

This readme file provides a brief description of our published data. The data comprise routing and topology traces collected during the Mobile Ad hoc Networks Interoperability And Cooperation (MANIAC) Challenge, held on November 25-26th 2007 in conjunction with IEEE Globecom 2007. In this competition an ad-hoc network comprising nodes from all participating teams was formed and data was logged during three runs of the competition. More details about the MANIAC Challenge, including conference papers analyzing the data collected, can be found at www.maniacchallenge.org.

The data include traces for the routing tables generated at each node for each time instant during the tests, and topology traces generated from the route logs to record topology changes at each time instant.

Each of the three runs of the competition lasted around 20 minutes. A total of 16 network nodes participated in the tests with IP addresses of the form 10.10.0.x, where x (the fourth octet) is in the set {21, 22, 24, 25, 40-51}.

Routing Logs

The routing logs contain snapshots of the routing tables at each node that participated in each test at each time instant. The routing logs for each test are collected together where a separate file is assigned for each node (the file name includes the node number which is the 4th octet of the node's IP address, expressed in decimal).

Each entry in the route logs starts with the time instant at which the routing table was generated, followed by the routing table itself, as in this example:

```
10:48:29
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref
Use Iface
10.10.0.48 10.10.0.43 255.255.255.255 UGH 2 0 0
eth0
10.10.0.49 10.10.0.43 255.255.255.255 UGH 2 0 0
eth0
10.10.0.50 0.0.0.0 255.255.255.255 UH 1 0
0 eth0
10.10.0.51 10.10.0.50 255.255.255.255 UGH 2 0 0
eth0
10.10.0.22 10.10.0.43 255.255.255.255 UGH 2 0 0
eth0
10.10.0.40 10.10.0.43 255.255.255.255 UGH 2 0 0
eth0
```

```

10.10.0.25    10.10.0.43    255.255.255.255 UGH  2    0    0
    eth0
10.10.0.24    10.10.0.43    255.255.255.255 UGH  2    0    0
    eth0
10.10.0.41    10.10.0.43    255.255.255.255 UGH  2    0    0
    eth0
10.10.0.42    0.0.0.0        255.255.255.255 UH   1    0    0
0          eth0
10.10.0.43    0.0.0.0        255.255.255.255 UH   1    0    0
    eth0
10.10.0.46    0.0.0.0        255.255.255.255 UH   1    0    0
    eth0
10.10.0.47    10.10.0.43    255.255.255.255 UGH  2    0    0
    eth0
10.10.0.0     0.0.0.0        255.255.255.0   U    0    0    0
    eth0
127.0.0.0    0.0.0.0        255.0.0.0       U    0    0    0
    lo

```

Because the logging process was started before the competition actually started, you will find the routing logs spanning a time period larger than the actual 20 minutes of the competition runs. The topology files that were generated from these logs were adjusted to reflect the approximate start and end times of the tests.

Topology Files

The topology files show how the network topology and connectivity changed over the duration of the tests. We generated a separate topology file for each test, each providing a snapshot of the network topology at each time instant. A sample entry in a topology file is as follows:

```

9:51:21
    21  22  24  25  40  41  42  43  44  45  46  47  48  49  50  51
2      4  4  0,  4  4  4  4  4  4  4  4  4  4  4  4  4  4
1,1  0,0  8,4  9,3  0  9,3  9,3  8,2  8,3  8,2  9,2  0,1  8,2  0,1  0,1  8,2  8,3
2      4  4  0,  5  4  4  4  4  4  4  4  4  4  4  4  4  4
2,1  5,3  0,0  5,2  0  1,2  5,2  5,2  0,1  0,1  0,1  5,2  5,2  5,3  5,2  0,1
2      4  4  0,  4  4  4  4  4  4  4  4  4  4  4  4  4  4
4,1  0,0  3,2  0,0  0  5,2  0,1  3,2  0,1  7,2  0,1  3,2  0,1  5,2  3,2  5,2  5,3
2      0,
5,1  0,0  0,0  0,0  0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0
4      0,
0,0  0,0  0,0  0,0  0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0
4      0,
1,0  0,0  0,0  0,0  0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0
4      0,
2,1  0,0  0,0  0,1  0  0,1  0,1  0,0  0,1  0,1  0,1  0,1  0,1  0,1  0,2  0,1  0,1
4      5  0,  4  4  4  4  4  4  4  4  4  4  4  4  4  4
3,1  0,2  0,1  0,1  0  0,1  0,1  0,1  0,0  0,1  0,1  5,2  0,1  0,1  5,2  0,1  0,1
4      0,
4,0  0,0  0,0  0,0  0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0
4      0,
5,0  0,0  0,0  0,0  0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0  0,0
4      4  4  0,  4  4  4  4  4  4  4  4  4  4  4  4  4  4  5
6,1  0,1  5,2  5,2  0  5,2  5,2  0,1  8,3  9,2  0,1  0,0  5,2  0,1  0,1  0,1  0,1  0,2

```

4				0,							4		5			
7,1	0,0	0,0	0,1	0	0,1	0,1	0,1	0,1	0,1	0,1	2,2	0,0	0,1	0,2	0,1	0,1
4		4	4	0,	5	4					4					
8,1	0,1	5,2	5,2	0	1,2	5,2	0,1	0,1	0,1	0,1	0,1	5,2	0,0	0,1	0,1	0,1
4		4	4	0,	4	4	4				4					5
9,1	0,1	5,2	5,2	0	5,2	5,2	8,2	0,0	0,1	0,1	0,1	5,2	0,1	0,0	0,1	0,2
5		4	4	0,	4											
0,1	0,1	5,2	5,2	0	0,1	5,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,0	0,1
5	4		4	0,	4						4			4	4	
1,1	8,2	0,1	5,2	0	0,1	5,2	0,1	0,1	0,1	0,1	5,2	0,1	0,1	5,2	8,2	0,0

An entry in a topology file starts with the time instant at which topology the snapshot was taken. A table showing the connections between each pair of nodes in the network follows, where the row represents the source node and the column represents the destination node.

Column and row headers contain the node identifiers for destination and source, respectively (as before, nodes are identified by the fourth octet of their IP address, expressed in decimal). Row headers also contain a flag next to the node identifier. This flag, which can have a value of 0 or 1, indicates whether this node logged a routing table at that particular time instant.

The reason we introduced this flag is to distinguish between the case of a node that logged an empty routing table (flag value of 1) and a node that did not log a routing table at all (flag value of 0) at a particular time instant, where in both cases all the entries in the row corresponding to that node will have the value of 0,0.

A general entry in the table that describes the route from node x (the row) to node y (the column) is in the format (gw, hops). The first field, gw, represents the gateway that node x uses to reach node y, while the hops entry represents the number of hops in the route.

An entry that has a value 0,0 indicates that node x had no route to node y at that particular time instant. An entry that has a value 0,1 indicates that node x can reach node y directly (with no gateway and in 1 hop) at that particular time instant. An entry that has a value of a,b means that node x can reach node y through gateway a and in b hops.

Note that routes between nodes x and y can be asymmetric. In other words, it is not necessary that node y reaches node x using the same route that x used to reach y. You may find, in some cases, that node x could reach node y in 3 hops while node y could reach node x in 2 hops or even had no route to node x.