

EOS Production Sites Network Performance Report: April 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: 3.69** (same as last month)
- **MODIS Reprocessing Active** – mostly to EROS (averaged over 600 mbps)
- **Requirements:** using the Network Requirements Database for 2014
 - Including GPM, OCO2, and SMAP missions
 - MODIS and AMSR Reprocessing requirements included
- **Only 2 flows below Good**
 - **GSFC → EROS: Low**
 - **NOAA → GSFC-NPP-SD3E: Low**
 - Probably just a problem with the NOAA test node

Ratings Changes:

Upgrade: ↑ None

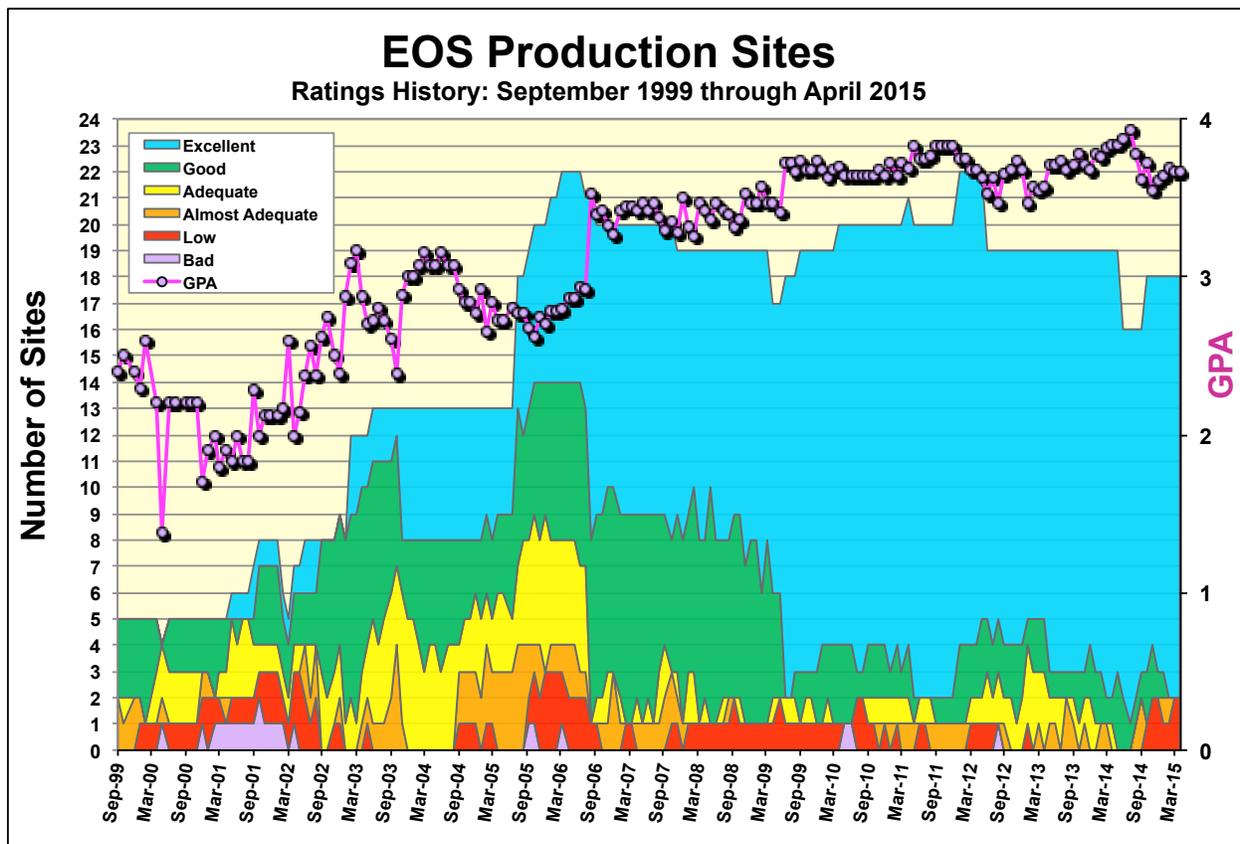
Downgrades: ↓ None

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

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

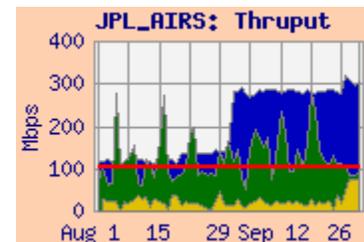
Previously, the requirements were based on the EOS Networks Requirements Handbook, Version 1.4.3 (from which the original database requirements were derived). Prior to that, the requirements were derived from version 1.4.2.

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”.



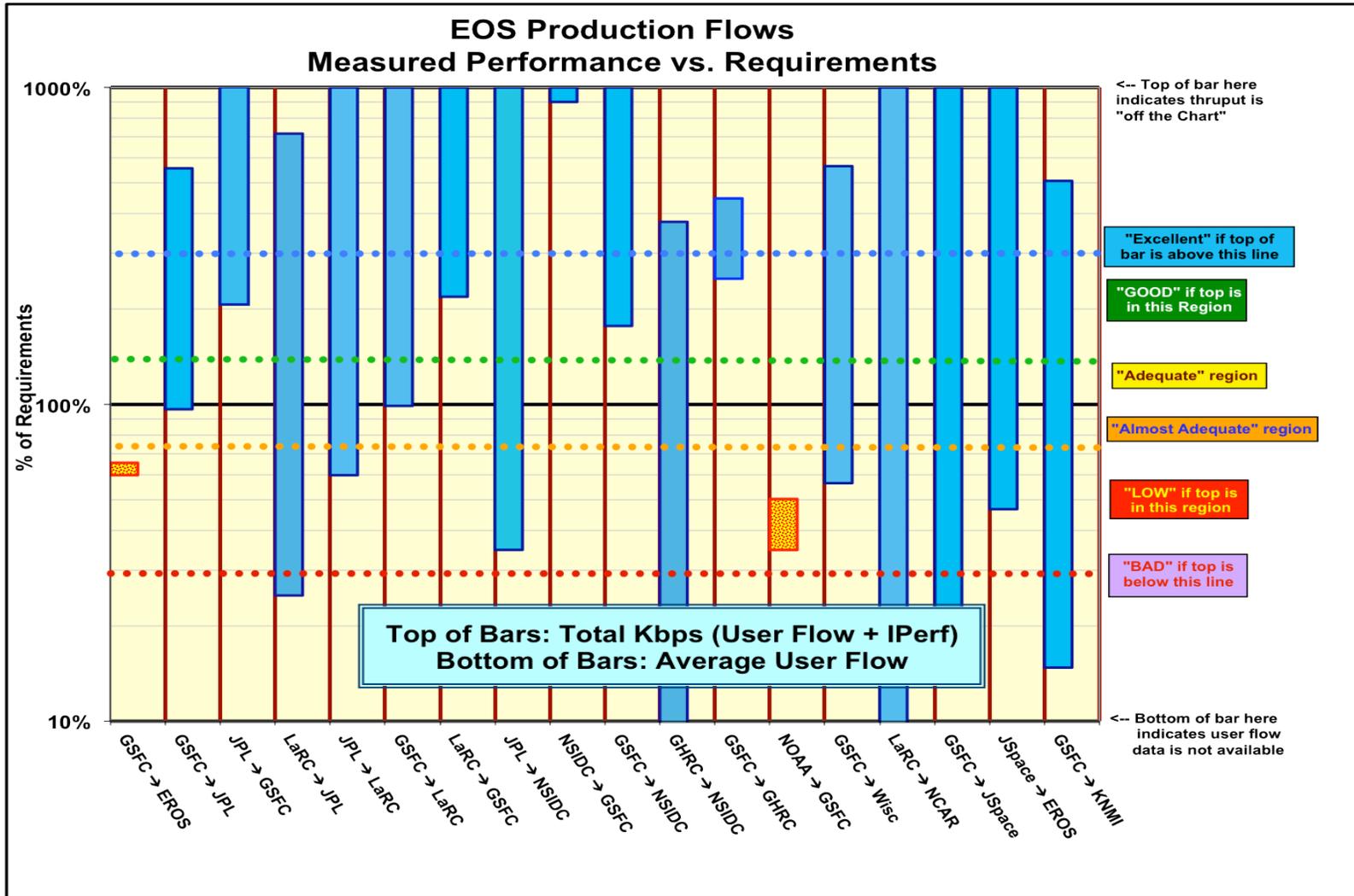
The green area is stacked on top of the user flow, and represents the “adjusted” daily average iperf throughput between the source-destination pair most closely corresponding to the requirement. This iperf measurement essentially shows the circuit capacity remaining with the user flows active. Adjustments 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

April 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	607.3	190.8	664.4	Low	Low
GSFC → JPL	AIRS, MLS, NPP, TES, OCO2, SMAP	121	63.0	NPP SD3E OPS1 → JPL-AIRS	116.6	626.3	673.9	Excellent	Ex
JPL → GSFC	MLS, OCO2	11.9	0.57	JPL-PODAAC → GSFC GES DISC	24.7	653.7	656.3	Excellent	Ex
LaRC → JPL	TES, MISR	83.5	83.5	LARC-ASDC → JPL-TES	20.8	597.0		Excellent	Ex
JPL → LaRC	TES	1.1	1.1	JPL-TES → LARC-PTH	0.66	774.6	774.6	Excellent	Ex
GSFC → LaRC	CERES, MISR, MOPITT, TES, MODIS	60.7	52.2	GSFC EDOS → LaRC ASDC	60.0	932.3	932.3	Excellent	Ex
LaRC → GSFC	MISR	0.6	0.6	LARC-ASDC → GES DISC	1.32	934.3	934.3	Excellent	Ex
JPL → NSIDC	AMSR-E, SMAP	17.1	0.16	JPL-SMAP → NSIDC	5.94	574.5		Excellent	Ex
NSIDC → GSFC	AMSR-E, MODIS, ICESAT	0.009	0.017	NSIDC DAAC → GES DISC	5.75	624.8	624.8	Excellent	Ex
GSFC → NSIDC	AMSR-E, MODIS, ICESAT, GBAD	38.5	8.4	MODAPS PDR → NSIDC-DAAC	68.1	473.6	487.5	Excellent	Ex
GHRC → NSIDC	AMSR-E	5.14	2.08	GHRC → NSIDC DAAC	0.024	19.4	19.36	Excellent	Ex
GSFC → GHRC	AMSR-E, MODIS	2.9	0.00	GSFC EDOS → GHRC via NISN	7.2	12.3	12.9	Excellent	Ex
NOAA → GSFC	NPP	601.3	522.3	NOAA-PTH → GSFC NPP-SD3E OPS1	208.6	240.9	302.1	Low	Low
GSFC → Wisc	NPP, MODIS, CERES, AIRS	264.2	259.1	GSFC NPP-SD3E OPS1 → WISC	149.0	1471.2	1491.4	Excellent	Ex
LaRC → NCAR	MOPITT	0.044	0.044	LaRC-PTH → NCAR		177.7		Excellent	Ex
GSFC → JAXA	TRMM, AMSR-E, MODIS, GPM	15.4	3.5	GSFC-EBnet → JAXA	21.2	n/a		n/a	n/a
JAXA → GSFC	AMSR-E, GPM	3.3	0.16	JAXA → GSFC-EBnet	8.6	n/a		n/a	n/a
GSFC → JSpace	ASTER	16.4	6.8	GSFC-EDOS → JSpace-ERSD	3.1	391.1	392.8	Excellent	Ex
JSpace → EROS	ASTER	8.3	8.3	JSpace-ERSD → EROS PTH	3.9	323.2	323.2	Excellent	Ex
GSFC → KNMI	OMI	13.4	13.4	GSFC-OMISIPS → KNMI ODPS	1.97	67.3	67.7	Excellent	Ex
		Significant change from FY '12 to FY '14							
		Changed in 2014	Value used for ratings						
						Ratings Summary		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	0
	Low	Requirement / 3 < Total Kbps < Requirement / 1.5				Low		2	2
	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	3.67	

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 lperf measurements – this value (when available) is used to determine the ratings.



1) EROS:

Ratings: GSFC → EROS: Continued **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	417.5	190.8	144.9	607.2	658.7
GSFC-EDOS → EROS LPDAAC	211.1	49.5	33.6		
GES DISC → EROS LPDAAC	232.2	101.3	72.7		
GSFC-ENPL → EROS LPDAAC	1326.0	1257.3	918.0		
GSFC-ENPL → EROS PTH	1968.0	1599.1	1157.3		
GSFC-EDOS → EROS PTH	57.3	7.8	3.7		
GSFC-NISN-PTH → EROS PTH	414.3	219.5	63.0		
ESDIS-PS → EROS PTH	210.7	30.2	17.1		

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.

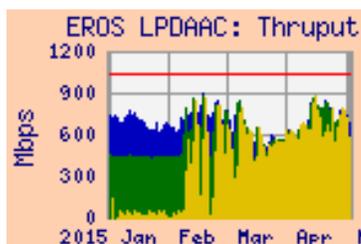
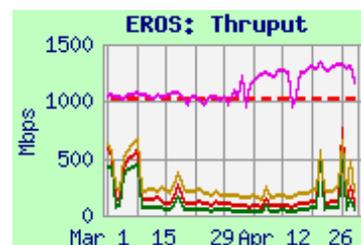
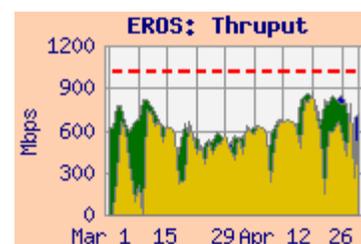
The reprocessing flow requirement began in August, so the requirement increased to 1016.1 mbps at that time (was only 49.8 mbps previously). **Note from the integrated graph that the reprocessing flow began in February.** The user flow this month averaged 607 mbps – a bit higher than last month, and much higher than the 24 mbps before reprocessing began.

The integrated thrupt from all sources was mostly stable this month, while **the iperf tests were much lower during peak MODIS flows.** The median integrated thrupt from **MODAPS-PDR** to LPDAAC remained slightly below 2/3 of the new requirement (which includes reprocessing), so the rating remains **Low**.

The median thrupt from **GSFC-EDOS** and **GES DISC** (also on EBnet) was similarly affected by MODAPS.

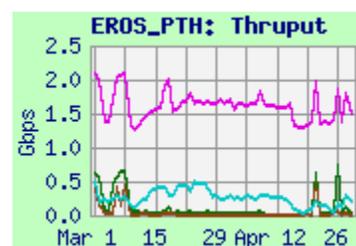
The route from EBnet sources is via the Doors, to NISN SIP on the NISN 10 gbps backbone, to the NISN Chicago CIEF, then via a NISN GigE, peering at the StarLight Gigapop with the EROS OC-48 (2.5 gbps) tail circuit.

Iperf testing for comparison is performed from **GSFC-ENPL** to LPDAAC (the “FTL” node, a 10 gig host outside the EROS firewall). The route is via a direct 10 gig connection to the MAX, to the Internet2 100 gbps backbone, to StarLight in Chicago, then via the EROS OC-48 tail circuit. **Thrupt from GSFC-ENPL to LPDAAC is much steadier than from EBnet sources, and is not much affected by the MODAPS reprocessing flow.**



1) **EROS:** (continued)

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** (IPv4) 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**. EROS has not been configured for IPv6 since February 2014.



The combined results show that all EBnet sources have poor iperf performance to both EROS and EROS-PTH during high MODIS reprocessing flows. But **GSFC-NISN-PTH**, which uses the same NISN SIP to StarLight route, was not affected as much. **This indicates that there is congestion at GSFC, between EBnet and NISN SIP.**

Additional Test Results:

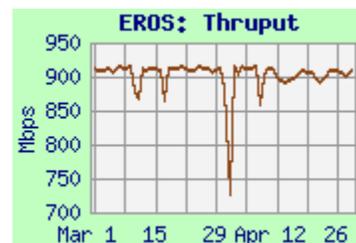
Source → Dest	Medians of daily tests (mbps)			User Flow	Integrated
	Best	Median	Worst		
JSpace-ERSD → EROS PTH	329.3	323.2	301.8	3.89	323.2
NSIDC SIDADS → EROS PTH	914.7	905.6	838.6		
LaRC PTH → EROS PTH	186.4	185.3	28.2		

Requirements:

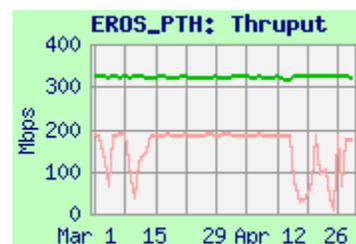
Source → Dest	Date	mbps	prev	Rating
JSpace → EROS	FY '06 –	8.3	8.3	Excellent

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

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



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



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	470.2	252.6	130.0		
EROS PTH → GSFC-ESDIS PTH	899.0	525.3	250.0		
JPL-PODAAC → GES DISC	853.7	653.7	208.5	24.7	
JPL-NISN-PTH → GSFC-NISN	614.1	423.3	150.8		
NSIDC DAAC → GES DISC	726.0	624.8	494.8	5.8	
NSIDC DAAC → GSFC-ISIPS (scp)	37.4	36.7	29.8		
LaRC ASDC → GES DISC	936.2	934.3	902.5	1.32	
LARC-ANGe → GSFC-ESDIS PTH	n/a	n/a	n/a		
NOAA-PTH → NPP-SD3E-OPS1	242.1	240.9	236.8	208.6	302.1

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:

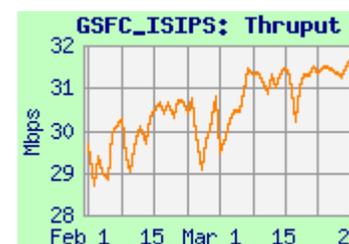
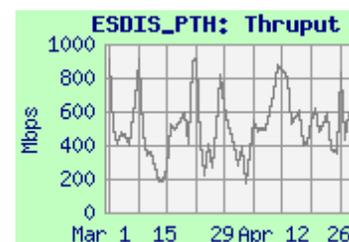
2.1.1 EROS LPDAAC, EROS-PTH → GSFC: The throughput improved for tests from **EROS LPDAAC** to **GES DISC**. Performance from **EROS-PTH** to **ESDIS-PTH** was again noisy. The results between the PTH's were better than results between the DAACs.

2.1.2 JPL → GSFC: Throughput from **JPL-PODAAC** to **GES DISC** remains noisy. Note that **JPL campus nodes → EBnet flows take Internet2 instead of NISN, based on JPL routing policies**. Throughput was well above 3 x the requirement, so the rating remains **Excellent**. The 24.7 mbps average user flow was above the requirement and the 14.5 mbps last month. Testing from **JPL-NISN-PTH** to **GSFC-NISN** is routed via **NISN PIP**, and dropped significantly this month.

2.1.3 NSIDC → GSFC: Performance from **NSIDC** 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.

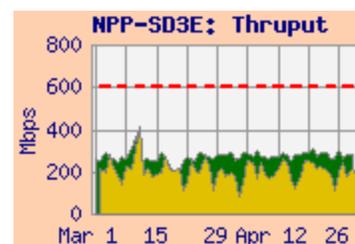
Throughput to **GSFC-ISIPS** using **SCP** improved a bit, and remains well above the requirement.

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**. **LaRC-ANGe** was down this month, so was not testing to **ESDIS-PTH**. The user flow this month was about 2 x 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 75% 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.

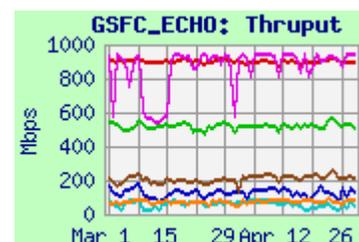


2.2 GSFC-ECHO: EOS Metadata Clearinghouse

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

Test Results:

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
EROS LPDAAC	182.8	126.0	61.1
EROS LPDAAC ftp	117.4	55.3	18.2
GES DISC	928.5	896.7	825.4
GES DISC ftp	946.7	934.3	495.4
LaRC ASDC DAAC	561.7	519.0	433.3
NSIDC DAAC	259.7	222.4	158.3
NSIDC DAAC ftp	114.8	74.9	34.6
EROS LPDAAC → CMR	11.2	10.5	9.0
GES DISC → CMR	433.1	379.0	320.4



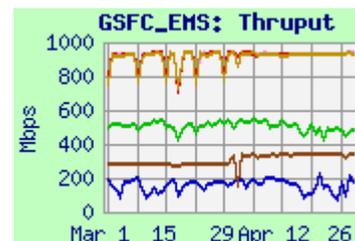
Comments: Performance was mostly stable from all sources. FTP performance is mostly limited by TCP window size – especially from sites with long RTT. Testing to the “Common Metadata Repository” (CMR), which will replace ECHO, was started in November. Performance is erratic – new server software has been requested.

2.3 GSFC-EMS: EOS Metrics System

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

Test Results:

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
EROS LPDAAC	230.3	169.4	62.9
ESDIS-PTH	938.2	933.5	857.2
GES DISC	937.2	933.3	867.6
LARC ASDC	570.9	503.4	355.8
MODAPS-PDR	937.7	929.7	771.2
NSIDC-SIDADS	341.7	336.4	196.9



Comments: Iperf testing is performed to GSFC-EMS from the above nodes. Performance was mostly stable from all sources.

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	809.7	626.3	316.3	116.6	673.9
GSFC-GES DISC → JPL-AIRS	546.3	472.9	353.3		
ESDIS-PTH → JPL-AIRS	754.7	606.5	368.3		
GSFC-NISN-PTH → JPL-AIRS	688.2	468.2	46.0		
NPP-SD3E-OPS1 → JPL-Sounder	834.6	755.9	454.9		
GSFC-NISN-PTH → JPL-Sounder	662.0	541.0	369.9		

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 increased a bit this month – the 117 mbps average flow (for all EBnet to JPL flows) is close to the requirement, with contingency, and above the 108 mbps peak 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**.

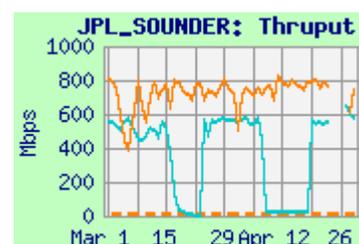
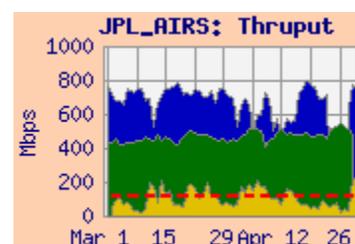
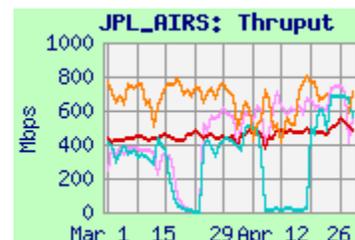
Most GSFC to JPL flows use the NISN PIP network, and are thus not affected by the NISN SIP congestion due to large MODIS reprocessing flows.

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** was lower but similar. **GSFC-NISN-PTH** suffered from what appears to be a repeat of the etherchannel problem at JPL from 8-18 April: poor performance from specific sources to specific destinations – while the same sources work well to other destinations, and the same destinations work well from other sources. **ESDIS-PTH** and **GSFC-NISN-PTH** had experienced a previous recurrence from 15-23 March. 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 stable, except for the April 8-18 and March 15-23 problems.



3.1) GSFC → JPL: continued

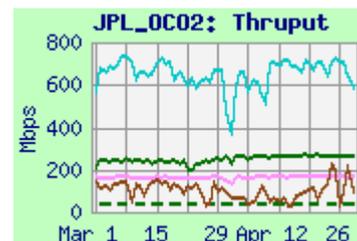
Test Results: continued

Source → Dest		Medians of daily tests (mbps)			Requirement (mbps)	Rating
		Best	Median	Worst		
GSFC-EDOS B13 → JPL-OCO2	1 stream	270.7	265.4	96.2	36.6	Excellent
	6 streams	774.5	675.4	227.2		Excellent
GSFC-EDOS B32 → JPL-OCO2		215.7	70.6	4.1		
ESDIS-PTH → JPL-OCO2		169.7	165.7	35.7		
GSFC-EDOS B13 → JPL-SMAP	1 stream	435.0	400.9	79.0	49	Excellent
	6 streams	680.9	443.2	129.9		
GSFC-EDOS B32 → JPL-SMAP		283.1	110.7	3.7		
ESDIS-PTH → JPL-SMAP		171.0	164.0	135.0		

Testing from EDOS to both OCO2 and SMAP was added in February from an EDOS node in B32 – previous testing from EDOS was from B13. Initial results were very strange ... testing to OCO2 from B32 was erratic, and much worse than from B13 (which was stable), while results to SMAP were opposite – thrupt from B32 was stable and better than the erratic performance from B13! The problem was cleared up late in February when a bad ethernet was removed from an etherchannel at JPL. Performance to both OCO2 and SMAP were much more stable after that, with EDOS-B13 getting better result.

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 stable since early December. Median thrupt 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 stable and similar to **EDOS-B13**, and from **EDOS-B32**, initially with erratic and poor performance until the JPL ethernet fix, above, was implemented, but performance is still somewhat noisy and worse than from **EDOS-B13**.

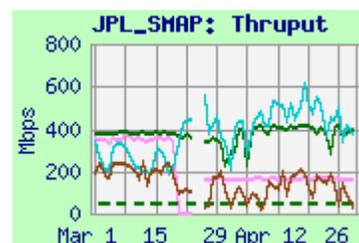
**3.1.5 SMAP:** http://ensight.eos.nasa.gov/Organizations/daac/JPL_SMAP.shtml

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**.



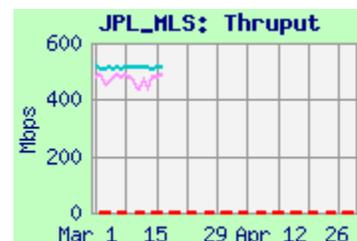
3.1) GSFC → JPL: continued

Test Results: continued

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ESDIS-PTH → JPL-MLS	n/a	n/a	n/a
GSFC-NISN-PTH → JPL-MLS	n/a	n/a	n/a
ESDIS-PTH → JPL-PODAAC	567.8	552.5	327.7
GSFC-NISN-PTH → JPL-PODAAC	35.5	26.4	19.0
ESDIS-PS → JPL-QSCAT	54.4	53.8	52.7
GSFC-NISN-PTH → JPL-QSCAT	21.8	12.7	10.8
ESDIS-PTH → JPL-NISN-PTH	73.9	19.4	7.6
EDOS-B32 → JPL-NISN-PTH	44.0	6.3	2.3

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, but the firewall rules were not implemented until May. So there are no results or rating this month.

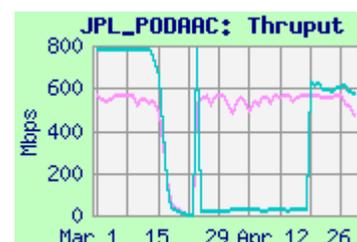


Thruput from both **ESDIS-PTH** and **GSFC-NISN** had stabilized in early December, and was way above the modest 1.2 mbps requirement, so the rating was **Excellent**.

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 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 remained well above the modest previous 0.6 mbps requirement.

**3.1.9 GSFC to 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. The thruput from **ESDIS-PTH** to JPL-NISN-PTH was stable until early March, then recovered in late April.



Testing was added from **GSFC-EDOS** in February – its performance was similar to **ESDIS-PTH**.

3.2) LaRC → JPL**Rating:** Continued **Excellent**

Web Pages:

http://ensight.eos.nasa.gov/Organizations/production/JPL_TES.shtmlhttp://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtmlhttp://ensight.eos.nasa.gov/Organizations/production/JPL_PTH.shtml**Test Results:**

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
LaRC ANGE → JPL-TES	n/a	n/a	n/a	
LaRC ASDC → JPL-TES	682.3	597.0	407.9	20.8
LaRC ANGE → JPL-PTH	n/a	n/a	n/a	
LaRC PTH → JPL-PTH	179.1	127.6	69.7	

Requirements:

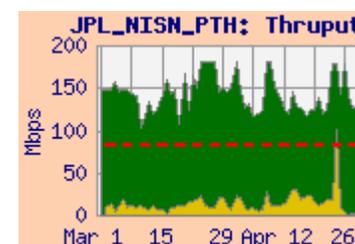
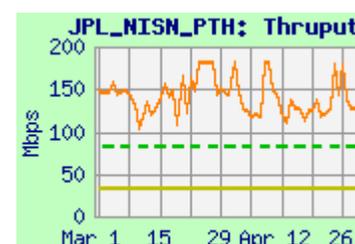
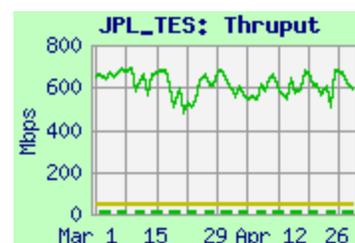
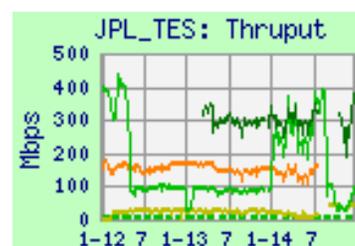
Source → Dest	Date	Mbps	Prev	Rating
LaRC → JPL-Combined	CY '12 –	83.5	69.3	Excellent
LaRC ASDC → JPL-TES	CY '12 –	5.5	7.0	Excellent

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 now based on the results from **LaRC ASDC** to JPL-TES, since the **LaRC ANGe** test node was retired in mid February. The median thruput was well above 3 x the combined requirements, so the overall rating remains **Excellent**. Total LaRC to JPL user flow is about 37% 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 down this month, so no testing occurred.



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	45.5	23.7	1.3	
LaRC PTH → JPL-MISR	71.1	18.2	0.3	8.3
JPL-NISN-PTH → JPL-MISR	23.7	16.0	2.7	

Requirements:

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

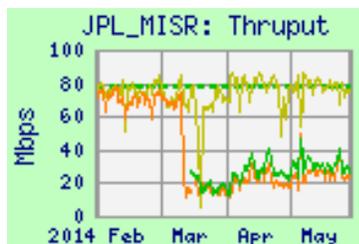
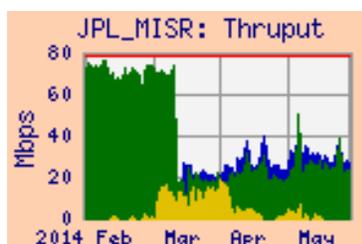
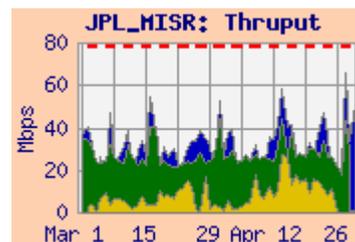
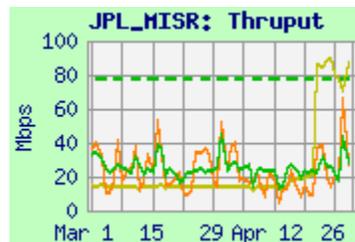
Performance from **LaRC ASDC** to JPL-MISR is similar to that from **LaRC PTH**, limited by the Fast-E connection to the MISR node. Thruput to MISR from both sources dropped severely in March 2014, after improving in December 2013.

This month, the median integrated thruput from **LaRC ASDC** remained a bit below 1/3 the MISR requirement, so the MISR rating remains **Bad**. User flow was a bit higher than last month, but averaged only about 16% 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 this month, when CSO fixed a routing problem, which had increased the RTT between these nodes to about 100 ms, similar to GSFC to JPL RTT.

So 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

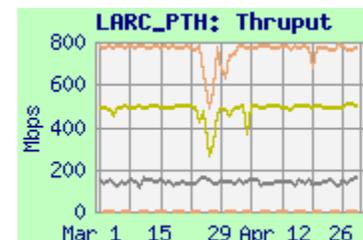
Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
JPL- TES → LaRC PTH	795.6	774.6	236.4	0.66
JPL- NISN-PTH → LaRC PTH	509.9	494.1	105.2	
JPL- PS → LaRC PTH	212.5	138.0	85.0	

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



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.

Thruput from **JPL-**NISN-PTH**** to LaRC-PTH increased at the beginning of June 2014, when **JPL-**NISN-PTH**** was connected to a Gig-E port on a NISN switch – previously it was limited to 100 mbps due to its connection to a Fast-E port. The thruput was stable this month, as **JPL-**NISN-PTH**** is not subject to NISN to JPL campus congestion.

Thruput from both JPL sources to LaRC-PTH increased again 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.

The JPL to LaRC user flow was only 0.66 mbps this month. This is the entire NISN flow from JPL to LaRC – it may not all be EOS related. But it is consistent with the EOS requirement.

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	936.2	930.7	772.5	60.0	932.3
GSFC-EDOS → LaRC ASDC	927.7	876.9	486.2		
ESDIS-PTH → LaRC-ANGe	n/a	n/a	n/a		
GSFC-NISN-PTH → LaRC-ANGe	n/a	n/a	n/a		
GES DISC → LaRC-PTH	507.1	217.8	165.8		
GSFC-NISN-PTH → LaRC-PTH	933.3	909.3	691.3		
NPP-SD3E → LaRC-PTH	425.4	206.9	165.7		

Requirements:

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

Comments:

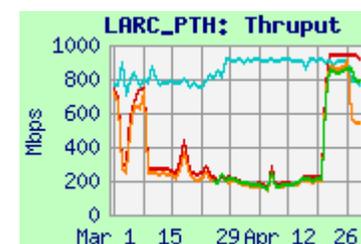
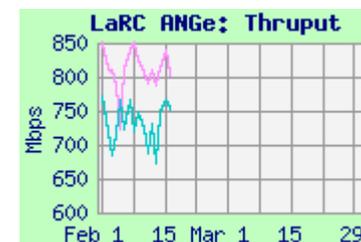
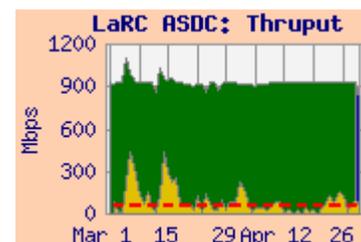
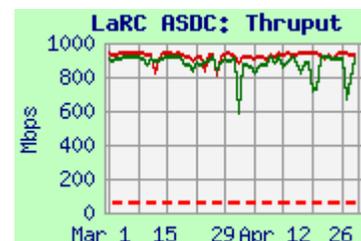
GSFC → LaRC ASDC: Thruput from **GES DISC** to LaRC ASDC DAAC remained well above 3 x the increased combined requirement, close to the circuit limitation, so the rating remains **Excellent**. Thruput to ASDC from **GSFC-EDOS** was slightly lower and noisier.

As seen on the integrated graph, the 60 mbps average user flow this month was above typical and the requirement (without contingency), with occasional peaks.

GSFC → ANGe (LaTIS): Testing to ANGe (“Bob”) from both **ESDIS-PTH** and **GSFC-NISN-PTH** was stable, close to the circuit limitation, until “Bob” went down in mid February. (Note the expanded scale on the graph).

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 SIP 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

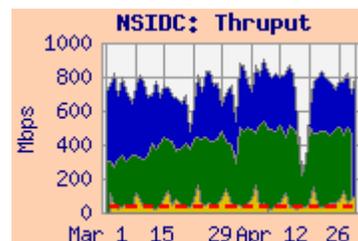
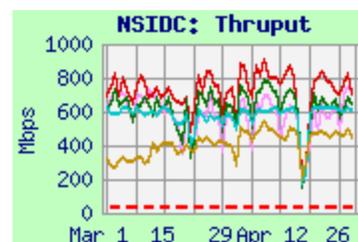
Source → Dest	Medians of daily tests (mbps)			
	Best	Median	Worst	User Flow
MODAPS-PDR → NSIDC DAAC	577.9	473.6	290.6	68.1
GES-DISC → NSIDC DAAC	911.5	795.2	372.0	
GSFC-EDOS → NSIDC DAAC	833.1	674.2	283.5	
ESDIS-PTH → NSIDC DAAC	755.3	618.9	265.8	
GSFC-ISIPS → NSIDC (iperf)	630.8	610.1	289.7	
JPL SMAP → NSIDC DAAC	853.0	574.5	338.5	5.9
JPL PS → NSIDC DAAC	677.0	400.0	132.0	

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

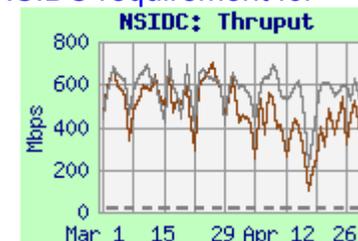
Comments: The requirements were updated in June 2014 to use the FY '14 database, and include MODIS reprocessing, which is now in process. AMSR-E flows from EDOS and JPL have been removed.

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 stabilized, and remained well above 3 x the increased requirement, so the rating remains **Excellent**. The 68 mbps average user flow is due to the MODIS reprocessing flow, and is now almost 2 x the requirement. Performance from GES-DISC, GSFC-EDOS, and GSFC-ISIPS was a little higher and mostly stable.



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 user flow decreased to 5.9 mbps (was 12 mbps last month) – about half of the requirement without contingency.



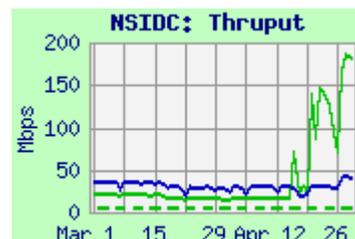
5) Boulder CO sites (Continued):

Test Results: GHRC → NSIDC S4PA

Source → Dest	Medians of daily tests (mbps)			User Flow
	Best	Median	Worst	
GHRC → NSIDC DAAC (nuttcp)	43.7	19.4	11.6	0.024
GHRC → NSIDC DAAC (ftp pull)	31.9	29.9	8.5	

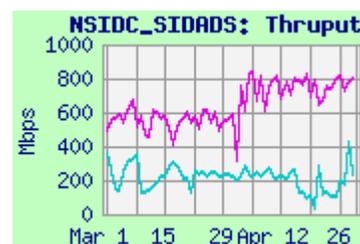
5.1.3 GHRC, GHRC-ftp → NSIDC S4PA: GHRC (NSSTC, UAH, Huntsville, AL) sends reprocessed AMSR-E data to NSIDC via Internet2. This requirement increased to 5.14 mbps in December '14 (was 2.08 mbps previously) – when the next reprocessing campaign began.

The median thrupt improved substantially in early April – it remained above the 5.1 mbps requirement by more than 3 x, so the rating remains

Excellent

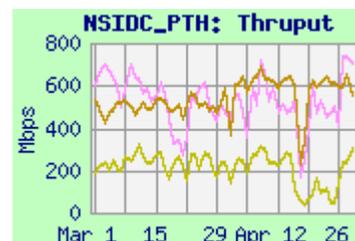
Test Results: NSIDC-SIDADS, NSIDC-PTH

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-ENPL → NSIDC-SIDADS	852.5	772.0	499.0
GSFC-NISN → NSIDC-SIDADS	302.3	252.4	112.2
ESDIS-PTH → NSIDC-PTH	774.9	508.5	250.4
MODAPS-PDR → NSIDC-PTH	723.8	605.7	398.3
JPL-NISN-PTH → NSIDC-PTH	321.7	228.7	52.4



5.1.4 GSFC → NSIDC-SIDADS: Performance from GSFC-ENPL was returned in June 2014 (using 30 streams, to compensate for the small window size on SIDADS) with increased thrupt. Testing from GSFC-NISN was similarly returned in September '14.

5.1.5 NSIDC-PTH: Thrupt from all sources to NSIDC-PTH 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)	3.62	2.95	2.09
ESDIS-PTH → LASP blue (iperf)	9.23	7.72	6.12
GES DISC → LASP blue (iperf)	8.15	2.81	0.61
LASP → GES DISC	9.23	8.96	8.32

Requirement:

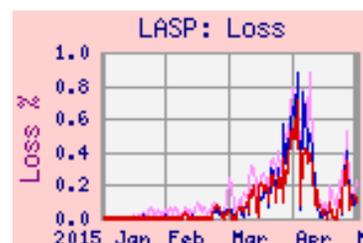
Source → Dest	Date	Mbps	Rating
LASP → GES DISC	CY '10 -	0.016	Excellent

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 in April, but stayed above previous levels; thruput was 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**.

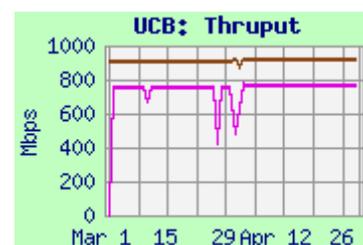
**5.3) UCB:** <http://ensight.eos.nasa.gov/Organizations/daac/UCB.shtml>**Test Results:** University of Colorado – Boulder

Source	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-ENPL	772.0	762.7	739.1
GSFC-ESTO	916.0	916.0	852.5

Comments:

Testing from **GSFC-ENPL** 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** 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).



5.4) 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	178.9	177.7	54.7
GSFC-ENPL-10G	6277.7	6221.4	4643.2
GSFC-ENPL-FE	97.4	96.6	95.6
GSFC-NISN-PTH	598.2	426.4	69.5

Requirement:

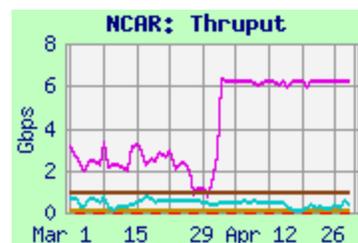
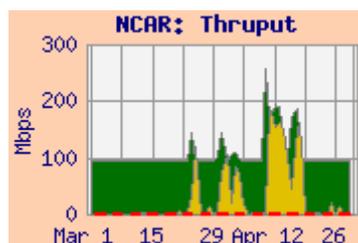
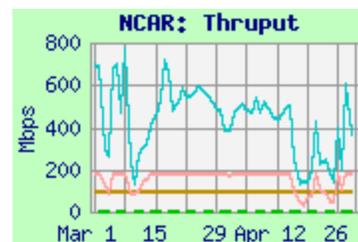
Source	Date	Mbps	Prev	Rating
LaRC	CY '12 -	0.044	0.1	Excellent
GSFC	CY '12 -	0.111	5.0	Excellent

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 was mostly steady, except for a few periods of congestion. It 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). Thruput was noisy this month, a bit more so than last month. The median was well above 3 x the tiny requirement, so the rating remains **Excellent**. The user flow from GSFC-EBnet averaged about 45.6 mbps this month (mostly in huge bursts over 100 mbps), and was well above the 10 mbps last month, and the revised and previous requirements.

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, 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	2422.9	1471.2	7.1	149.0	1491.4
GES DISC	884.2	877.9	606.5		
GSFC ENPL	6872.0	6822.5	6681.3		
GSFC-ENPL-v6	5875.6	5845.9	5600.3		
LaRC PTH	189.0	188.4	19.4		

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 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. 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 consistent with the requirement, similar to last month.

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

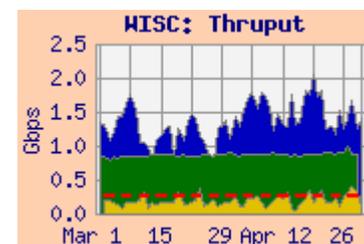
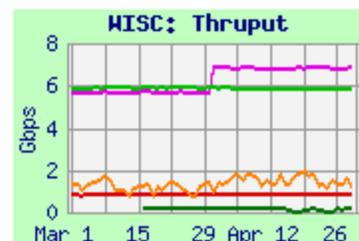
Testing from **GSFC-ENPL** was switched to the 10 gig server at Wisconsin (SSEC) in March 2013. Due to problems, testing was switched to a backup server in September '14, with reduced results, back to the 10 gig server in early October, to the backup server again in December, and back to the primary in January.

Testing from **GSFC-ENPL** using IPv6 was added in late November '14. Its performance was very stable and similar to IPv4 performance. Both IPv4 and IPv6 thrupt averaged about 6 gbps.

Testing from **GES DISC** began failing in November, and was restored in January. 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; testing from **LaRC-PTH** was substituted.

Thrupt from **LaRC-PTH** was stable, and consistent with its 200 mbps outflow limitation. It remains well above the previous 7.9 mbps requirement; it 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	98.8	67.3	45.7	2.0	67.7
GSFC-ENPL → KNMI-ODPS	496.5	173.5	81.8		

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 route from GSFC is via MAX to Internet2, peering in DC with Géant's 2+ x 10 gbps circuit to Frankfurt, then via Surfnet through Amsterdam.

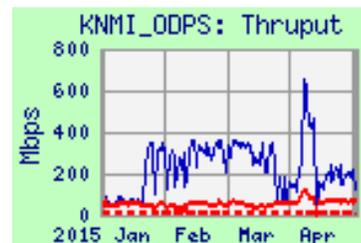
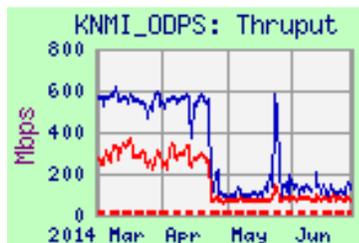
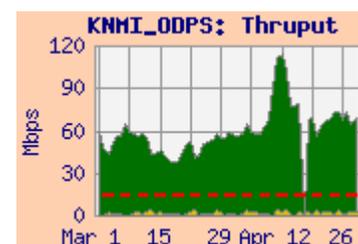
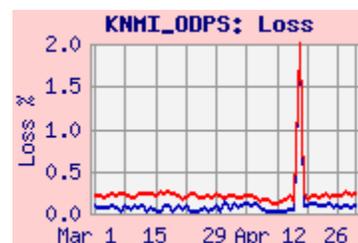
The requirement was increased with the use of the FY'14 database to 13.4 mbps, a much more realistic value than the previous 0.03 mbps.

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 dramatically in mid-January – with no apparent change in packet loss, or change in performance from **OMISIPS**. It has been noisy since then, but better than from **OMISIPS**

The median thruput from **OMISIPS** remains above 3 x the increased requirement, so the rating remains **Excellent**.

The user flow, however, averaged only 2.0 mbps this month, similar to recent months, but only 22% 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	Integrated
	Best	Median	Worst		
GSFC-EDOS → JSpace-ERSD	489.1	391.1	66.4	3.08	392.8
GES DISC → JSpace-ERSD	120.0	110.6	42.7		
GSFC ESDIS-PTH → JSpace-ERSD	351.5	231.3	40.5		
GSFC ENPL (GE) → JSpace-ERSD	276.5	247.5	51.8		
JSpace-ERSD → EROS-PTH	329.3	323.2	301.8	3.89	323.2
JSpace-ERSD → JPL-PerfSonar	92.5	88.7	24.3		

Requirements:

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

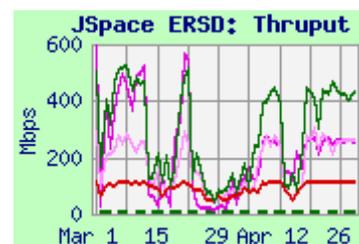
Comments:

8.1 GSFC → JSpace-ERSD: The old server at JSpace-ERSD was retired in early January 2014. Testing to the new server was initiated in January, and February. Performance to the new server at ERSD from all sources had good periods and bad periods. But median throughput **GSFC-EDOS** was well above the requirement, rating **Excellent**.

The 3.08 mbps user flow from GSFC to JSpace-ERSD was similar to the 2.96 mbps last month, and 28% 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 3.9 mbps user flow this month was above last month's 3.6 mbps, but below 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 stable this month; the rating would be **Excellent**.



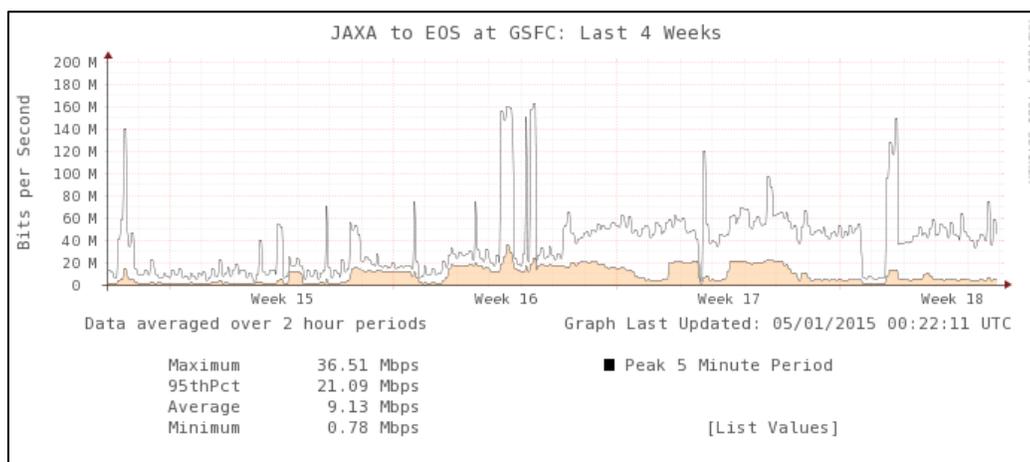
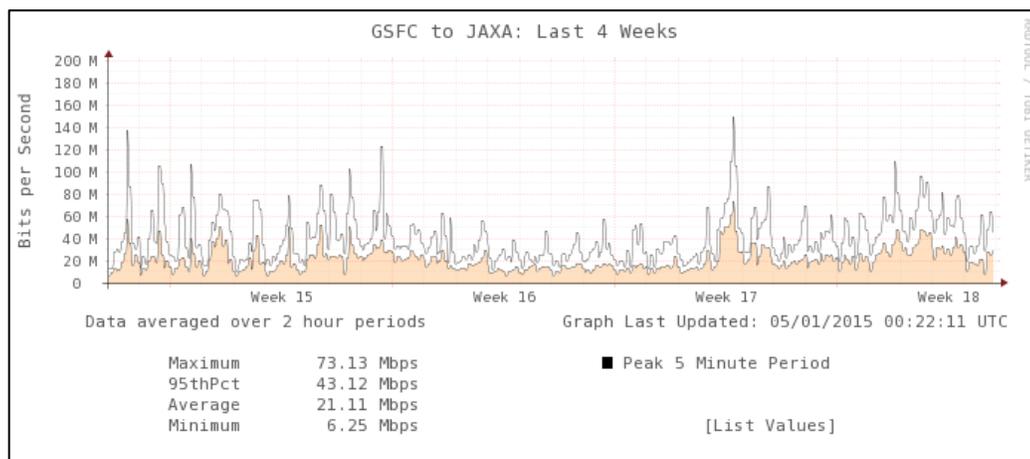
10) GSFC ↔ JAXA

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 21.1 mbps from GSFC-EBnet to JAXA, and 9.1 mbps from JAXA to GSFC-EBnet.

The 21.1 mbps GSFC-EBnet to JAXA flow is above the usual flow and the new database requirements of 15.4 mbps. The JAXA to GSFC-EBnet flow is also above the 3.3 mbps requirement. 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 is well in excess of the JAXA requirements.

