, so the rating remains **Excellent**. The 133 mbps average user flow is due to the MODIS reprocessing flow, and is now over 3 x the requirement. Performance from GES-DISC, was a little higher and also mostly stable. Performance from GSFC-EDOS-B13 was pretty noisy. The GSFC-ISIPS node was retired in June, and testing discontinued.



5.1.2 JPL SMAP → NSIDC S4PA: There is no longer a JPL to NSIDC requirement for AMSR-E. A new 17.1 mbps flow requirement for SMAP began in October, before the SMAP launch on January 31.

Testing to NSIDC from JPL-SMAP was well in excess of the SMAP requirement, rating **Excellent**. Thrupt stabilized in December, like many other JPL flows. A new test was added in February from a new test node at JPL – JPL-PS). Performance was a bit lower than from JPL-SMAP. The 5.2 mbps user flow was similar to recent months – it's about half of the requirement without contingency.



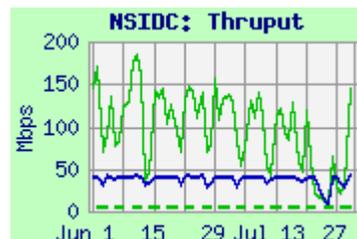
5) Boulder CO sites (Continued):

Test Results: GHRC → NSIDC S4PA

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
GHRC → NSIDC DAAC (nuttcp)	244.2	80.6	12.7	0.028
GHRC → NSIDC DAAC (ftp pull)	43.5	39.6	16.7	

5.1.3 GHRC, GHRC-ftp → NSIDC S4PA: GHRC (NSSTC, UAH, Huntsville, AL) sends reprocessed AMSR-E data to NSIDC via Internet2. This requirement increased to 5.14 mbps in December '14 (was 2.08 mbps previously) – when the next reprocessing campaign began.

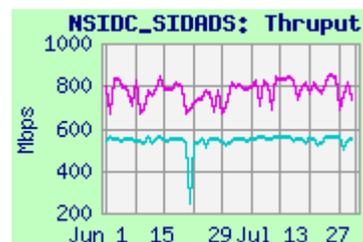
The median thrupt improved substantially in mid April – it is quite noisy, but the median remained well above the 5.1 mbps requirement, so the rating remains **Excellent**. User flow is very low.



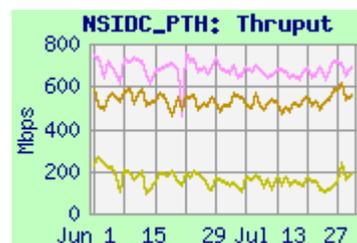
Test Results: NSIDC-SIDADS, NSIDC-PTH

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-ENPL → NSIDC-SIDADS	865.0	805.0	598.0
GSFC-NISN → NSIDC-SIDADS	566.6	550.9	410.3
ESDIS-PTH → NSIDC-PTH	771.6	671.3	457.6
MODAPS-PDR → NSIDC-PTH	662.9	520.7	356.5
JPL-NISN-PTH → NSIDC-PTH	341.9	147.3	49.1

5.1.4 GSFC → NSIDC-SIDADS: Testing from GSFC-ENPL was retuned in June 2014 (using 30 streams, to compensate for the small window size on SIDADS) with increased thrupt. Testing from GSFC-NISN was similarly retuned in September '14. Performance from GSFC-ENPL was stable; performance from GSFC-NISN improved and stabilized in June – possibly due to reduced congestion on the NISN backbone.



5.1.5 NSIDC-PTH: Thrupt from all sources to NSIDC-PTH was stable this month. Performance had improved in mid December 2014, when the NSIDC-PTH machine was upgraded.



5) Boulder CO sites (Continued):

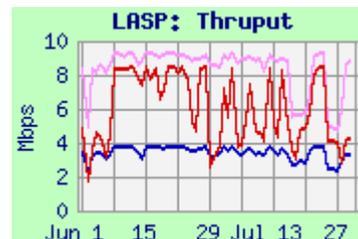
5.2) **LASP:**

Rating: LASP → GSFC: Continued **Excellent**

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

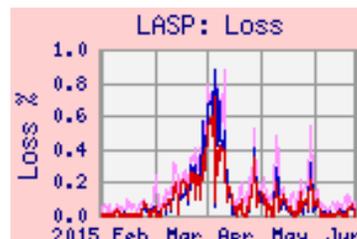
Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ESDIS-PTH → LASP blue (scp)	3.76	3.36	2.58
ESDIS-PTH → LASP blue (iperf)	9.33	8.85	6.71
GES DISC → LASP blue (iperf)	8.39	4.67	1.93
LASP → GES DISC	9.23	8.94	7.19



Requirement:

Source → Dest	Date	Mbps	Rating
LASP → GES DISC	CY '10 -	0.016	Excellent



Comments: In January '11, LASP's connection to NISN PIP was rerouted to a 10 mbps connection to the NISN POP in Denver; previously it was 100 mbps from CU-ITS via NSIDC.

In early February, packet loss from EBnet to LASP began increasing, peaking at almost 1% in late March. Performance dropped from all sources, especially from **GES DISC**.

The packet loss declined subsequently, but stayed above previous levels; thruput was noisy and somewhat reduced as a result.

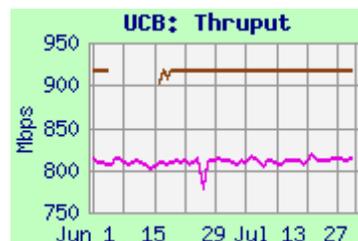
Return testing from **LASP** to GES DISC was also slightly affected by the congestion. Thruput was close to the circuit limitation, and much higher than 3 x the requirement, rating **Excellent**.



5.3) **UCB:** <http://ensight.eos.nasa.gov/Organizations/daac/UCB.shtml>

Test Results: University of Colorado – Boulder

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-ENPL	824.9	811.1	745.8
GSFC-ESTO	917.0	916.0	879.0



Comments:

Testing from **GSFC-ENPL** to the UCB 10 gig server began failing again in February, and was switched back to the 1 gig server in March. The route is via Internet2 to FRGP, similar to NCAR.

Thruput from both **GSFC-ENPL** and **GSFC-ESTO** was very stable this month.

Thruput had improved in early October '14, by switching back to the 10 gig connected test node at UCB (it had begun failing consistently in mid-May 2013, so testing had been switched to a 1 gig test node in mid-June '13).

5) Boulder CO sites (Continued):**5.4) NCAR:**

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

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

Test Results:

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
LaRC PTH	183.1	182.6	175.6
GSFC-ENPL-10G	6273.3	6205.3	4654.8
GSFC-ENPL-FE	98.2	97.2	96.1
GSFC-NISN-PTH	673.2	560.6	275.1

Requirement:

Source	Date	Mbps	Prev	Rating
LaRC	CY '12 -	0.044	0.1	Excellent
GSFC	CY '12 -	0.111	5.0	Excellent

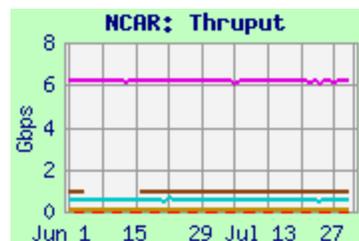
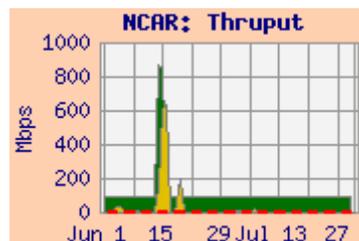
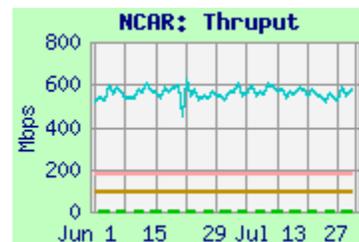
Comments: NCAR has a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS (Aura, from GSFC) QA requirements. Testing is to NCAR's 10 gigabit capable PerfSonar node since March '12.

5.4.1 From LaRC: Thruput from LaRC-PTH stabilized last month – apparently due to reduced congestion on the NISN backbone (the route appears to not have changed). Thruput had improved a bit with the LaRC-PTH upgrade in September '14, but remains limited to 200 mbps by agreement with CSO / NISN. The median remained well above 3 x the tiny requirement, so the rating remains **Excellent**.

5.4.2 From GSFC: From GSFC-NISN-PTH, the route is via NISN to the MAX (similar route as from LaRC-PTH). Performance from GSFC-NISN also improved and stabilized in June – apparently due to reduced congestion on the NISN backbone (similar to the improvement from LaRC-PTH). The median was well above 3 x the tiny requirement, so the rating remains **Excellent**.

The user flow from GSFC-EBnet averaged a more normal 2.8 mbps this month (but still way above the requirement), after an unusual 800 mbps peak (averaging 39.4 mbps) last month.

From GSFC-ENPL-10G, with a 10 Gig-E interface, and a 10 gig connection to MAX, performance to NCAR's 10 Gig PerfSonar node improved and stabilized in late March '15, and now averages over 6 gbps!



6) Wisconsin:Rating: Continued **Excellent**Web Pages <http://ensight.eos.nasa.gov/Missions/NPP/WISC.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
NPP-SD3E	2153.2	1179.8	7.0	121.8	1200.3
GES DISC	884.5	856.1	436.5		
GSFC ENPL	6893.2	6830.3	6015.2		
GSFC-ENPL-v6	5760.5	5704.0	4231.3		
LaRC ANGe	695.5	480.8	181.5		

Requirements:

Source Node	Date	mbps	Prev	Rating
NPP-SD3E	FY'14 -	242.3	237.2	Excellent
GSFC MODAPS	FY'14 -	21.9	16.5	Excellent
GSFC Combined	FY'14 -	264.2	253.7	Excellent
LaRC Combined	CY'12 -	n/a	7.9	n/a

Comments: The University of Wisconsin is included in this Production report due to its function as Atmosphere PEATE for NPP. Wisconsin also continues to act as an SCF on the MODIS, CERES and AIRS teams.

6.1 GSFC: Testing from **NPP-SD3E** was switched to Wisconsin's 10 gig server in May 2013. Performance averages over 1 gbps – but there are frequent dips below 10 mbps. The median integrated thrupt from **NPP-SD3E** remained above the NPP requirement by more than 3 x, so the NPP rating remains **Excellent**. It was also above the GSFC combined requirement by more than 3 x, so the combined rating also remains **Excellent**.

User flow was a bit below, but consistent with the requirement (without contingency), similar to last month.

The route from EBnet at GSFC is via the Doors to MAX to Internet2, peering with MREN in Chicago.

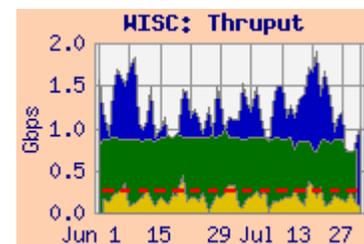
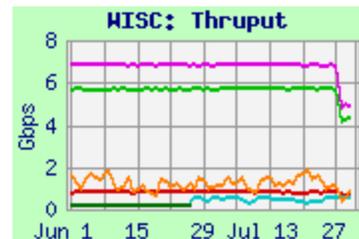
Testing from **GSFC-ENPL** was switched to the 10 gig server at Wisconsin (SSEC) in March 2013. Due to problems, testing has occasionally been switched between this 10 gig server and a 1 gig backup server. The primary server has been used since January 2015.

Testing from **GSFC-ENPL** using IPv6 was added in November '14. Its performance was very stable. Currently, the IPv6 RTT is higher than the IPv4 RTT (45 ms vs 37 ms), so the performance is a bit lower than IPv4 performance. Both IPv4 and IPv6 thrupt averaged about 6 gbps.

Testing from **GES DISC** began failing in November '14, and was restored in January '15. Thrupt was stable and close to the 1 gbps circuit limit.

6.2 LaRC: There is no longer a CERES requirement from LaRC to Wisconsin. In April 2013, testing from **LaRC ANGe** was switched to the new SSEC 10 gig server; performance improved at that time. The **LaRC ANGe** node went down in February, so testing was switched to be from **LaRC-PTH**. Thrupt from **LaRC-PTH** had been stable, consistent with its 200 mbps outflow limitation.

Testing from **LaRC ANGe** was restored in June – testing from **LaRC-PTH** was discontinued at that time. Thrupt from **LaRC ANGe** was mostly stable, and much better than from **LaRC-PTH**. Performance was well above the previous 7.9 mbps requirement, and would be rated **Excellent**. The route from LaRC is via NISN SIP, peering with MREN in Chicago.



7) KNMI:

Rating: Continued **Excellent**

Web Page http://ensight.eos.nasa.gov/Missions/aura/KNMI_ODPS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
OMISIPS → KNMI-ODPS	118.1	78.5	42.1	2.49	78.7
GSFC-ENPL → KNMI-ODPS	625.0	357.0	65.3		

Requirements:

Source Node	Date	mbps	Prev	Rating
OMISIPS	CY'12 -	13.4	0.03	Excellent

Comments: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura).

The requirement was increased with the use of the FY'14 database to 13.4 mbps, a much more realistic value than the previous 0.03 mbps.

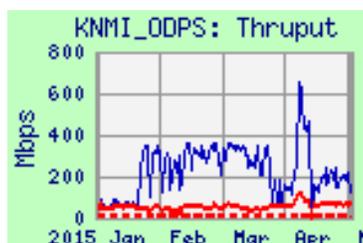
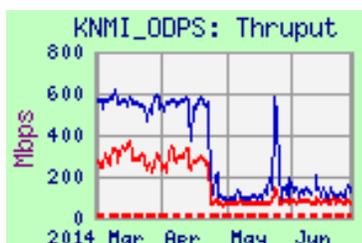
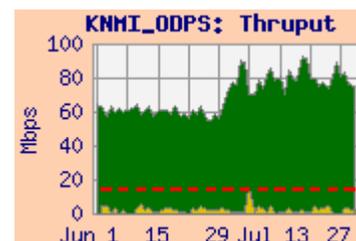
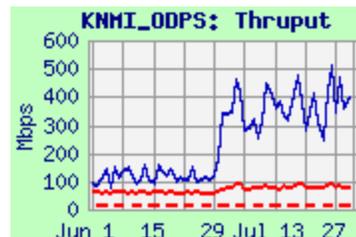
The rating is based on the results from **OMISIPS** on EBnet at GSFC to the ODPS primary server at KNMI. **Thruput from both sources was stable until near the end of April 2014, when it dropped significantly, due to increased packet loss.**

Thruput from **GSFC-ENPL** improved again in July, this time due to a further reduction in packet loss. Thruput from **GSFC-ENPL** had improved dramatically in mid-January – with no apparent change in packet loss, or change in performance from **OMISIPS**. It is now much better than from **OMISIPS**

The route from **GSFC-ENPL** is via MAX to Internet2, peering in NY with Géant's 2+ x 10 gbps circuit to Frankfurt, then via Surfnet through Amsterdam. **The route from OMISIPS (on EBnet) is similar from MAX, but goes from the Doors to NISN SIP to get to MAX. This route apparently incurs additional packet loss, reducing performance.** It has been requested to change the route to go directly from the Doors to MAX, to see if the packet loss would be reduced.

Even with this loss, the median thruput from **OMISIPS** remains above 3 x the increased requirement, so the rating remains **Excellent**.

The user flow, however, averaged only 2.5 mbps this month, similar to recent months, but only 28% of the revised requirement (without contingency).



8) JSpace - ERSD:

Ratings: **GSFC → ERSD: Continued Excellent**
ERSD → EROS: Continued Excellent
ERSD → JPL-ASTER-IST: N/A

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

US ↔ JSpace - ERSD Test Results

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
GSFC-EDOS → JSpace-ERSD	623.6	377.9	74.3	3.7
GES DISC → JSpace-ERSD	129.7	113.9	55.3	
GSFC ESDIS-PTH → JSpace-ERSD	420.1	276.9	62.1	
GSFC ENPL (GE) → JSpace-ERSD	684.0	660.0	144.0	
JSpace-ERSD → EROS-PTH	333.8	327.4	271.7	5.1
JSpace-ERSD → JPL-PerfSonar	90.4	89.1	56.3	

Requirements:

Source → Dest	CY	Mbps	Prev	Rating
GSFC → JSpace-ERSD	'14 -	16.4	6.75	Excellent
JSpace-ERSD → EROS	'12 -	8.33	8.3	Excellent
JSpace-ERSD → JPL-ASTER IST	'12 -	0.31	0.31	Excellent

Comments:

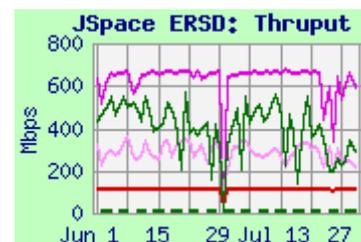
8.1 GSFC → JSpace-ERSD: The old server at JSpace-ERSD was retired in early January 2014. Testing to the new server began in January and February 2014.

Performance to the new server at ERSD from all sources had stabilized in May. Median thruput from **GSFC-EDOS** was well above the 3 x requirement, rating **Excellent**.

The 3.7 mbps user flow from GSFC to JSpace-ERSD was slightly below the 3.8 mbps last month, and 34% of the increased requirement, without contingency.

8.2 JSpace-ERSD → EROS: Testing from the new server at **JSpace** was initiated to EROS-PTH in October 2014. Performance was returned in January, and stabilized higher than previously -- it is rated **Excellent**. The 5.1 mbps user flow this month was similar to last month's 5.0 mbps, and was close to the requirement, without contingency.

8.3 JSpace-ERSD → JPL-ASTER-IST: The JPL-ASTER-IST test node was retired in October 2012. JPL no longer uses a distinct IST; instead, JPL personnel log in directly to the IST at JSpace-ERSD. As a substitute, testing was initiated from JSpace-ERSD to a different node at JPL ("JPL-PerfSonar"). Results to JPL-PS were again mostly stable this month; the rating would be **Excellent**.

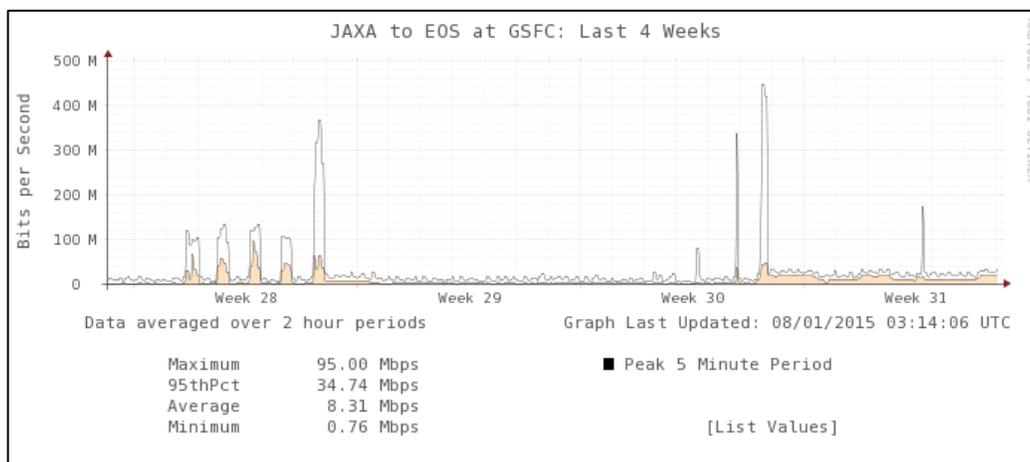
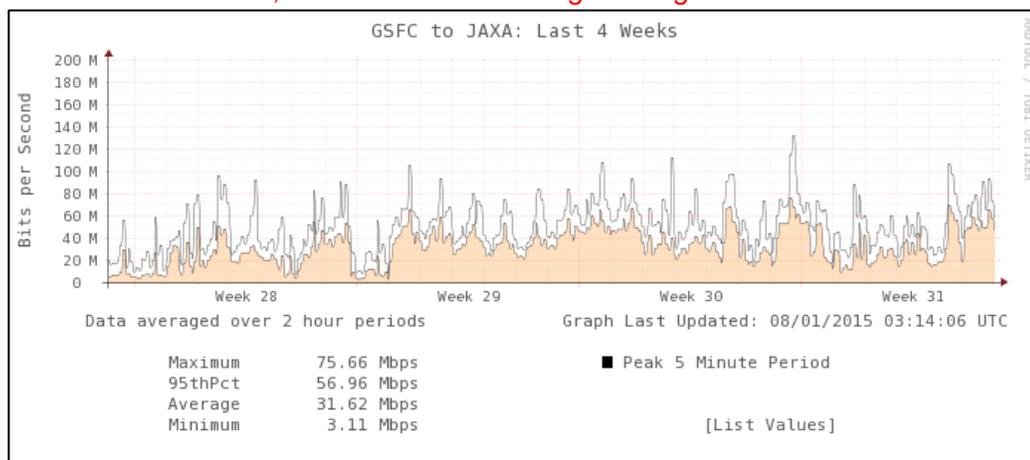


10) GSFC ↔ JAXA

Ratings: GSFC ↔ JAXA: N/A

The JAXA test hosts at EOC Hatoyama were retired on March 31, 2009. No additional testing is planned for AMSR or TRMM. All testing to JAXA-TKSC for ALOS was terminated at the end of June '09. Tests have been conducted with JAXA to evaluate different file transfer protocols for GPM -- but those results are not suitable for this report.

However, the user flow between GSFC-EBnet and JAXA continues to be measured. As shown below, the user flow this month averaged 31.6 mbps from GSFC-EBnet to JAXA, and 8.3 mbps from JAXA to GSFC-EBnet. **Both flows this month are well above both the requirement and the usual flows** (The GSFC-EBnet to JAXA requirements dropped from 15.4 mbps to 14.5 mbps with the removal of TRMM flows). However, since no iperf tests are run, the true capability of the network cannot be determined, and therefore no rating is assigned.



For comparison, testing is performed from GSFC to a test node at the Tokyo Exchange point, which is on the route from GSFC to JAXA. Performance to the Tokyo-XP 10 gig server averages about 3.5 gbps, and is well in excess of the JAXA requirements.

