Opengear Aids Scientists in Helping Stroke Patients Regain Control of Their Limbs

SUMMARY

INTERACTIVE MOTION TECHNOLOGIES

Industry:
Medical, Biomechanics

Customer Profile:
Interactive Motion Technologies provides robotic tools for neurorehabilitation professionals. Developed at MIT, the company's InMotion robots apply the latest research in neuroscience, neurorehabilitation and biomedical engineering, using Assist as Needed technology to augment patients as they learn, reacquire and improve motor skills.

Objectives:
- Handle service calls to robots in distant international locations remotely from the company headquarters in Boston
- Render cost and time expenditures associated with travel for minor updates unnecessary
- Maintain the systems of InMotion robots worldwide via secure cellular out-of-band connections

Opengear Solution:
- ACM5004-G-E remote management, cellular out-of-band, SSH tunnel to host on Interactive Motion's site

Results:
- InMotion robots have their software updated over a cellular network
- Service calls can now be completed from the company headquarters
- Minor updates no longer require a tech to travel and be on-site
- An Opengear ACM5004-G-E and a $20/month cell service add incredible value to a $100K robot
- Interactive Motion is investigating additional opportunities to integrate Opengear's solution as part of their product

THE CHALLENGE

Interactive Motion Technologies creates InMotion robots, which are designed to assist in the therapy of moderate to severe stroke patients as they reacquire and improve motor skills in impaired upper limbs. By taking the patient's own movements as feedback, the robot can taper its assistance and thereby help the patient's brain relearn and regain motor control.

InMotion robots have been at use in hospitals around the world for over a decade, with some models still running on legacy versions of Ubuntu or Red Hat Linux. Because these systems are not on the Internet or local hospital networks, they were often out of date with security patches or experienced other maintenance issues. To maintain these systems, technicians would travel to the sites. In some cases, this meant a $5,000+ expense and overseas travel to delete a single character in a code string: a simple three-minute job if they were able to have remote access. Interactive Motion needed a solution for remotely managing their off-line robots in these various distant locations for:

- Gaining remote access to off-line systems in distant locations

- Securely transmitting data to out-of-date and vulnerable systems

- Making it simple enough as to remove the need for a technician on the other end, avoiding the difficulties of instructing a non-technician over the phone through possible language barriers.

> "The idea that I have this robot I've helped to make, and I expected I'd never be able to connect to again unless I traveled to where it is and typed on the console; suddenly I'm able to take this box, ship it and have them plug it in. And now I'm here in Boston, type a couple commands, and a minute later I'm connected and able to issue commands on this robot. And it's going over the global cell network."
>
> **- Dr. Daniel M. Drucker**
> Scientist
> Interactive Motion

THE SOLUTION: Interactive Motion Connects Their Robots to Home with Opengear Gateways

Interactive Motion deployed Opengear ACM5004-G-E remote management gateways for maintaining the systems of InMotion robots worldwide via secure cellular out-of-band connections. The results have been transformative: service calls can now be completed from the Boston office, and minor robot updates no longer require a tech to travel and be on-site, rendering unnecessary what had been huge cost and time expenditures associated with travel.

Because the connection from Boston to the InMotion robot is not Internet-based but uses cellular out-of-band, and Opengear's gateway provides secure tunneling, the security of the older systems in use is protected. The value added by a low cost gateway and $20/month cell service means Opengear's solution easily pays for itself by saving technician time and travel costs, so much so that Interactive Motion is exploring additional opportunities to integrate Opengear gateways into their products.

Additional benefits to Interactive Motion, as well as to hospitals and patients using their products include:

- Improved operational efficiency and reduced downtime. Rapid robot repairs mean patients aren't left waiting
- Researchers asking for special experiments and features can have those delivered quickly and remotely
- No need for on-site technical support, just ship the gateway, have it plugged in and the updates can be completed remotely
- Technical staff can better invest their time where it's most valuable: developing technology to serve patients

ACM5004-G-E Remote Site Manager

- Complete remote management solution in one box
- Remote site access over PSTN or cellular with smart failover
- Integrated console server, managed router, switch and firewall serial & USB consoles
- Deploy in wiring closets, branch offices, communications cabinets and remote sites
- Military-spec security, FIPS 140-2 validated encryption, stateful firewall, OpenVPN & IPsec
- Environmental and physical sensor alarm notification via SMS, SNMP or Nagios
- Automatically detect and recover from network outages and repair equipment faults

> "We call the Opengear product a miracle! It feels like magic."
>
> **- Dr. Daniel M. Drucker**
> Scientist
> Interactive Motion

Key Features:
Opengear ACM5004-G-E

- Internal 3G modem
- Secure OpenVPN tunneling
- Local session logging
- Extensible root-level scripting access
- Custom dev kit for specialized applications
- Lock down management interfaces with local and remote AAA
- Integrates seamlessly with your existing IT & network management systems

About Opengear:

Founded in 2004, Opengear designs manufactures and delivers the most feature rich, cost effective, flexible solutions for secure remote infrastructure management. Opengear enables companies to access and manage virtually any electronic device on their network remotely and securely from anywhere, even if the network is down, to improve efficiencies and maximize business continuity. The company is headquartered in Sandy, Utah, has substantial operations in the UK and Australia, and sales partners worldwide. For more information, please visit www.opengear.com

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