Network Determination and Timeliness of the Rapid Sessions

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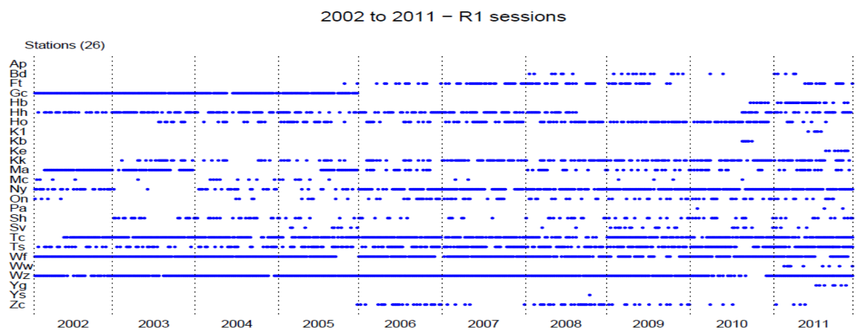
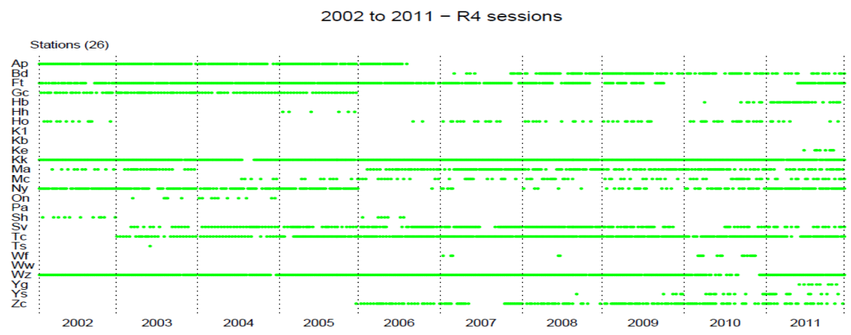
INTRODUCTION

The Rapid sessions started in 2002 with the goal of recording and processing weekly sessions within a 15-day period. Now 10 years, 26 stations, 1,020 sessions, and 6,854 station days later--Has this goal been reached? Yes it has for the most part. Can the 15-day limit be reduced to 10 days? Well, let's review the data.

2002-2011 IVS-R1 NETWORK



2002-2011 IVS-R4 NETWORK



The network plots give an overview of the station usage in the IVS-R1 & IVS-R4 networks for the past 10 years. The plots display how frequently the stations were used. It also shows when stations started participating, dropped out, and returned to networks. For example, Fortaleza (Ft) and HartRAO (Hh) went down for a while and returned to the networks, but Gilcreek (GC) never returned.

IVS-R1 LATENCY

Latency Table for IVS-R1 Sessions

YEAR	# of SESSIONS	6-7 DAY DELAY	8 DAY DELAY	9 DAY DELAY	10 DAY DELAY	11-12 DAY DELAY	13-14 DAY DELAY	15 DAY DELAY	16-17 DAY DELAY	18-19 DAY DELAY	20+ DAY DELAY
2002	49	0	0	0	2	0	11	16	5	0	15
2003	52	1	1	4	4	3	18	9	6	0	6
2004	52	2	7	5	15	0	7	12	0	0	4
2005	49	0	4	13	5	1	17	7	1	0	1
2006	52	0	1	3	7	3	21	10	2	0	5
2007	52	0	0	2	5	1	18	4	11	0	11
2008	50	0	1	3	8	4	17	7	6	1	3
2009	52	0	0	0	4	1	20	14	7	1	5
2010	52	0	0	1	4	5	29	5	4	1	3
2011	50	0	1	6	4	1	16	4	11	0	7
	510										

IVS-R4 LATENCY

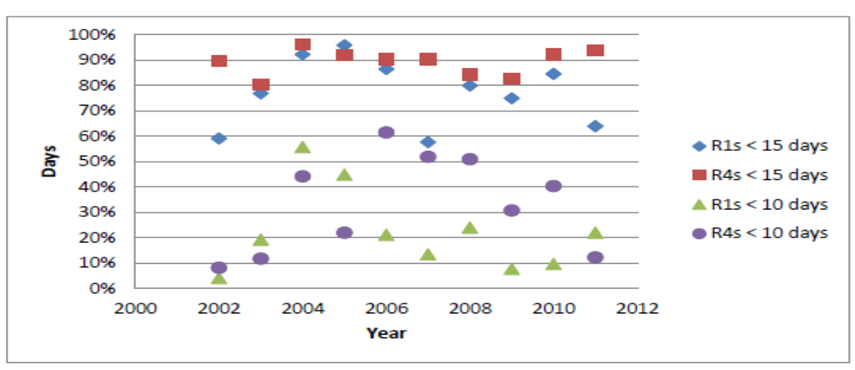
Latency Table for IVS-R4 Sessions

YEAR	# of SESSIONS	6-7 DAY DELAY	8 DAY DELAY	9 DAY DELAY	10 DAY DELAY	11-12 DAY DELAY	13-14 DAY DELAY	15 DAY DELAY	16-17 DAY DELAY	18-19 DAY DELAY	20+ DAY DELAY
2002	49	0	1	0	3	29	11	0	1	2	2
2003	51	0	0	0	6	20	15	0	2	4	4
2004	52	7	2	1	13	22	5	0	0	2	0
2005	50	4	0	0	7	25	10	0	0	2	2
2006	52	17	0	0	15	11	4	0	1	0	4
2007	52	13	3	0	11	16	4	0	0	3	2
2008	51	14	0	1	11	14	2	1	0	3	5
2009	52	1	4	0	11	19	7	1	2	2	5
2010	52	4	0	0	17	22	5	0	1	1	2
2011	49	1	1	0	4	21	18	1	2	1	0
	510										

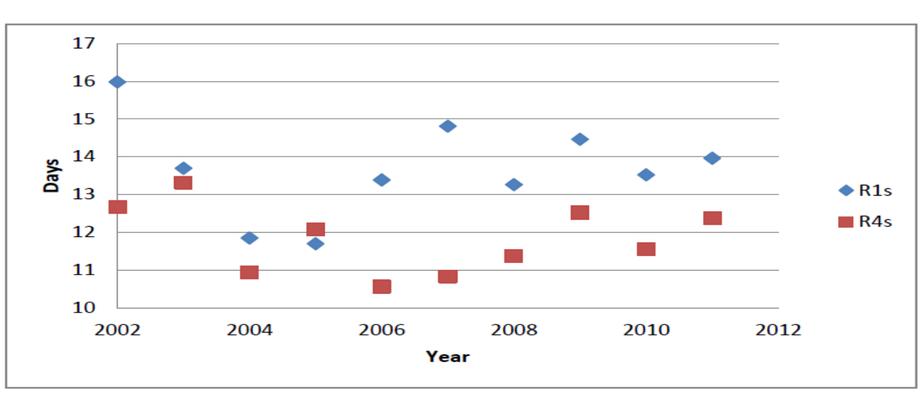
The latency table shows that **77.3% of the IVS-R1** sessions were processed within 15 days. Most of the sessions were processed within 13 to 14 days. In 2002, there were some start-up problems and 20 sessions (40.8%) were delayed. The latency improved for the next few years until 2007, when 22 sessions (42.3%) were delayed because the Tsukuba data had to be e-transferred to Haystack and shipped to Bonn. The latency improved in July 2007 when Bonn and Tsukuba had a direct connection. The latency increased again in 2011 when 18 sessions (36%) were delayed. The 36% is attributed mostly to problems with the DiFX Software Correlator. The IVS-R1s were processed by Bonn, Haystack, and the Washington Correlator from 2002 through 2006. Starting in 2007 the IVS-R1s were mainly processed by the Bonn Correalitor.

The latency table shows that **89% of the IVS-R4** sessions were processed within 15 days. The IVS-R4s were processed mostly within 11 to 12 days. The IVS-R4s were processed by the Washington Correlator only.

SUCCESS RATE



AVERAGE LATENCY



Based on the data, the latency can be reduced to 10 days as long as there are some changes made to the procedures. Especially, since Bonn processed 22% of the IVS-R1s within 10 days during 2011 and Washington processed 12.2% of the IVS-R4s within 10 days during 2011.

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