

# RS-HL-6: Ground Station and Satellite Contact Simulation

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## Scope

The interesting part of the satellite contact chart simulation is that the number of connection oscillates fastly between two integers. We need to find the cause of the oscillation. In order to do that, we should visualize the contact sequence between single Ground Station to multiple satellites and single satellite to multiple ground stations.

```
clc; clear;
addpath( '~/Desktop/Redstone_Project/RS_HL/
RS_HL_1_Constellation_Scinarior_Formulation/' )
```

## I. Input information

### I.1 Time Parameter

```
% Initial Epoch Definition

Year = 2024;
Month = 3;
Day = 21;
Hour = 0;
Minute = 0;
Seconds = 0;

% Duration and Steptime
duration = hours(24);
steptime = 15; % seconds

startTime = datetime(Year,Month,Day,Hour,Minute,Seconds);

time_parameters.startTime = datetime(Year,Month,Day,Hour,Minute,Seconds);
time_parameters.duration = duration;
time_parameters.steptime = steptime;
```

```
scenario = scenario_initialization(time_parameters);
```

## I.2 Satellite Constellation - Walker Configuration (24 SATs in Single Orbit)

```
% Intial Orbit Settings

Altitude = 500; % (km)
Eccentricity = 1e-5;
Inclination = 97.4022; % (deg)
RAAN = 90; % (deg)
AOP = 0; % (deg)

% Number of satellites
number_of_SATs = 24;

% Satellite Characteristics - This will entail -1, -2, ... for
% constellation
satellite_name = "RS-1";

% Orbit Propagator
Orbit_Propagator = 'SGP4';

orbit_information.SMA = Altitude*1000 + 6378000;
orbit_information.ecc = Eccentricity;
orbit_information.inc = Inclination;
orbit_information.RAAN = RAAN;
orbit_information.AOP = AOP;

% Generate First Stream of Satellites
satellites_orbit_1 = single_orbit_constellation(scenario, orbit_information,
number_of_SATs, Orbit_Propagator, satellite_name);

% Generate Second Stream of Satellites
RAAN = 105;
orbit_information.RAAN = RAAN;
satellite_name = "RS-2";
satellites_orbit_2 = single_orbit_constellation(scenario, orbit_information,
number_of_SATs, Orbit_Propagator, satellite_name);

% Merge Satellite Informations
satellites = [satellites_orbit_1, satellites_orbit_2];
```

## I.4 gs Station Location

```
gs_info = ["Austin", 30.2672, -97.7431, 15;  
           "New York", 40.7128, -74.0060, 10;  
           "Los Angeles", 34.0522, -118.4837, 71;  
           "Chicago", 41.8781, -87.6298, 181;  
           "Houston", 29.7604, -95.3698, 30;  
           "Phoenix", 33.4484, -112.0740, 331;  
           "Philadelphia", 39.9526, -75.1652, 12;  
           "San Antonio", 29.4481, -98.4936, 198;  
           "San Diego", 32.7157, -117.1611, 22;  
           "Dallas", 32.7767, -96.7970, 137;  
           "London", 51.5074, -0.1278, 35;  
           "Tokyo", 35.6895, 139.6917, 6;  
           "Paris", 48.8566, 2.3522, 35;  
           "Moscow", 55.7558, 37.6176, 155;  
           "Sydney", -33.8688, 151.2093, 19;  
           "Toronto", 43.6511, -79.3830, 76;  
           "Berlin", 52.5200, 13.4050, 34;  
           "Rome", 41.9028, 12.4964, 17;  
           "Seoul", 37.5665, 126.9780, 23;  
           "Mumbai", 19.0760, 72.8777, 14;  
           "Beijing", 39.9042, 116.4074, 43;  
           "Mexico City", 19.4326, -99.1332, 2240;  
           "São Paulo", -23.5505, -46.6333, 780;  
           "Bangkok", 13.7563, 100.5018, 2;  
           "Istanbul", 41.0082, 28.9784, 39;  
           "Cairo", 30.0444, 31.2357, 23;  
           "Dubai", 25.2769, 55.2963, 4;  
           "Singapore", 1.3521, 103.8198, 15;  
           "Hong Kong", 22.3193, 114.1694, 39;  
           "Sydney", -33.8688, 151.2093, 19];  
  
gs = groundStation(scenario, "Name", gs_info(:,1), ...  
                   "Latitude", str2double(gs_info(:,2)), ...  
                   "Longitude", str2double(gs_info(:,3)), ...  
                   "Altitude", str2double(gs_info(:,4)), ...  
                   "MinElevationAngle", 15);
```

## II. GS -> SAT: Select 1 GS and 48 SATs in given timeframe

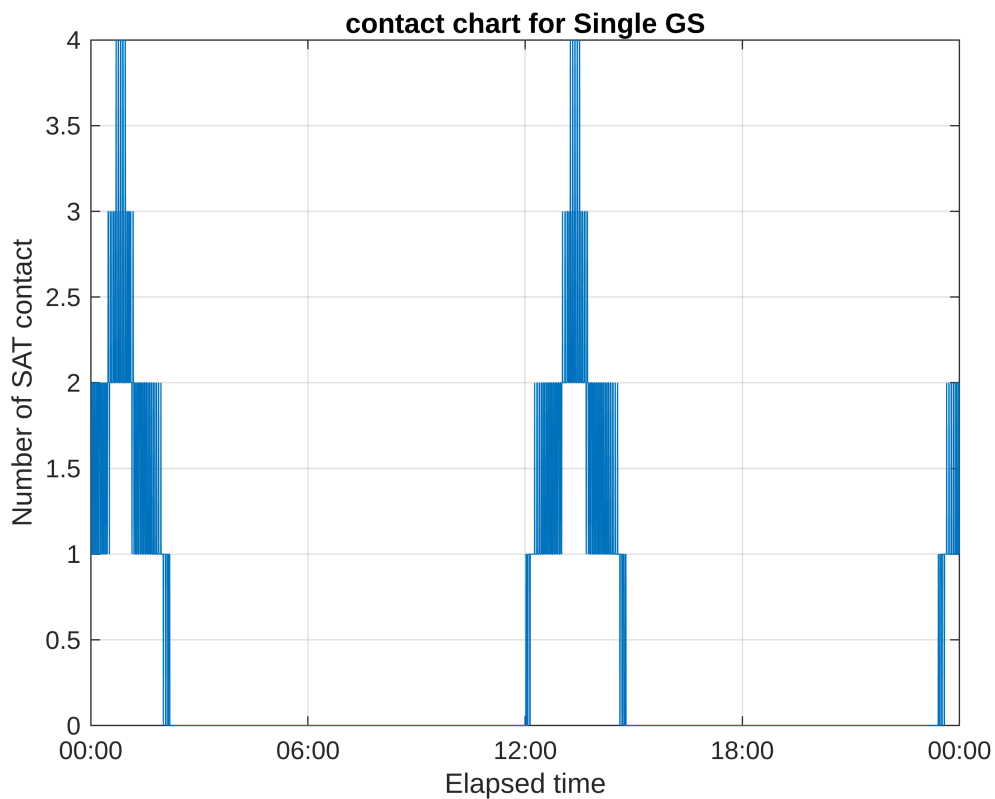
```
gs_no = 1;
```

```

[time_vector, ...
 gs_to_sat_access_table, ...
 gs_to_sat_access_matrix, ...
 gs_to_sat_access_info, ...
 contact_1_sat, ...
 contact_2_sat, ...
 contact_3_sat, ...
 contact_4_plus_sat] =
gs_to_sat_access_info_generation(scenario,satellites,gs(gs_no));

figure;
plot(time_vector,gs_to_sat_access_matrix(1,:))
title('contact chart for Single GS')
xlabel('Elapsed time')
ylabel('Number of SAT contact')
grid on

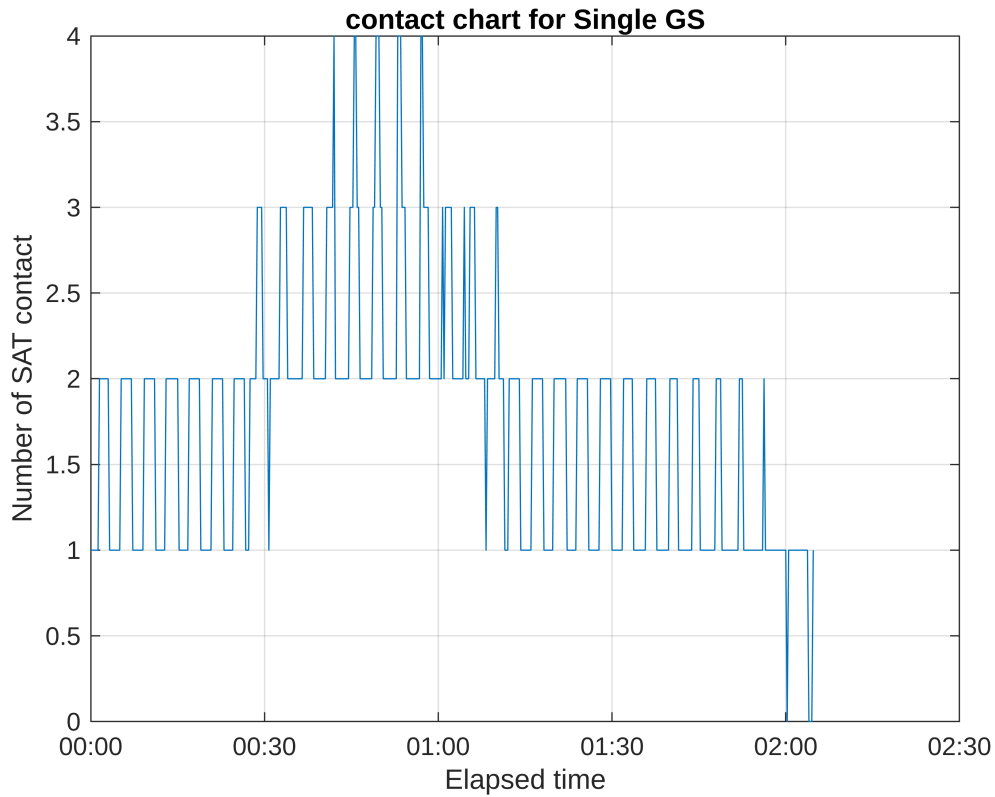
```



```

figure;
plot(time_vector(1:500),gs_to_sat_access_matrix(1,1:500))
title('contact chart for Single GS')
xlabel('Elapsed time')
ylabel('Number of SAT contact')
grid on

```



```
sorted_table1 = sortrows(gs_to_sat_access_table, 4, 'ascend')
```

```
sorted_table1 = 111x8 table
```

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
1	"Austin"	"RS-1-3"	1	21-Mar-2024 00:00:00	21-Mar-2024 00:03:00	180
2	"Austin"	"RS-1-2"	1	21-Mar-2024 00:01:30	21-Mar-2024 00:07:00	330
3	"Austin"	"RS-1-1"	1	21-Mar-2024 00:05:15	21-Mar-2024 00:11:00	345
4	"Austin"	"RS-1-24"	1	21-Mar-2024 00:09:15	21-Mar-2024 00:15:00	345
5	"Austin"	"RS-1-23"	1	21-Mar-2024 00:13:00	21-Mar-2024 00:18:45	345
6	"Austin"	"RS-1-22"	1	21-Mar-2024 00:17:00	21-Mar-2024 00:22:45	345
7	"Austin"	"RS-1-21"	1	21-Mar-2024 00:21:00	21-Mar-2024 00:26:30	330
8	"Austin"	"RS-1-20"	1	21-Mar-2024 00:24:45	21-Mar-2024 00:30:30	345
9	"Austin"	"RS-2-20"	1	21-Mar-2024 00:27:30	21-Mar-2024 00:29:30	120
10	"Austin"	"RS-1-19"	1	21-Mar-2024 00:28:45	21-Mar-2024 00:34:15	330
11	"Austin"	"RS-2-19"	1	21-Mar-2024 00:31:00	21-Mar-2024 00:33:45	165
12	"Austin"	"RS-1-18"	1	21-Mar-2024 00:32:45	21-Mar-2024 00:38:15	330
13	"Austin"	"RS-2-18"	1	21-Mar-2024 00:34:30	21-Mar-2024 00:38:00	210
14	"Austin"	"RS-1-17"	1	21-Mar-2024 00:36:45	21-Mar-2024 00:42:00	315

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
15	"Austin"	"RS-2-17"	1	21-Mar-2024 00:38:15	21-Mar-2024 00:42:00	225
16	"Austin"	"RS-1-16"	1	21-Mar-2024 00:40:45	21-Mar-2024 00:45:45	300
17	"Austin"	"RS-2-16"	1	21-Mar-2024 00:42:00	21-Mar-2024 00:46:15	255
18	"Austin"	"RS-1-15"	1	21-Mar-2024 00:44:45	21-Mar-2024 00:49:45	300
19	"Austin"	"RS-2-15"	1	21-Mar-2024 00:45:30	21-Mar-2024 00:50:15	285
20	"Austin"	"RS-1-14"	1	21-Mar-2024 00:48:45	21-Mar-2024 00:53:30	285
21	"Austin"	"RS-2-14"	1	21-Mar-2024 00:49:15	21-Mar-2024 00:54:15	300
22	"Austin"	"RS-1-13"	1	21-Mar-2024 00:53:00	21-Mar-2024 00:57:15	255
23	"Austin"	"RS-2-13"	1	21-Mar-2024 00:53:00	21-Mar-2024 00:58:15	315
24	"Austin"	"RS-1-12"	1	21-Mar-2024 00:57:00	21-Mar-2024 01:00:45	225
25	"Austin"	"RS-2-12"	1	21-Mar-2024 00:57:00	21-Mar-2024 01:02:15	315
26	"Austin"	"RS-2-11"	1	21-Mar-2024 01:00:45	21-Mar-2024 01:06:15	330
27	"Austin"	"RS-1-11"	1	21-Mar-2024 01:01:15	21-Mar-2024 01:04:30	195
28	"Austin"	"RS-2-10"	1	21-Mar-2024 01:04:30	21-Mar-2024 01:10:15	345
29	"Austin"	"RS-1-10"	1	21-Mar-2024 01:05:30	21-Mar-2024 01:08:00	150
30	"Austin"	"RS-2-9"	1	21-Mar-2024 01:08:30	21-Mar-2024 01:14:00	330
31	"Austin"	"RS-1-9"	1	21-Mar-2024 01:10:00	21-Mar-2024 01:11:15	75
32	"Austin"	"RS-2-8"	1	21-Mar-2024 01:12:15	21-Mar-2024 01:18:00	345
33	"Austin"	"RS-2-7"	1	21-Mar-2024 01:16:15	21-Mar-2024 01:22:00	345
34	"Austin"	"RS-2-6"	1	21-Mar-2024 01:20:00	21-Mar-2024 01:25:45	345
35	"Austin"	"RS-2-5"	1	21-Mar-2024 01:24:00	21-Mar-2024 01:29:45	345
36	"Austin"	"RS-2-4"	1	21-Mar-2024 01:28:00	21-Mar-2024 01:33:30	330
37	"Austin"	"RS-2-3"	1	21-Mar-2024 01:32:00	21-Mar-2024 01:37:30	330
38	"Austin"	"RS-2-2"	1	21-Mar-2024 01:36:00	21-Mar-2024 01:41:15	315
39	"Austin"	"RS-2-1"	1	21-Mar-2024 01:40:00	21-Mar-2024 01:45:00	300
40	"Austin"	"RS-2-24"	1	21-Mar-2024 01:44:00	21-Mar-2024 01:48:45	285
41	"Austin"	"RS-2-23"	1	21-Mar-2024 01:48:00	21-Mar-2024 01:52:30	270
42	"Austin"	"RS-2-22"	1	21-Mar-2024 01:52:00	21-Mar-2024 01:56:15	255
43	"Austin"	"RS-2-21"	1	21-Mar-2024 01:56:15	21-Mar-2024 02:00:00	225
44	"Austin"	"RS-2-20"	2	21-Mar-2024 02:00:30	21-Mar-2024 02:03:45	195
45	"Austin"	"RS-2-19"	2	21-Mar-2024 02:04:45	21-Mar-2024 02:07:15	150
46	"Austin"	"RS-2-18"	2	21-Mar-2024 02:09:00	21-Mar-2024 02:10:45	105
47	"Austin"	"RS-1-20"	2	21-Mar-2024 12:01:30	21-Mar-2024 12:03:00	90

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
48	"Austin"	"RS-1-19"	2	21-Mar-2024 12:04:45	21-Mar-2024 12:07:30	165
49	"Austin"	"RS-1-18"	2	21-Mar-2024 12:08:30	21-Mar-2024 12:11:45	195
50	"Austin"	"RS-1-17"	2	21-Mar-2024 12:12:00	21-Mar-2024 12:15:45	225
51	"Austin"	"RS-1-16"	2	21-Mar-2024 12:15:45	21-Mar-2024 12:20:00	255
52	"Austin"	"RS-1-15"	2	21-Mar-2024 12:19:30	21-Mar-2024 12:24:00	270
53	"Austin"	"RS-1-14"	2	21-Mar-2024 12:23:15	21-Mar-2024 12:28:15	300
54	"Austin"	"RS-1-13"	2	21-Mar-2024 12:27:00	21-Mar-2024 12:32:15	315
55	"Austin"	"RS-1-12"	2	21-Mar-2024 12:30:45	21-Mar-2024 12:36:15	330
56	"Austin"	"RS-1-11"	2	21-Mar-2024 12:34:45	21-Mar-2024 12:40:15	330
57	"Austin"	"RS-1-10"	2	21-Mar-2024 12:38:30	21-Mar-2024 12:44:00	330
58	"Austin"	"RS-1-9"	2	21-Mar-2024 12:42:30	21-Mar-2024 12:48:00	330
59	"Austin"	"RS-1-8"	1	21-Mar-2024 12:46:15	21-Mar-2024 12:52:00	345
60	"Austin"	"RS-1-7"	1	21-Mar-2024 12:50:15	21-Mar-2024 12:56:00	345
61	"Austin"	"RS-1-6"	1	21-Mar-2024 12:54:00	21-Mar-2024 12:59:45	345
62	"Austin"	"RS-1-5"	1	21-Mar-2024 12:58:00	21-Mar-2024 13:03:45	345
63	"Austin"	"RS-2-5"	2	21-Mar-2024 13:00:45	21-Mar-2024 13:02:00	75
64	"Austin"	"RS-1-4"	1	21-Mar-2024 13:02:00	21-Mar-2024 13:07:30	330
65	"Austin"	"RS-2-4"	2	21-Mar-2024 13:04:00	21-Mar-2024 13:06:30	150
66	"Austin"	"RS-1-3"	2	21-Mar-2024 13:06:00	21-Mar-2024 13:11:15	315
67	"Austin"	"RS-2-3"	2	21-Mar-2024 13:07:45	21-Mar-2024 13:10:45	180
68	"Austin"	"RS-1-2"	2	21-Mar-2024 13:09:45	21-Mar-2024 13:15:15	330
69	"Austin"	"RS-2-2"	2	21-Mar-2024 13:11:15	21-Mar-2024 13:15:00	225
70	"Austin"	"RS-1-1"	2	21-Mar-2024 13:13:45	21-Mar-2024 13:19:00	315
71	"Austin"	"RS-2-1"	2	21-Mar-2024 13:15:00	21-Mar-2024 13:19:15	255
72	"Austin"	"RS-1-24"	2	21-Mar-2024 13:17:45	21-Mar-2024 13:22:45	300
73	"Austin"	"RS-2-24"	2	21-Mar-2024 13:18:45	21-Mar-2024 13:23:15	270
74	"Austin"	"RS-1-23"	2	21-Mar-2024 13:21:45	21-Mar-2024 13:26:30	285
75	"Austin"	"RS-2-23"	2	21-Mar-2024 13:22:30	21-Mar-2024 13:27:15	285
76	"Austin"	"RS-1-22"	2	21-Mar-2024 13:26:00	21-Mar-2024 13:30:15	255
77	"Austin"	"RS-2-22"	2	21-Mar-2024 13:26:15	21-Mar-2024 13:31:15	300
78	"Austin"	"RS-1-21"	2	21-Mar-2024 13:30:00	21-Mar-2024 13:34:00	240
79	"Austin"	"RS-2-21"	2	21-Mar-2024 13:30:00	21-Mar-2024 13:35:15	315
80	"Austin"	"RS-2-20"	3	21-Mar-2024 13:34:00	21-Mar-2024 13:39:15	315

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
81	"Austin"	"RS-1-20"	3	21-Mar-2024 13:34:15	21-Mar-2024 13:37:30	195
82	"Austin"	"RS-2-19"	3	21-Mar-2024 13:37:45	21-Mar-2024 13:43:15	330
83	"Austin"	"RS-1-19"	3	21-Mar-2024 13:38:15	21-Mar-2024 13:41:00	165
84	"Austin"	"RS-2-18"	3	21-Mar-2024 13:41:30	21-Mar-2024 13:47:15	345
85	"Austin"	"RS-1-18"	3	21-Mar-2024 13:42:30	21-Mar-2024 13:44:30	120
86	"Austin"	"RS-2-17"	2	21-Mar-2024 13:45:30	21-Mar-2024 13:51:15	345
87	"Austin"	"RS-2-16"	2	21-Mar-2024 13:49:15	21-Mar-2024 13:55:00	345
88	"Austin"	"RS-2-15"	2	21-Mar-2024 13:53:15	21-Mar-2024 13:59:00	345
89	"Austin"	"RS-2-14"	2	21-Mar-2024 13:57:15	21-Mar-2024 14:02:45	330
90	"Austin"	"RS-2-13"	2	21-Mar-2024 14:01:15	21-Mar-2024 14:06:45	330
91	"Austin"	"RS-2-12"	2	21-Mar-2024 14:05:00	21-Mar-2024 14:10:30	330
92	"Austin"	"RS-2-11"	2	21-Mar-2024 14:09:00	21-Mar-2024 14:14:30	330
93	"Austin"	"RS-2-10"	2	21-Mar-2024 14:13:00	21-Mar-2024 14:18:15	315
94	"Austin"	"RS-2-9"	2	21-Mar-2024 14:17:00	21-Mar-2024 14:22:00	300
95	"Austin"	"RS-2-8"	2	21-Mar-2024 14:21:00	21-Mar-2024 14:25:45	285
96	"Austin"	"RS-2-7"	2	21-Mar-2024 14:25:00	21-Mar-2024 14:29:30	270
97	"Austin"	"RS-2-6"	2	21-Mar-2024 14:29:15	21-Mar-2024 14:33:15	240
98	"Austin"	"RS-2-5"	3	21-Mar-2024 14:33:15	21-Mar-2024 14:36:45	210
99	"Austin"	"RS-2-4"	3	21-Mar-2024 14:37:30	21-Mar-2024 14:40:15	165
100	"Austin"	"RS-2-3"	3	21-Mar-2024 14:41:45	21-Mar-2024 14:43:45	120

⋮

### III. SAT -> GS: Select 1 SAT and 30 GS in given timeframe

```
sat_no = 1;

[time_vector, ...
 sat_to_gs_access_table, ...
 sat_to_gs_access_matrix, ...
 sat_to_gs_access_info, ...
 contact_1_gs, ...
 contact_2_gs, ...
 contact_3_gs, ...
```

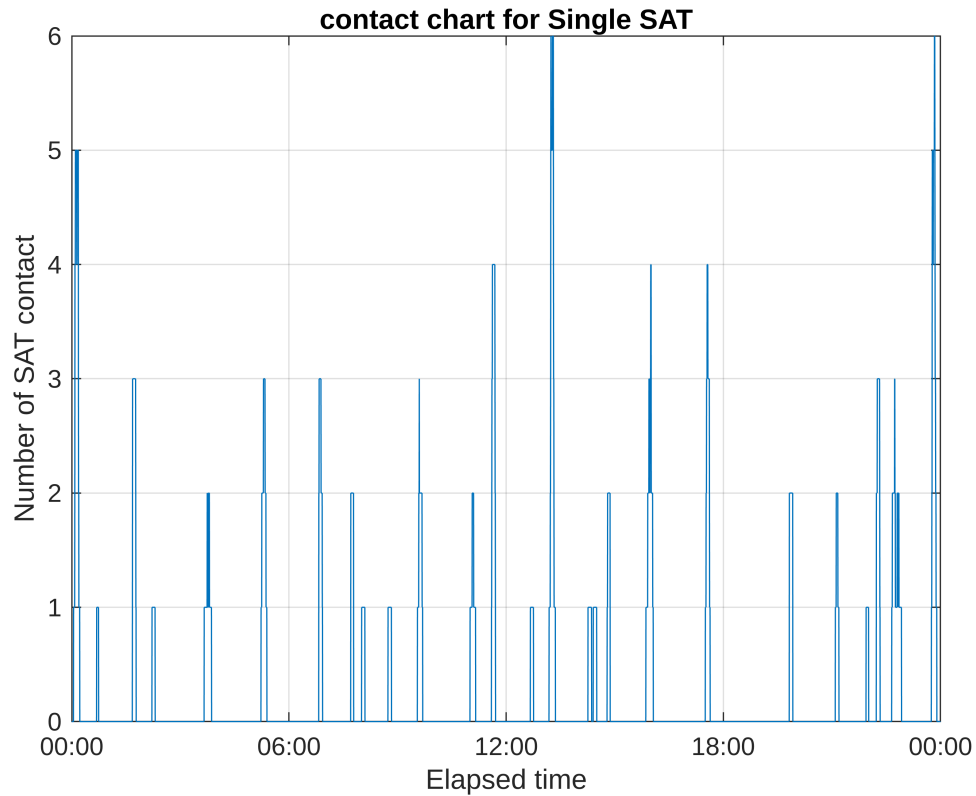


```

contact_4_plus_gs] =
sat_to_gs_access_info_generation(scenario,satellites(sat_no),gs);

figure;
plot(time_vector,sat_to_gs_access_matrix(1,:))
title('contact chart for Single SAT')
xlabel('Elapsed time')
ylabel('Number of SAT contact')
grid on

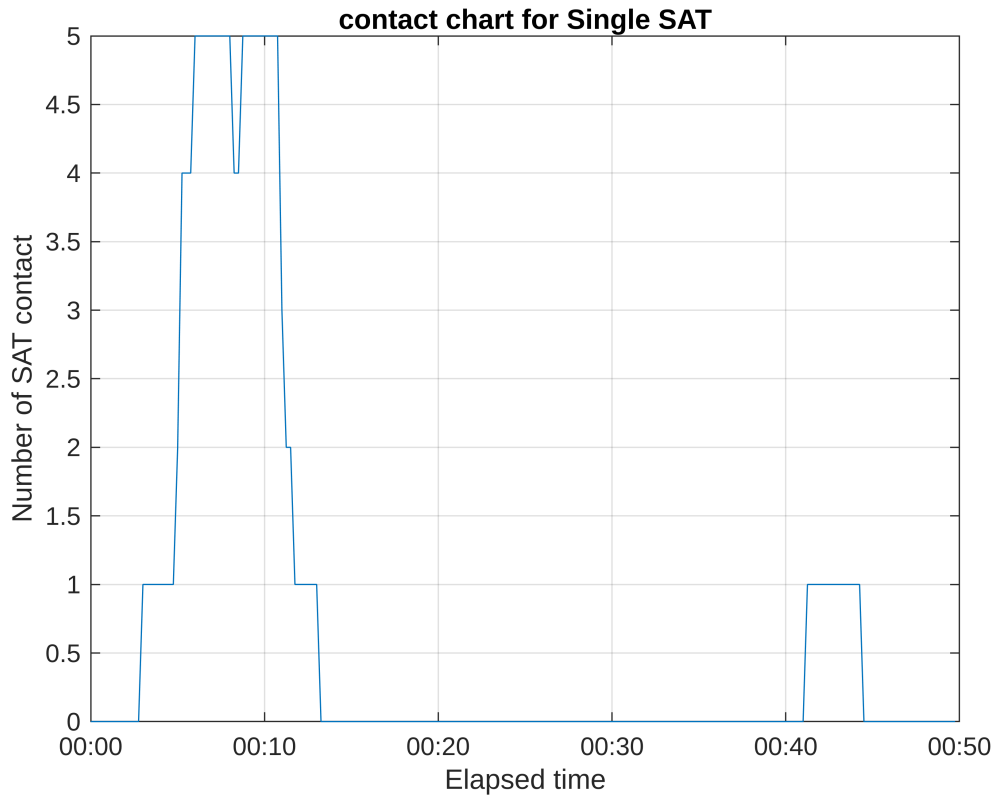
```



```

figure;
plot(time_vector(1:200),sat_to_gs_access_matrix(1,1:200))
title('contact chart for Single SAT')
xlabel('Elapsed time')
ylabel('Number of SAT contact')
grid on

```



```
sorted_table = sortrows(sat_to_gs_access_table, 4, 'ascend')
```

```
sorted_table = 75x8 table
```

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
1	"RS-1-1"	"Mexico City"	1	21-Mar-2024 00:03:00	21-Mar-2024 00:08:00	300
2	"RS-1-1"	"Houston"	1	21-Mar-2024 00:05:00	21-Mar-2024 00:10:45	345
3	"RS-1-1"	"Austin"	1	21-Mar-2024 00:05:15	21-Mar-2024 00:11:00	345
4	"RS-1-1"	"San Antonio"	1	21-Mar-2024 00:05:15	21-Mar-2024 00:10:45	330
5	"RS-1-1"	"Dallas"	1	21-Mar-2024 00:06:00	21-Mar-2024 00:11:30	330
6	"RS-1-1"	"Chicago"	1	21-Mar-2024 00:08:45	21-Mar-2024 00:13:00	255
7	"RS-1-1"	"Mumbai"	1	21-Mar-2024 00:41:15	21-Mar-2024 00:44:15	180
8	"RS-1-1"	"San Diego"	1	21-Mar-2024 01:40:30	21-Mar-2024 01:46:00	330
9	"RS-1-1"	"Los Angeles"	1	21-Mar-2024 01:40:45	21-Mar-2024 01:46:30	345
10	"RS-1-1"	"Phoenix"	1	21-Mar-2024 01:40:45	21-Mar-2024 01:45:45	300
11	"RS-1-1"	"Dubai"	1	21-Mar-2024 02:13:00	21-Mar-2024 02:18:00	300
12	"RS-1-1"	"Moscow"	1	21-Mar-2024 03:39:30	21-Mar-2024 03:44:45	315
13	"RS-1-1"	"Istanbul"	1	21-Mar-2024 03:44:30	21-Mar-2024 03:48:00	210

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
14	"RS-1-1"	"Cairo"	1	21-Mar-2024 03:46:30	21-Mar-2024 03:51:30	300
15	"RS-1-1"	"Moscow"	2	21-Mar-2024 05:13:45	21-Mar-2024 05:17:45	240
16	"RS-1-1"	"Berlin"	1	21-Mar-2024 05:15:00	21-Mar-2024 05:20:15	315
17	"RS-1-1"	"Rome"	1	21-Mar-2024 05:17:45	21-Mar-2024 05:23:15	330
18	"RS-1-1"	"Istanbul"	2	21-Mar-2024 05:18:00	21-Mar-2024 05:21:45	225
19	"RS-1-1"	"London"	1	21-Mar-2024 06:49:30	21-Mar-2024 06:55:00	330
20	"RS-1-1"	"Berlin"	2	21-Mar-2024 06:49:30	21-Mar-2024 06:53:00	210
21	"RS-1-1"	"Paris"	1	21-Mar-2024 06:50:00	21-Mar-2024 06:55:30	330
22	"RS-1-1"	"Sydney"	1	21-Mar-2024 07:42:30	21-Mar-2024 07:47:00	270
23	"RS-1-1"	"Sydney"	1	21-Mar-2024 07:42:30	21-Mar-2024 07:47:00	270
24	"RS-1-1"	"Tokyo"	1	21-Mar-2024 08:00:30	21-Mar-2024 08:05:45	315
25	"RS-1-1"	"São Paulo"	1	21-Mar-2024 08:44:15	21-Mar-2024 08:49:45	330
26	"RS-1-1"	"Hong Kong"	1	21-Mar-2024 09:33:00	21-Mar-2024 09:36:00	180
27	"RS-1-1"	"Seoul"	1	21-Mar-2024 09:35:15	21-Mar-2024 09:40:30	315
28	"RS-1-1"	"Beijing"	1	21-Mar-2024 09:36:00	21-Mar-2024 09:41:30	330
29	"RS-1-1"	"Singapore"	1	21-Mar-2024 11:00:15	21-Mar-2024 11:06:00	345
30	"RS-1-1"	"Bangkok"	1	21-Mar-2024 11:03:45	21-Mar-2024 11:09:15	330
31	"RS-1-1"	"Toronto"	1	21-Mar-2024 11:35:45	21-Mar-2024 11:41:30	345
32	"RS-1-1"	"New York"	1	21-Mar-2024 11:36:15	21-Mar-2024 11:42:00	345
33	"RS-1-1"	"Philadelphia"	1	21-Mar-2024 11:36:30	21-Mar-2024 11:42:15	345
34	"RS-1-1"	"Chicago"	2	21-Mar-2024 11:37:15	21-Mar-2024 11:41:15	240
35	"RS-1-1"	"Mumbai"	2	21-Mar-2024 12:40:15	21-Mar-2024 12:45:15	300
36	"RS-1-1"	"Chicago"	3	21-Mar-2024 13:11:15	21-Mar-2024 13:14:30	195
37	"RS-1-1"	"Dallas"	2	21-Mar-2024 13:13:15	21-Mar-2024 13:18:15	300
38	"RS-1-1"	"Austin"	2	21-Mar-2024 13:13:45	21-Mar-2024 13:19:00	315
39	"RS-1-1"	"Phoenix"	2	21-Mar-2024 13:14:00	21-Mar-2024 13:18:15	255
40	"RS-1-1"	"San Antonio"	2	21-Mar-2024 13:14:00	21-Mar-2024 13:19:15	315
41	"RS-1-1"	"Houston"	2	21-Mar-2024 13:14:15	21-Mar-2024 13:18:30	255
42	"RS-1-1"	"Mexico City"	2	21-Mar-2024 13:17:00	21-Mar-2024 13:21:30	270
43	"RS-1-1"	"Dubai"	2	21-Mar-2024 14:15:45	21-Mar-2024 14:21:30	345
44	"RS-1-1"	"Moscow"	3	21-Mar-2024 14:24:30	21-Mar-2024 14:30:00	330
45	"RS-1-1"	"Los Angeles"	2	21-Mar-2024 14:47:30	21-Mar-2024 14:52:15	285
46	"RS-1-1"	"San Diego"	2	21-Mar-2024 14:48:15	21-Mar-2024 14:52:15	240

	Source	Target	IntervalNumber	StartTime	EndTime	Duration
47	"RS-1-1"	"Cairo"	2	21-Mar-2024 15:51:45	21-Mar-2024 15:57:30	345
48	"RS-1-1"	"Istanbul"	3	21-Mar-2024 15:54:45	21-Mar-2024 16:00:15	330
49	"RS-1-1"	"Rome"	2	21-Mar-2024 15:56:45	21-Mar-2024 16:00:15	210
50	"RS-1-1"	"Berlin"	3	21-Mar-2024 15:58:30	21-Mar-2024 16:03:45	315
51	"RS-1-1"	"Moscow"	4	21-Mar-2024 15:59:45	21-Mar-2024 16:02:45	180
52	"RS-1-1"	"Rome"	3	21-Mar-2024 17:30:15	21-Mar-2024 17:34:15	240
53	"RS-1-1"	"Paris"	2	21-Mar-2024 17:31:30	21-Mar-2024 17:37:00	330
54	"RS-1-1"	"London"	2	21-Mar-2024 17:32:15	21-Mar-2024 17:38:00	345
55	"RS-1-1"	"Berlin"	4	21-Mar-2024 17:33:15	21-Mar-2024 17:36:45	210
56	"RS-1-1"	"Sydney"	2	21-Mar-2024 19:49:30	21-Mar-2024 19:55:00	330
57	"RS-1-1"	"Sydney"	2	21-Mar-2024 19:49:30	21-Mar-2024 19:55:00	330
58	"RS-1-1"	"Tokyo"	2	21-Mar-2024 21:05:45	21-Mar-2024 21:11:30	345
59	"RS-1-1"	"Seoul"	2	21-Mar-2024 21:07:15	21-Mar-2024 21:09:45	150
60	"RS-1-1"	"São Paulo"	2	21-Mar-2024 21:56:45	21-Mar-2024 22:00:45	240
61	"RS-1-1"	"New York"	2	21-Mar-2024 22:13:45	21-Mar-2024 22:19:15	330
62	"RS-1-1"	"Philadelphia"	2	21-Mar-2024 22:13:45	21-Mar-2024 22:19:00	315
63	"RS-1-1"	"Toronto"	2	21-Mar-2024 22:15:15	21-Mar-2024 22:19:45	270
64	"RS-1-1"	"Beijing"	2	21-Mar-2024 22:39:15	21-Mar-2024 22:45:00	345
65	"RS-1-1"	"Seoul"	3	21-Mar-2024 22:40:15	21-Mar-2024 22:44:15	240
66	"RS-1-1"	"Hong Kong"	2	21-Mar-2024 22:44:00	21-Mar-2024 22:49:30	330
67	"RS-1-1"	"Bangkok"	2	21-Mar-2024 22:48:15	21-Mar-2024 22:51:00	165
68	"RS-1-1"	"Singapore"	2	21-Mar-2024 22:50:00	21-Mar-2024 22:55:15	315
69	"RS-1-1"	"Mexico City"	3	21-Mar-2024 23:45:00	21-Mar-2024 23:47:00	120
70	"RS-1-1"	"Houston"	3	21-Mar-2024 23:45:45	21-Mar-2024 23:51:00	315
71	"RS-1-1"	"Austin"	3	21-Mar-2024 23:46:15	21-Mar-2024 23:50:45	270
72	"RS-1-1"	"San Antonio"	3	21-Mar-2024 23:46:15	21-Mar-2024 23:50:30	255
73	"RS-1-1"	"Dallas"	3	21-Mar-2024 23:46:30	21-Mar-2024 23:51:45	315
74	"RS-1-1"	"Chicago"	4	21-Mar-2024 23:48:15	21-Mar-2024 23:53:45	330
75	"RS-1-1"	"Toronto"	3	21-Mar-2024 23:50:00	21-Mar-2024 23:52:30	150