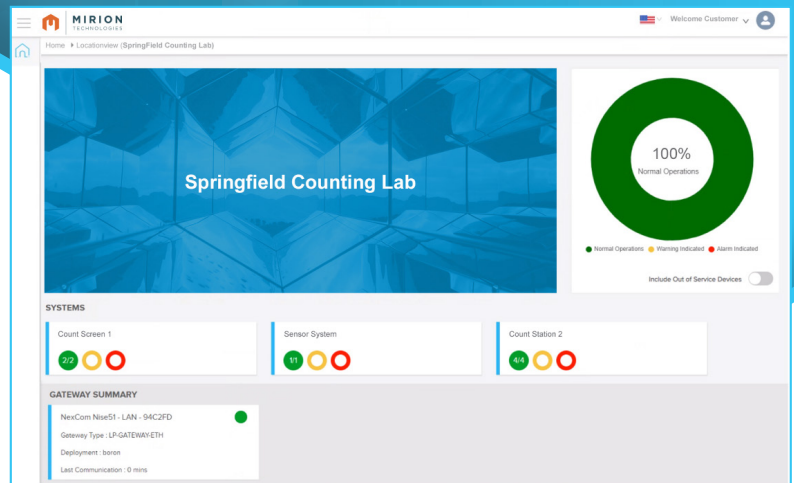




Lab-Pulse™ Services

*Comprehensive value-based services for
your HPGe system*



DESCRIPTION

Lab-Pulse premium Services elevates your visibility, our effectiveness, and together our ability to proactively manage your count rooms.

Lab-Pulse monitoring gives you access to a remote dashboard for real-time status wherever you are and provides you with automatic emails if an instrument has an error.

Instrument alarms are linked with Mirion's Technical Support network, allowing us to respond quickly and effectively when something does go wrong.

Detail periodic reviews of instrument State-of-Health (SoH) data by our technical analyst will capture early warnings of potential servicing needs, allowing for optimum performance and planned maintenance.

Reach out to your Mirion contact to discuss and provide a Demo of Lab-Pulse Services.

WHAT IS LAB-PULSE SERVICES?

First and foremost, Lab-Pulse Services is a Service Offering that complements our Customer Service Agreement (CSA). Mirion's Customer Service Agreements are designed to help ensure your Mirion equipment is operational, providing reliable uptime and maximum return on your investment. Lab-Pulse Services enables our Mirion professionals to monitor your equipment remotely. In case of an alarm or failure, you are quickly notified, and our team automatically begins an investigation and corrective action, whether that is performing remote troubleshooting, scheduling a maintenance visit, or arranging for a factory repair. In addition, the Lab-Pulse system allows Mirion professionals to collect continuous SoH data directly from the instruments that previously has not been accessible. With this additional information, Mirion can troubleshoot root cause failures faster and remotely, as well as identify early warning signs of a potential future system failure. This means that we can better manage uptime of your instruments and your detectors will be online more of the time, ready to count samples.

WHAT IS INCLUDED WITH LAB-PULSE SERVICES?

Lab-Pulse Services includes:

- Automatic notification of alarms for monitored instruments
- Guaranteed response by a Mirion Service expert within the next business day for any Lab-Pulse generated technical support case from instrument alarms
- Access to Lab-Pulse User Dashboard for reviewing instrument real-time status remotely
- Monthly Executive Summary Reports of instrument uptime and Mirion Response status
- Bi-annual Lab-Pulse remote review of Lab-Pulse instruments covered for in-depth SoH status, early failure warning indicators, optimum ambient conditions, and personalized recommendations and action plans.

These features are described in more detail in the following sections.

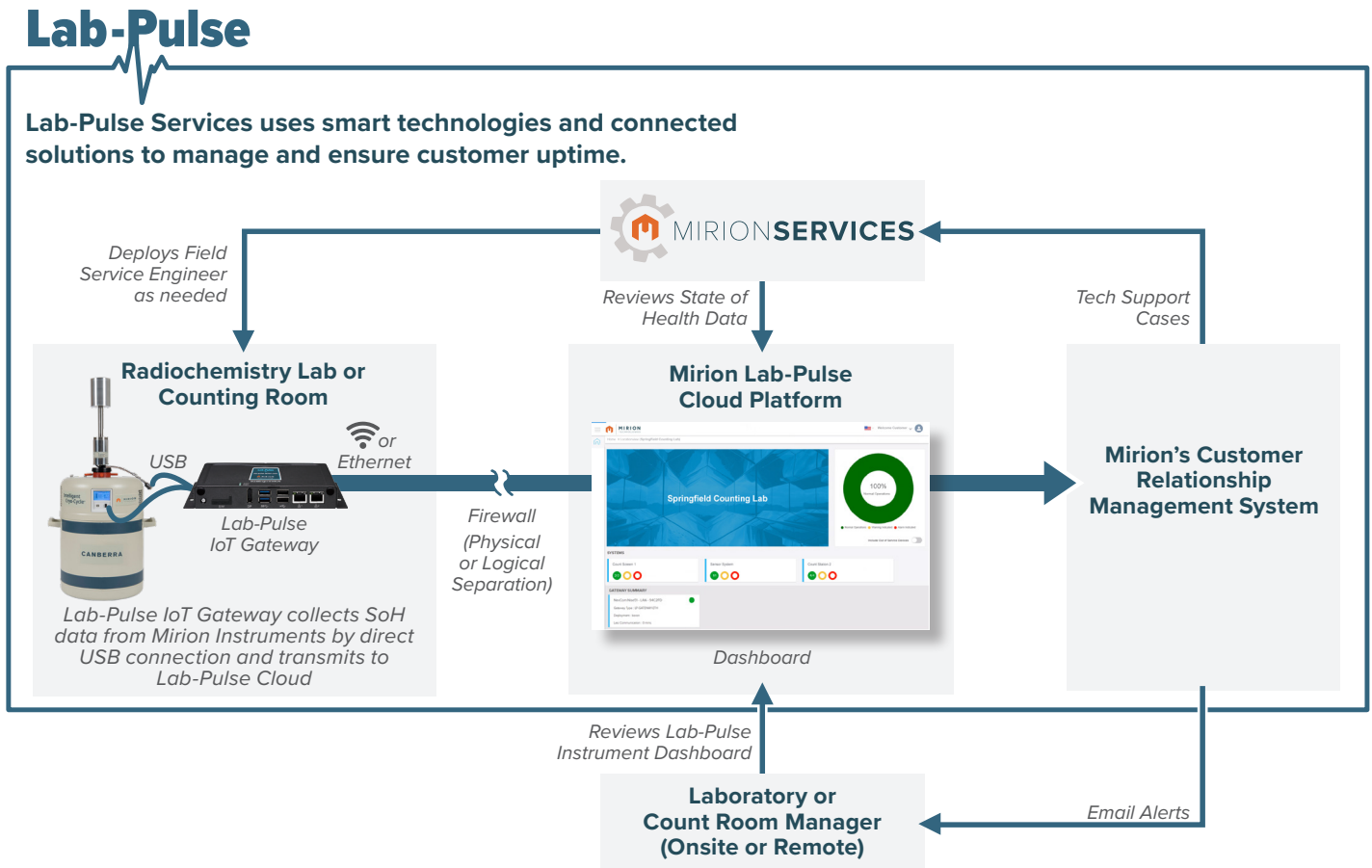
HOW DOES LAB-PULSE SERVICES WORK?

Lab-Pulse Services captures SoH parameters for a variety of Mirion nuclear measurement devices and supported sensors. This information is polled from the devices by a physical “Gateway” device that is located in your laboratory and connected to the instruments by USB. The gateway then

<p>Confidence & Reliability</p> <ul style="list-style-type: none"> • Know your systems will perform during surge operations, such as outages • Fewer spares required 	<p>Better Operational Efficiency</p> <ul style="list-style-type: none"> • Advanced planning for system maintenance • Faster troubleshooting • Fewer emergency visits
<p>Increased Uptime</p> <ul style="list-style-type: none"> • Less lost revenue • Fewer missed deadlines 	<p>Better Return on Investment</p> <ul style="list-style-type: none"> • Equipment lasts longer • Equipment performs better

transfers the SoH data to our Lab-Pulse cloud for storage and analysis. The cloud system manages all system-specific alarm set points and will signal alarm conditions as defined during installation and setup. The system will also signal alarms that have been defined at the hardware level. If any alarms are signaled, Lab-Pulse Services automatically sends an email notification to Mirion Technical Support and your designated site contact. In addition, Lab-Pulse monitoring will automatically create an active case in Mirion’s customer service case management system and the case will be assigned to the appropriate Mirion Services personnel for investigation and corrective action.

The following diagram depicts the various integration points between different systems:



WHY IS MIRION PURSUING LAB-PULSE OFFERING?

Mirion's Lab-Pulse Services is one of our first forays into the Internet of Things (IoT) and cloud-based technologies. We are driven to continually improve and enhance the services and capabilities that we can provide our customers. Leveraging new technologies like these allow us to bring capabilities to you that previously were not possible. Lab-Pulse Services for Gamma Spectroscopy instrumentation is just the first step of our journey. We envision expanding similar capability to a broad range of Mirion products, whether that is contamination monitors or alpha-beta systems.

WHAT IS INCLUDED WITH THE LAB-PULSE SYSTEM?

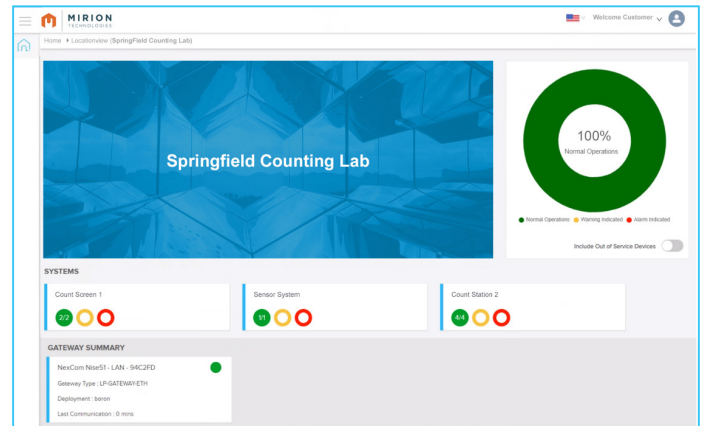
The initial release of Lab-Pulse Services supports the following gamma spectroscopy devices:

- HPGe detectors outfitted with Mirion's iPA™ (intelligent preamplifier)
- The Cryo-Pulse® 5 Plus (CP5-Plus) electrically cooled cryostats
- The Intelligent Cryo-Cycle™ (iCC) Cryostat, a new hybrid cooler for Mirion germanium detectors
- The Cryo-Cycle™ II Plus, a retrofitted hybrid cooler for our legacy CCII systems

In addition, environmental monitors and vibration sensors are provided as needed by Lab-Pulse Services and are installed near the monitored instruments to track the ambient conditions around the instruments.

THE LAB-PULSE DASHBOARD

To help keep you informed of the status of your instruments, Lab-Pulse Services comes with access to the Lab-Pulse Dashboard. Each end-user registered in the Mirion Customer Community portal has a unique username and password, which enables them to view instruments associated with their account. From the dashboard, a user can see whether each Lab-Pulse monitored instrument is operational or in alarm state. A direct link to the Customer Community portal allows users to see the status of their Mirion technical support case, which is automatically created anytime an instrument loses connection or generates an alarm. The dashboard includes a summary graphic to see what percentage instruments are currently operational at any given time.



LAB-PULSE ALARM RESPONSE

The Lab-Pulse connected instruments generate an alarm for one of two reasons: A hardware alarm is raised by the device from alarm setpoints that are programmed into the instrument firmware. These often are displayed by a warning indicator on the device and may include events such as voltages outside of instrument tolerance or loss of power. The second type of alarm is configured by Mirion Services team members after reviewing baseline performance of the instruments. This is set in the Mirion cloud and can be adjusted to the performance of a given system. For example, this may include the wattage draw of a cryogenic cooler or monitoring the ambient temperature conditions for excursions beyond those recommended for best instrument performance.

An alarm from a Lab-Pulse monitored instrument will automatically generate a Mirion Technical Support case and send an email notification to the designated contact person for the account. Additionally, the case will be assigned to a trained Mirion Services team member, who will keep you informed and start corrective actions by the next business day.



LAB-PULSE INSTRUMENT MONITORING AND PERFORMANCE - EXECUTIVE SUMMARY REPORT

Our mission is to maximize the amount of time your instruments are operational and available for your radiation detection needs. To keep you informed of our efforts, you will receive a monthly report of the uptime and status of all your Lab-Pulse monitored instruments at your location. The report includes both a single summary metric of all your monitored instruments as well as a detail breakdown of each individual instrument. Also included is a listing of any technical support cases generated for the instruments during the reporting period and any relevant work orders.

LAB-PULSE BI-ANNUAL REVIEW

One of the most powerful features of Lab-Pulse Services is the ability to develop predictive maintenance for your Mirion instruments. Twice a year, a Mirion technical analyst will perform a detailed remote review of your Mirion instrument. The technical analyst will evaluate the SoH data collected over the reporting period, using 25 explicit tests. These tests compare the performance against baseline data, look for trends of gradual instrument degradation, and lead to recommendations for instrument maintenance to extend instrument longevity and maximize performance. These recommendations are captured by a personalized summary and action plan for your review. Like the Executive Summary Report, the Lab-Pulse Bi-annual Review report also includes a summary of instrument uptime and current status, listing of technical support cases generated and associated work orders. Finally, environmental conditions are reviewed for optimum instrument conditions.



ADDITIONAL TECHNICAL DETAILS FOR LAB-PULSE SERVICES

The Lab-Pulse monitoring system uses an IoT gateway to connect directly to Mirion instruments. The gateway is owned and managed by Mirion to maintain compatibility with the latest product updates, and it is installed and connected by a Mirion Services personnel at your facility. It connects directly to the Mirion instruments by USB, with no need to connect on your instrument or business network. The Lab-Pulse gateway will transmit the instrument SoH data back to the Mirion cloud through one of the following three connection methods: Ethernet, LTE/Cellular, or WiFi. A full list of the parameters transmitted is available with the Lab-Pulse Data Persistence document, which can be obtained upon request. The data is encrypted using RSA-2048 encryption algorithm, transmitted leveraging secure TLS protocol.

Mirion has experts available to discuss and provide a deeper review of the Lab-Pulse monitoring system and implementation on request.

SPECIFICATIONS

Mirion Lab-Pulse Gateway:

- Connects directly to instruments by USB. No need to interface with Instrument Data network
- Gateway devices use auto-provisioning
- Data encrypted using RSA-2048 encryption algorithm and transmitted leveraging secure TLS protocol
- Gateway/Cloud connectivity is supported by one of the following connection modes Ethernet; WiFi; 4G/LTE
- Supports Over-the-Air (OTA) to manage security updates
- Uses Trusted Platform Module (TPM 2.0) for secure provisioning of gateway and storing secret key-pair

Mirion Lab-Pulse Cloud:

- All incoming and outgoing communication authenticated and encrypted
- Only authorized gateways can send data to system
- Connections within the system are also limited to only those required and managed with keys and access control rules

General

- Access to gateway and cloud resources restricted via firewalls and every session is uniquely authenticated
- Telemetry data is encrypted in transit and at rest
- Encryption keys secured and are routinely rotated
- System, policies, and procedures are designed and evaluated against NIST standards
- Periodic Penetration Tests performed and remediations implemented as required