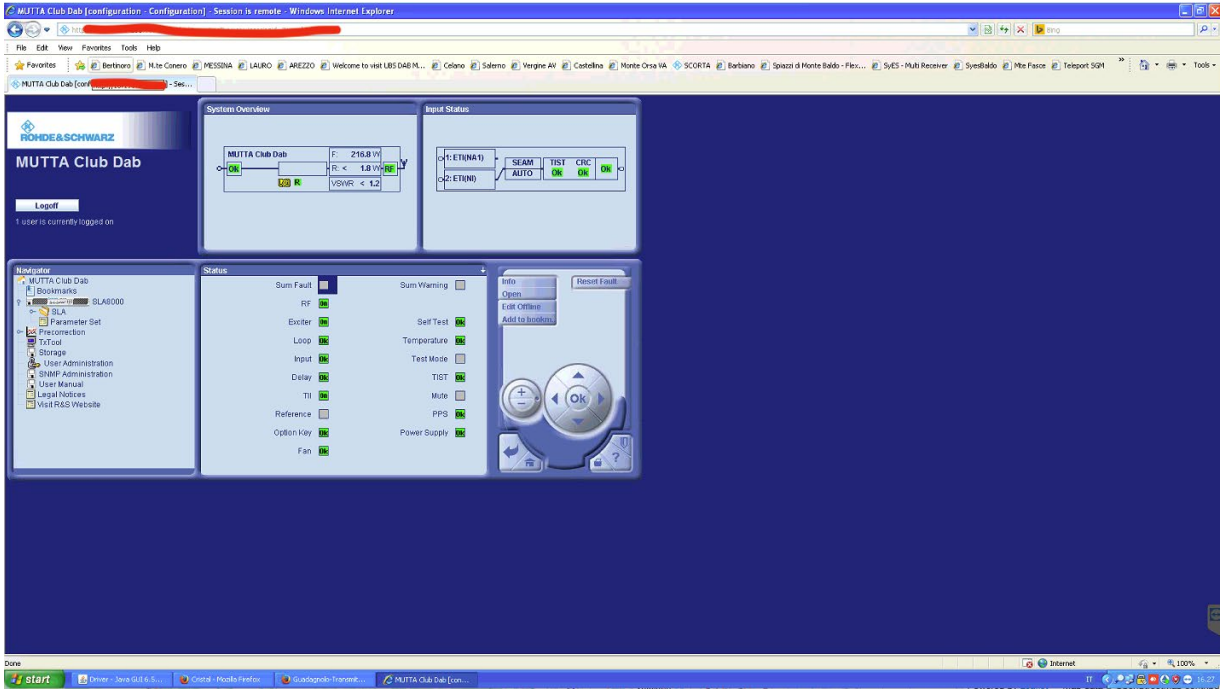
Measuring and monitoring

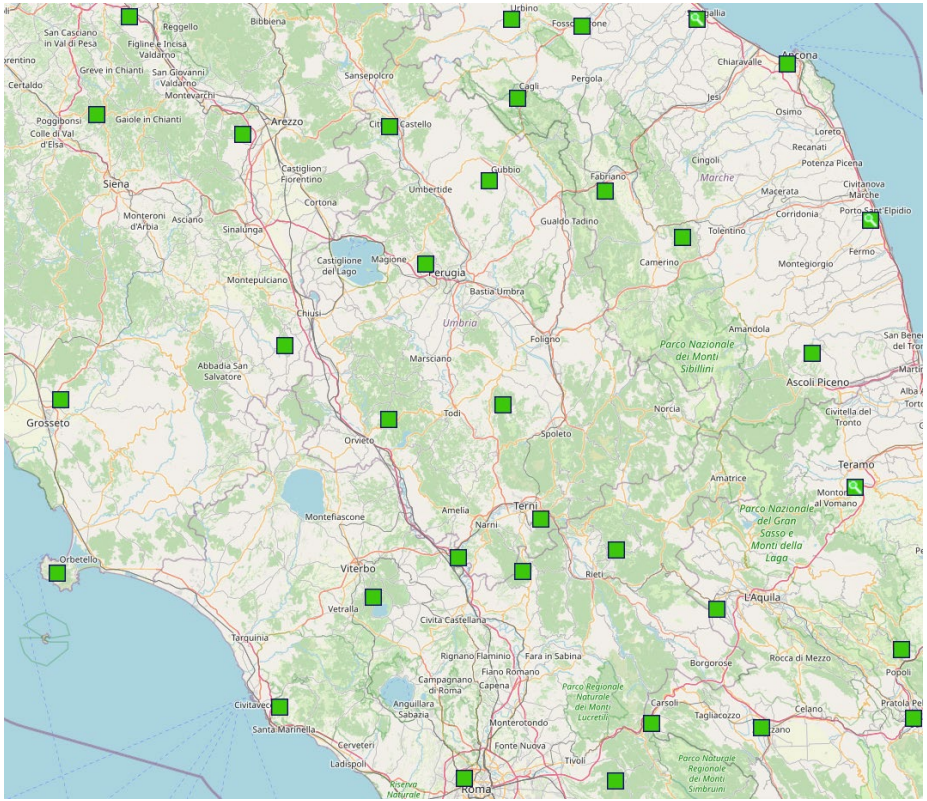
DAB Italia network monitoring

- Launched in 2012
  - 15 sites
  - All sites with IP connectivity
  - 1st phase – manual monitoring!!!
    - Manually accessing single transmitters
    - No alarms



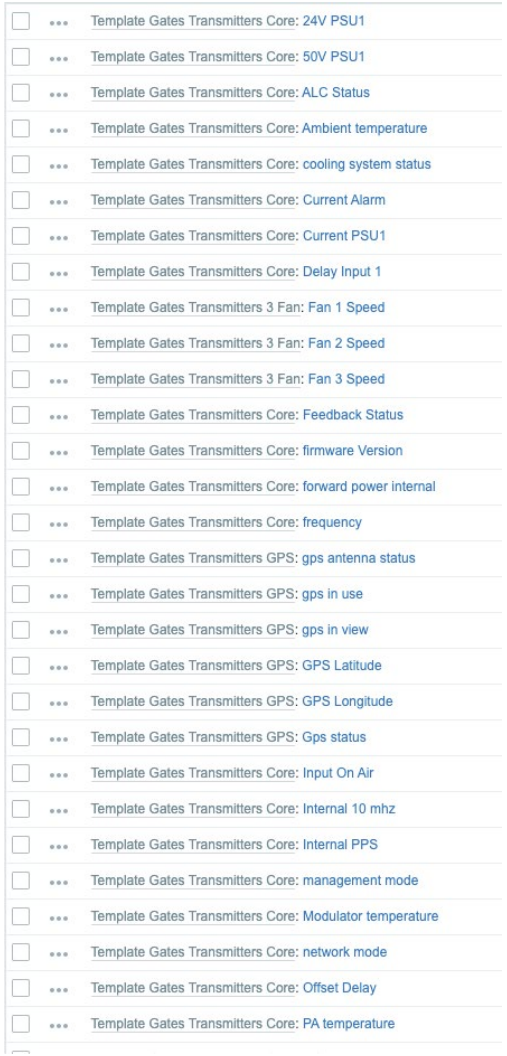
DAB Italia network monitoring

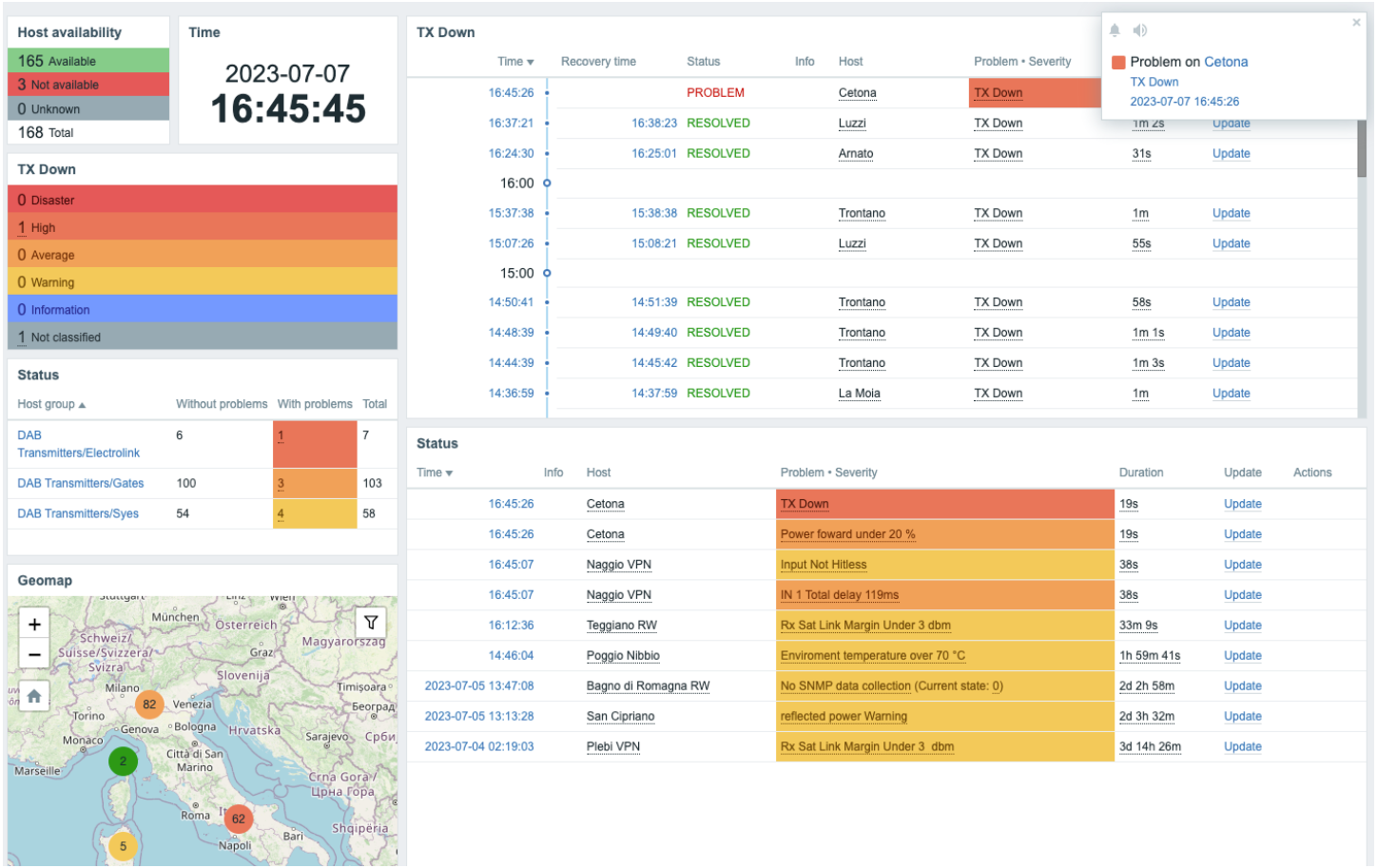
- Extension of the network
  - 25+ sites
  - All sites with IP connectivity
  - 2nd phase – NMS!!!
    - Implemented a simple but efficient NMS
    - Simple status verification
      - Red – alarm
      - Blue – no connectivity
      - Green - ok
    - Alarm generation and alerting
    - Reporting
    - More and more data points, depending on the HW manufacturer



DAB Italia network monitoring

- Status 2023
  - 3rd phase
    - Systematic usage of NMS for basic monitoring and alerting
    - Implementation of new NMS platform which allows us to monitor over 50 datapoints of each tx
    - Inclusion of on-site and remote probes for SFN “surveillance”
    - Creating of complex levels of alerting and ticketing




Host availability
165 Available
3 Not available
0 Unknown
168 Total
Time
2023-07-07
16:45:45
TX Down
0 Disaster
1 High
0 Average
0 Warning
0 Information
1 Not classified
Status
Host group
Without problems
With problems
Total
DAB Transmitters/Electrolink 6 1 7
DAB Transmitters/Gates 100 3 103
DAB Transmitters/Syes 54 4 58
Geomap
TX Down
Time
Recovery time
Status
Info
Host
Problem • Severity
16:45:26 PROBLEM Cetona TX Down
16:37:21 16:38:23 RESOLVED Luzzi TX Down 1m 2s Update
16:24:30 16:25:01 RESOLVED Arnato TX Down 31s Update
16:00
15:37:38 15:38:38 RESOLVED Trontano TX Down 1m Update
15:07:26 15:08:21 RESOLVED Luzzi TX Down 55s Update
15:00
14:50:41 14:51:39 RESOLVED Trontano TX Down 58s Update
14:48:39 14:49:40 RESOLVED Trontano TX Down 1m 1s Update
14:44:39 14:45:42 RESOLVED Trontano TX Down 1m 3s Update
14:36:59 14:37:59 RESOLVED La Moia TX Down 1m Update
Problem on Cetona
TX Down
2023-07-07 16:45:26
Status
Time
Info
Host
Problem • Severity
Duration
Update
Actions
16:45:26 Cetona TX Down 19s Update
16:45:26 Cetona Power foward under 20 % 19s Update
16:45:07 Naggio VPN Input Not Hitless 38s Update
16:45:07 Naggio VPN IN 1 Total delay 119ms 38s Update
16:12:36 Teggiano RW Rx Sat Link Margin Under 3 dbm 33m 9s Update
14:46:04 Poggio Nibbio Enviroment temperature over 70 °C 1h 59m 41s Update
2023-07-05 13:47:08 Bagno di Romagna RW No SNMP data collection (Current state: 0) 2d 2h 58m Update
2023-07-05 13:13:28 San Cipriano reflected power Warning 2d 3h 32m Update
2023-07-04 02:19:03 Plebi VPN Rx Sat Link Margin Under 3 dbm 3d 14h 26m Update
München
Österreich
Schweiz/
Suisse/Svizzera/
Svizra
Magyarország
Graz
Slovenija
Milano
Venezia
Torino
Genova
Bologna
Hrvatska
Monaco
Sarajevo
Città di San
Marino
Marseille
Crna Gora/
Црна Гора
Roma
Napoli
Bari
Shqipëria
Timişoara
Београд
Срби
82
2
62
5

DAB Italia network monitoring

- Takeaways
  - It is (very) important to monitor the network
  - All sites must have IP connectivity
  - We have moved from basic monitoring to more and more detailed analysis
  - The more complex the network becomes the more you need to track delay issues and be able to isolate “fake” information
  - In a complex SFN in most cases it is better to shut down a TX than allowing it to generate interference
  - Programming your NMS and creating automatic fallback scenarios is essential
  - Deep knowledge of the distribution network is equally essential

Thank you for your attention!

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