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A REPORT ON THE SURVEY PROJECT

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The purpose of this paper is 1) to report on the status of the SURVEY project and current data, 2) to inform the ARPANET community of the services we offer related to this project, 3) to report on our future plans, and 4) to ask for suggestions and improvements.

I. THE STATUS OF THE SURVEY PROGRAM

The SURVEY program is in operation again as many of you may have noticed. We are surveying at 20-minute intervals now (we were surveying at 15-minute intervals before). The SURVEY program attempts to do a complete ICP (initial connection protocol) to the LOGGER socket (socket 1) of each host listed in the survey table. We currently survey all the known "SERVER" hosts on the ARPANET. It is easy for us to add and delete hosts from this table.

The previous version of the SURVEY program was aborting in the middle of ICP, but now we attempt to complete ICP (with a 5 second time-out for each of the connections after receiving the server socket number "S" on the ICP connection). This latter change was made as many HOSTS do not provide for either time-outs or queuing of the ICP commands (RFC's). Consequently, incomplete ICPs were tying up HOST connection resources. Please let me know if our 5-second time-out is too small and if you are encountering problems with SURVEY.

The survey program records date, time, status, and response time for each host (the response time is currently averaged, and date and time are only recorded for the first survey in a block of 96 surveys). We are in the process of modifying the SURVEY recording procedures to record all the data for each individual survey test in a standard ASCII format suitable for transmission to the DATACOMPUTER (CCA) where we are storing the SURVEY data. This database at the CCA-DATACOMPUTER is accessible via programs in our BUDDLE subsystem. A future memo will explain the use of the DATACOMPUTER database and facilities to access it.

The response time measurement is the time taken to establish the full-duplex TELNET connections. It is not the time taken to get the prompt message, or logging in. The latter measures of response time are more meaningful to the user but our measure for response time represents a lower bound for the "true" response

time. It should be noted that our response time measuring procedure has altered slightly (previously we were measuring the time taken to get the server socket number "S" on the ICP connection). It should also be noted that the response time measurement is valid only when the host state is "logger available".

II. NETWORK STATUS SERVICE ON SOCKET 15

We offer a network status service on socket 15 (decimal) for communicating the results of the "last" or the most recent survey. To use this service, just ICP to HOST 70 socket 15. The SURGIV program will transmit data in the following format:

```

month,day,year,hours,minutes
host,status,response-time
host,status,response-time
.....
-1

```

An example of the data transmitted is given below:

```

@connection to host dmcg socket 15
completed.
06,05,1973,14,44
001,5,013
002,5,031
003,1,200
004,5,015
006,5,011
007,3,200
008,1,200
009,5,002
010,3,200
011,5,003
013,5,016
014,5,002
015,5,014
016,5,031
023,5,011
031,1,200
032,5,014
035,5,015
065,5,008
066,5,010
069,5,020
070,5,009
074,5,011
078,5,002
086,3,200

```

133,1,200
 134,5,006
 138,4,200
 198,5,007
 -1

CONNECTIONS ABORTED
 CLOSED BY FOREIGN HOST

The host number is in decimal, the response time is in tenths of seconds, and the status code is as described below:

- Code 5 - ICP to socket 1 successfully completed, logger available.
- Code 4 - ICP timed-out (20 seconds), logger not responding.
- Code 3 - ICP aborted by foreign host, logger rejecting.
- Code 2 - No reset response from foreign host, (15 sec time-out) ICP not responding.
- Code 1 - Foreign host DEAD status returned by IIP Host dead or disconnected.
- Code 0 - Not surveyed or undetermined.

All transmission is in standard 8-bit network ASCII bytes. A response time of 200 (20 seconds) is sent for all other status except 5 (logger available). The entire survey data is for the time recorded on the first line (the survey usually takes only a couple of minutes), and should be good to within 20 minutes (10 minutes average).

The above service is designed more for use by programs but can also be used directly by human users. Other hosts on the ARPANET may periodically collect the survey information from us and store and display the information as they please. They can also display to their user's the latest host availability information without actually doing the survey themselves.

III. ACCESSING SURVEY DATA VIA THE "NETWRK" PROGRAM

To use the NETWRK program connect to (via ICP) socket 1 of host 70 (i.e., login), and login by typing "login <host no>initials CR" (e.g., login 70akb <CR>). After you are logged in and receive the ";" prompt, invoke NETWRK by typing "NETWRK <CR>" (<CR> = Carriage Return). You will get the message "Network commands available, and the "@" prompt from CALICO NETWRK. Now type any of the following commands and expect to receive type-out of the form shown below:

(comments are in parenthesis)

1. DISPLAYING THE RESULTS OF THE "LAST" SURVEY

@SURVey (you type "surv <CR>")
 SURVEY TAKEN AT 14:44:51 ON 06/05/73

```

---HOST--- ---#--- ----STATUS-----
                OCT DEC
ucla-nmc        1 001  Logger available
sri-arc         2 002  Logger available
ucsb-mod75     003 003  Host disconnected
utah-10        4 004  Logger available
mit-multic    006 006  Logger available
rand-rc        7 007  Logger not responding
sdc-adept     10 008  Host disconnected
harv-10       11 009  Logger available
ll-67         12 010  Logger not responding
su-ai         13 011  Logger available
case-10       15 013  Logger available
cmu-cc        16 014  Logger available
illiac        17 015  Logger available
ames-67       20 016  Logger available
usc-44        27 023  Logger available
cca           37 031  Host disconnected
parc-maxc     40 032  Logger available
ucsd-cc       43 035  Logger available
ucla-ccn     101 065  Logger available
sri-ai        102 066  Logger available
bbn-tenexa   105 069  Logger available
mit-dmcg     106 070  Logger available
ll-tx2       112 074  Logger available
cmu-10alt    116 078  Logger available
usc-isi      126 086  Logger not responding
bbn-tenexb   205 133  Host disconnected
mit-ai       206 134  Logger available
ll-tsp       212 138  Logger rejecting
mit-ml       306 198  Logger available

```

2. DISPLAYING THE CURRENT SUMMARY

@SUMmary.of.surveys (you type SUM <CR>)

14 Surveys from 10:23:37 on 06/05/73 to 14:44:51 on 06/05/73

```

---HOST--- ---#---  -%-UP-  -RESP-
                OCT DEC
ucla-nmc      001 001   093%   01.25
sri-arc       002 002   079%   02.37
ucsb-mod75    003 003   029%   00.67
utah-10       004 004   079%   01.43
mit-multic    006 006   100%   01.10
rand-rc       007 007   000%   00.00

```

sdca-adept	010	008	000%	00.90
harv-10	011	009	100%	00.19
ll-67	012	010	007%	10.17
su-ai	013	011	100%	00.34
case-10	015	013	100%	01.53
cmu-cc	016	014	093%	00.22
illiac	017	015	071%	01.34
ames-67	020	016	079%	02.89
usc-44	027	023	057%	00.97
cca	037	031	029%	02.15
parc-maxc	040	032	100%	01.34
ucsd-cc	043	035	071%	01.57
ucla-ccn	101	065	093%	00.85
sri-ai	102	066	093%	00.99
bbn-tenexa	105	069	100%	01.92
mit-dmccg	106	070	100%	00.88 *
ll-tx2	112	074	079%	01.08
cmu-10alt	116	078	086%	00.24
usc-isi	126	086	043%	11.82
bbn-tenexb	205	133	000%	00.00
mit-ai	206	134	100%	00.63
ll-tsp	212	138	000%	00.00
mit-ml	306	198	100%	00.67

*MIT-DMCCG was really up 100% as it completed 14 surveys at 20 minute intervals between 1023 and 1444.

3. DISPLAYING THE LONGTERM SUMMARY

@LONGterm.SUMmary.of.surveys (you type "long<SP>sum<SP>")

23232 Surveys from 19:48:24 on 04/27/72 to 10:03:32 on 06/05/73

---HOST---	---#---	-%-UP-	-RESP-
	OCT DEC		
ucla-nmc	001 001	075%	01.06
sri-arc	002 002	069%	01.70
ucsb-mod75	003 003	056%	00.69
utah-10	004 004	071%	02.02
bbn-ncc	005 005	000%	00.00
mit-multic	006 006	065%	04.52
rand-rcc	007 007	000%	00.30
sdca-adept	010 008	006%	01.67
harv-10	011 009	068%	00.17
ll-67	012 010	016%	04.99
su-ai	013 011	076%	00.41
case-10	015 013	039%	00.75
cmu-cc	016 014	075%	00.20
illiac	017 015	050%	02.95

ames-67	020	016	045%	01.51	
rauc-645	022	018	000%	00.00	
nbs-ccst	023	019	000%	00.02	
usc-44	027	023	019%	00.36	
cca	037	031	030%	01.13	
parc-maxc	040	032	001%	01.34	
ucsd-cc	043	035	015%	02.14	(also add results of Host 129)
ucla-ccn	101	065	081%	00.32	
sri-ai	102	066	016%	00.94	
bbn-tenexa	105	069	073%	01.13	
mit-dmcg	106	070	090%	01.05	(real UP time is about 80%)
rand-csg	107	071	023%	01.82	(later changed to usc-isi)
ll-tx2	112	074	000%	00.91	
cmu-10alt	116	078	035%	00.20	
usc-isi	126	086	030%	01.00	(previously Rand-CSG)
???????	201	129	008%	02.01	(the old UCSD-CC Host)
bbn-tenexb	205	133	019%	01.56	
mit-ai	206	134	084%	00.82	
ll-tsp	212	138	000%	00.08	
mit-ml	300	198	073%	00.73	

4. DISPLAYING THE CURRENT HISTORY OF A HOST

@History of NIC (you type "hist<SP>nic<CR>")
 (You may use any acceptable host name or number)

14 Surveys taken beginning 10:23:37 on 06/05/73

```

Test #01  LOGGER available
Test #02  LOGGER available
Test #03  LOGGER available
Test #04  LOGGER available
Test #05  LOGGER not responding
Test #06  Host dead
Test #07  Host dead
Test #08  LOGGER available
Test #09  LOGGER available
Test #10  LOGGER available
Test #11  LOGGER available
Test #12  LOGGER available
Test #13  Not surveyed
Test #14  LOGGER available

```

Last survey at 14:44:51 on 06/05/73

5. DISPLAYING LONGTERM HISTORY OF A HOST

@LONGterm.History of NIC (you type "long<SP>hist<SP>nic<CR>")
 (You may use any other acceptable host name or number)

23232 Surveys taken beginning 19:48:24 on 04/27/72

Undetermined 0 times (0%)
 Host dead 5715 times (25%)
 NCP not responding 0 times (0%)
 LOGGER rejecting 1546 times (7%)
 LOGGER not responding 5 times (0%)
 LOGGER available 15964 times (69%)
 Average response time = 1.70 seconds

Last survey at 10:03:32 on 06/05/73

6. DISPLAYING THE ACCEPTABLE HOST NAMES

@HOSTS (to display the acceptable host names)

```

----#----- HOSTS -----
DEC OCT STANDARD NAME NICK-NAMES
001 001 ucla-nmc sex-ucla
002 002 sri-arc nic
003 003 ucsb-mod75
004 004 utah-10
005 005 bbn-ncc
006 006 mit-multics multics
007 007 rand-rcc
008 010 sdc-adept
009 011 harv-10 harvard
010 012 11-67
011 013 su-ai sail
012 014 ill-ants
013 015 case-10
014 016 cmu-cc cmu
015 017 illiac i4
016 020 ames-67
017 021 mitre
018 022 radc-645
019 023 nbs-ccst
020 024 etac
021 025 tink-418
022 026 mcl-418
023 027 usc-44
024 030 gwc
025 031 noaa-7600
026 032 saac
027 033 amec
028 034 arpa
029 035 aberdeen
030 036 bbn-tip
031 037 cca
032 040 parc-maxc

```

033	041	fnwc		
034	042	lbl		
035	043	ucsd-cc		
065	101	ucla-ccn	ccn-ucla	
066	102	sri-ai		
069	105	bbn-tenexa	bbn	tenex
070	106	mit-dmcg	dmcg	its
071	107	rand-csg		
073	111	harv-1		
074	112	ll-tx2		
078	116	cmu-10alt		
079	117	ames		
086	126	usc-isi	isi	
096	140	parc-vts		
133	205	bbn-tenexb		
134	206	mit-ai	ai	
137	211	harv-11		
138	212	ll-tsp		
197	305	bbn-ld		
198	306	mit-ml	ml	

THE FOLLOWING HOSTS ARE TERMINAL IMPS:

144	220	ames-tip
145	221	mitre-tip
146	222	radc-tip
147	223	nbs-tip
148	224	etac-tip
151	227	usc-tip
152	230	gvc-tip
153	231	docb-tip
154	232	saac-tip
155	233	belvoir
156	234	arpa-tip
158	236	bbn-testip
159	237	cca-tip
163	243	aloha-tip

IV. FUTURE SERVICES

We will maintain a CURRENT database at the DATACOMPUTER (CCA) by transferring the survey information to the DATACOMPUTER as soon as possible, i.e., every 20 minutes whenever the DATACOMPUTER is in operation. So it should be possible for other network users to write their own query programs in DATALANGUAGE. We will provide one such query facility in our MIDDLE subsystem. We do have an existing database of survey data at the DATACOMPUTER, and also programs exist in MIDDLE to access this database. As soon as the use and format of the data at the DATACOMPUTER database is

stabilized we will publish a memo on how to use the database and facilities to access it.

If it is considered desirable by network users and ARPA, we will provide specialized services to display survey data on specific sockets, and/or via commands in NETWRK and MUDDLE. An example of such specialized services is to display a week's or a month's Host availability profile.

V. REQUEST FOR COMMENTS AND SUGGESTIONS

As mentioned in HWG/RFC #523 (NIC #17048, "SURVEY is in Operation Again") if you desire a change in the list of sites we survey, please call me at 617-253-1428 or send mail to akb@mit-dmcg or at NIC (ident= akb). Please let me know if survey is inconveniencing anyone, we will try our best to resolve any problems.

Your comments and suggestions are invited for improvements in the way we collect, store, retrieve, and display data. For example, should we measure the response time for actually getting some data on the TELNET connection, should we start surveying FTP socket 3 as well (perhaps less often), should we try to actually login (only occasionally at random) and collect statistics on system loading, time taken to login etc., and what services we should provide in addition to those mentioned above.