Tibbo TECHNOLOGY

Case Study

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Communication Channel and Emergency Notification System Monitoring

Industry

Government

Companies

The Ministry of the Russian Federation for Civil Defense, Emergencies and Elimination of Consequences of Natural Disasters (EMERCOM of Russia)

Company Profile

The Ministry of the Russian Federation for Civil Defense, Emergencies and Elimination of Consequences of Natural Disasters (EMERCOM of Russia) is a federal executive body responsible for development and implementation of state policy, legal regulation as well as supervision and control in the civil defense field, protection of population and territories from natural and man-made disasters, providing fire and water safety.

Hardware

The Ministry's data communication network consists of Cisco switches and routers, while the video conference system is designed using Tandberg equipment. There are specialized custom-built controllers and sensors used in emergency notification and radiation control systems.

Challenges

The initial task defined by the customer was tracking status and availability of all EMERCOM communication channels, network equipment, video conference system, as well as operator workstations in different regions. Since plenty of leased lines were being used to ensure communication with the Main Office, it was seen as important to monitor their SLA compliance. The duty officers' workstations should be tracked not just for availability but also for basic performance parameters, such as CPU, memory and disk space.

After some investigation, the team identified important tasks of emergency notification system monitoring and radiation control data collection and analysis. Provided some output values or parameters exceed their thresholds, the alerts must be transmitted to the higher-level systems.

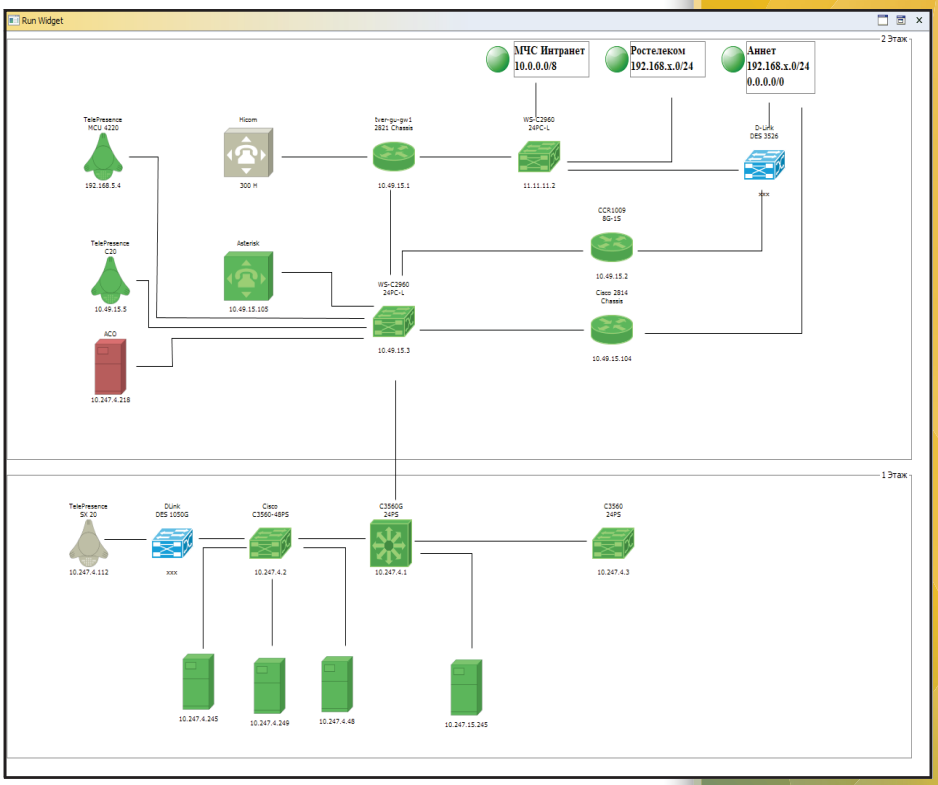
Since the project targets covered several application areas, there was no off-the-shelf solution fully meeting all customer requirements available on the market. Having carefully studied the requirements for the system, Tibbo and EMERCOM staff developed a target specification and the engineers got down to work.

Solution

AggreGate Network Manager has been approved as suitable monitoring software providing all necessary tools for the solution customization. The customer also chose the Tibbo Project System (TPS) module with digital outputs as a hardware M2M/IoT platform in this project. Due to its modular architecture, this low-cost programmable controller opens the door for building customized applications rather than being charged for irrelevant features. TPS is fully compatible with AggreGate platform and derived product line.

Since AggreGate Network Manager supports all SNMP versions, it allows the operators to collect all necessary information from devices. Through the use of SNMP v3, the network security doesn't go down now. Furthermore, there were SNMP agents configured for 36 routers working as gateways in local LANs and 10 Cisco switches in the Main Office. This made it possible to retrieve data on communication channels, network interfaces, CPU performance and memory usage, plus monitor temperature, state of power supplies and fans. Eventually, each region got an SNMP agent set up on all workstations.

Speaking about other systems subject to monitoring, the task has been fulfilled with minimum efforts. Telephones and conference equipment availability was defined via ICMP. The public emergency notification system supported SNMP management, therefore, it was easy to connect speaker controllers to AggreGate.



What's more, the Tibbo team collaboratively with the customer developed a specific interface displaying the whole network. One of the screens in the situation center shows the region map consisting of several districts, each of which may have its status depending on the local equipment state. The map has multiple nesting levels, i.e. it is possible to see the entire region and move to the district level, and even down to an individual device. If a problem with equipment or communication channels occurs, a responsible operator is immediately notified by e-mail with the malfunction date, time, location and cause. A separate interface displays the public address system status looking like a geographical city map indicating location and state of the speakers. The map supports scaling, so you can easily see the big picture as well as zoom in the district of interest.

AggreGate Network Manager was integrated with the sensor control system to manage the radiation sensors by checking their performance once per minute. If any parameter exceeds a threshold, the signal is transmitted to the higher-level software and hardware through dry contacts implemented on the TPS controller.

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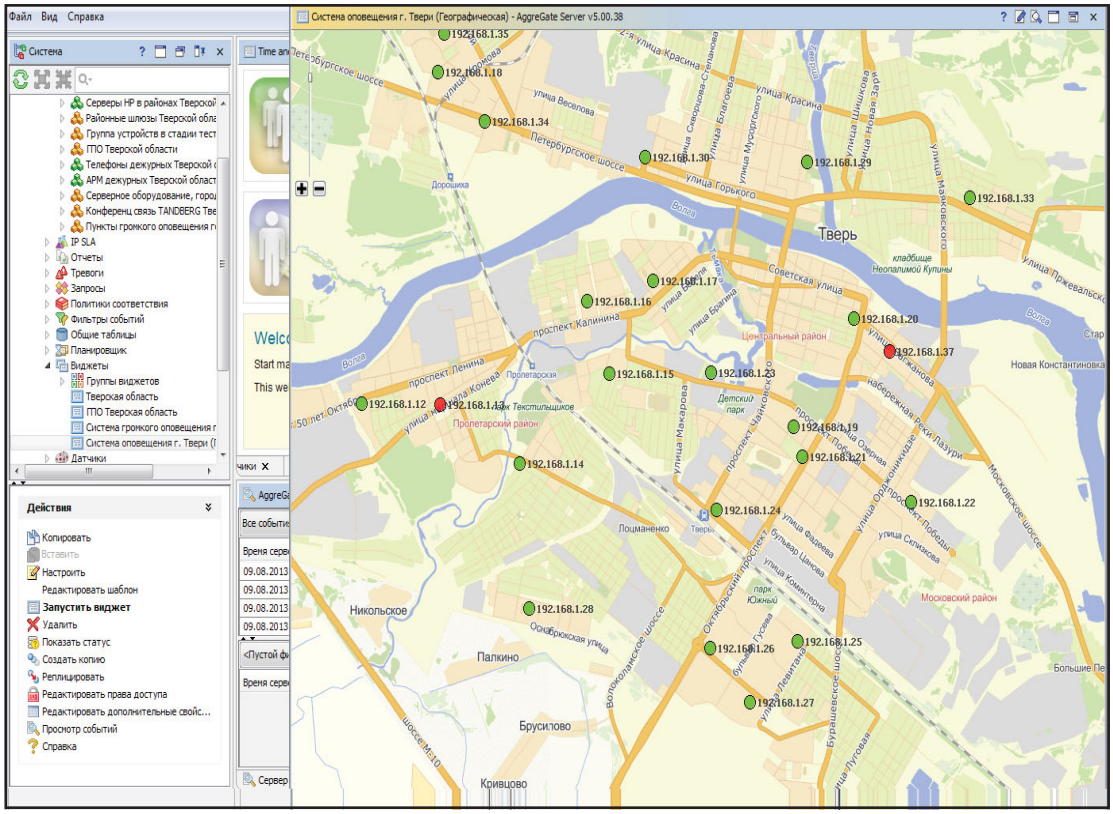

Outcome

Upon the project completion, the customer acquired a handy tool for monitoring and managing workstations as well as network and conference call equipment. This significantly reduced the network diagnostics cost, as the new system accurately indicates location and cause of a problem. Moreover, the same tool provided reliable monitoring for radiation sensors at no additional cost.

Conclusion

Tibbo engineers successfully deployed the network and equipment monitoring system at the customer's facilities. The works have been carried out within the project timeframe. The system successfully passed a commissioning stage and went into commercial operation. Despite the fact that the solution is complete, there is still room for vertical and horizontal system expansion in the future.

About Tibbo

Located in Taipei, Taiwan, Tibbo Technology Inc. brings simplicity to the automation world defined by enormous complexity of operating systems, programming languages, and design tools. Tibbo's programmable hardware and the AggreGate Platform offer a complete solution for delivering robust, distributed automation and monitoring systems.

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