# Predict*Pulse*™
# Predictive remote monitoring for infrastructure management

In a perfect world, you'd have eyes on your IT infrastructure and power management equipment constantly, making sure it's protecting critical assets, running efficiently and replacing parts before they fail. That's not reality though. Your team—however big or small—has more to tend to than just the IT environment. Plus, you don't have a crystal ball to predict failures. That's where remote monitoring and predictive analytics can make a difference. It means a second set of eyes is keeping tabs on your equipment, notifying you of any issues and proactively replacing components during a planned maintenance window.

**PredictPulse** is a cloud-based monitoring and management service that collects and analyzes data from connected power infrastructure devices, providing us with the insight needed to make recommendations and take action on your behalf. It's also powered by CA Technologies, bringing together the best in hardware and software.

**PredictPulse Insight** is the first cloud-based analytics service for data center infrastructure to predict the failure of power components. The new service adds predictive analytics to Eaton's next-generation PredictPulse remote monitoring service, shifting power monitoring from a reactive to a proactive model.

**F·T·N**

*Powering Business Worldwide*

# Why PredictPulse?

Power management solutions involve complex devices that can fail for any number of reasons. Eaton knows these devices inside and out, making us the best source for keeping them running so you can achieve 100 percent uptime.

## 40%
of all UPS failures are due to parts

## 60%
are due to human, design and other errors

## Peace of mind

**Rely on Eaton to:**
- Remotely monitor and manage on site service 24x7 so you can focus on your business and IT priorities
- Manage critical alarms and expedite on site service for any emergency

## Real-time status

**The dashboard and mobile app (see page 4) provides:**
- Real-time status updates, such as alarms and Eaton's response during critical events
- Key performance metrics
- Service history
- Contact information

## Save time

**Make your life easier with:**
- An easy self-installation and registration process using Eaton connectivity cards
- Cloud-based monitoring that requires no special wiring or software
- A secure dashboard that allows you to add, change and delete devices, adjust access permission and set escalation preferences
- Remote diagnostics that allow our experts to predict power failures before they happen

## Reduced risk

**Achieve 100 percent uptime through:**
- Our service that spots issues early to improve the reliability of your infrastructure
- Proprietary algorithms and processes enable predictive analytics, remote diagnosis and expedited repairs
- PredictPulse also manages the collection of monitoring data and sends it to you through secure communication

# Which PredictPulse level is right for me?

| Feature | PredictPulse | PredictPulse Insight | PredictPulse Insight Plus |
|---|---|---|---|
| Increased power reliability | X | X | X |
| Installation in minutes | X | X | X |
| 24x7 monitoring and management by Eaton | X | X | X |
| Remote diagnosis of issues and alarms by Eaton | X | X | X |
| Expedited repairs | X | X | X |
| Access to real-time device and alarm data | X | X | X |
| Performance and device health insights | X | X | X |
| Secure data transfer | X | X | X |
| Predictive analytics to identify component failure | | X | X |
| Predictive parts: VRLA batteries, capacitors, fans, filters, power modules[1] | | X | X |
| Verification visit before proactive component replacement | | X | X |
| Reduced downtime from part failures by 75% | | X | X |
| Baseline health inspection and firmware updates | | X | X |
| Cost of proactive component replacement included (except batteries[2]) | | | X |

[1] Power module predictive availability in 2017

[2] Battery replacement coverage may be purchased separately (Full Battery Coverage), but capacitors, fans and other parts are eligible for proactive replacement coverage with PredictPulse Insight Plus
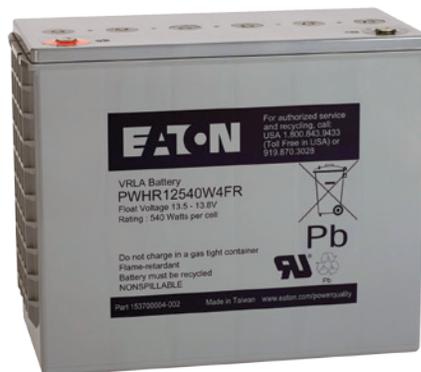
# How do you predict the risk of component failures?

**Batteries are a great example.**

VRLA batteries are a leading cause of UPS failures since they provide the power backup supply and degrade over time. Here are some of the critical inputs we capture and trend over the life of a battery:

- Battery make and model—define maximum and average life based on UPS rating
- Frequency and depth of battery discharge in minutes and percentage
- Temperature
- Age of battery
- UPS load percentage
- Battery test results measuring voltage and resistance over time based on battery age
- UPS operating mode
- UPS service history compared to similar UPSs with same battery make and model
- UPS logic and battery alarms
- Battery inspection test results
- UPS application

After inspecting and onboarding an Eaton UPS for PredictPulse Insight, Eaton will:

- Callibrate algorithms to specific batteries baed on age and condition
- Respond to a predictive alert by arranging a planned maintenance inspection



**Eaton 12V 540-watt battery**

# How it works

**Getting started**

- PredictPulse works with compatible Eaton UPS devices with a standard Eaton connectivity card and an environmental monitoring probe connected to your network's email SMTP server
- Eaton uses one-way outbound emails to transmit all data and alarms—we don't expose your network since Eaton never needs to come back through your firewall

**Online portal and reporting**

- Your real-time dashboard aggregates data from all subscribed devices
- You receive a monthly and device detail report that summarizes the most recent 30 days of status, overall performance, alarms and system health

**Device data, transport and security**

- PredictPulse uses SMTP Relay to transport data from subscribing devices to Eaton computers
- We use industry standard security, reliable connectivity and your email server to transmit data, ensuring that data only flows out and never back in
- We adhere to rigorous IT security and data protection processes and built PredictPulse on the CA Technologies platform, an industry leader in IT security applications

**Alarm management and customer support**

- We monitor and manage all subscribing device alarms 24x7
- Our alarm technicians acknowledge all critical alarms within 15 minutes, push them to your dashboard and mobile app and respond per an agreed-upon procedure
- An unlimited number of contacts and prioritization can be added to your PredictPulse subscription to ensure timely alarm notification and emergency mitigation

**Predictive analytics**

- PredictPulse Insight combines data, intelligence, proprietary modeling tools and experience of how UPS parts perform and fail to predict the probability of a component needing to be replaced
- This information inverts the service model from reactive to proactive, where an issue can be fixed before it's a bigger problem
- Algorithms will improve over time thanks to the data coming in from a fleet of deployed UPSs
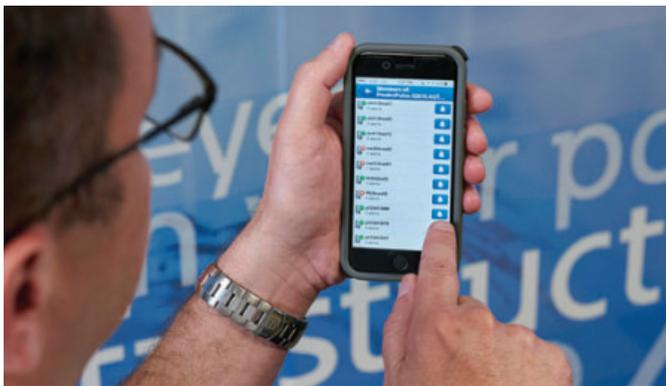
**Service contract integration**

- Customers who subscribe to PredictPulse will see enhanced integration with field service technicians
- Technicians can access and use the service history, fleet service trends, device data and algorithms integrated into PredictPulse
- When emergency repairs are needed, technicians review the impacted device's data and come prepared with the correct parts, saving time and costly downtime expenses



**PredictPulse uses connectivity cards in our UPSs, like the 5PX, to send data to our monitoring center every 15 minutes.**

# PredictPulse dashboard

**EAT·N PredictPulse™**



1. **Duration** – Time period covered in the dashboard
2. **Connected devices** – List of managed devices reporting data
3. **Critical alarms** – Current critical alarms from all managed devices
4. **Asset management** – Connected devices and their details, service history, planned service and alarms
5. **Relative performance index** – Measurement of your system's performance based on the weighted average of data for all managed devices (scale of 1-10, where 10 is perfect)
6. **Availability** – Measurement of uptime based on the total minutes your managed devices have been offline and total minutes in the duration time period

7. **Load percentage** – Amount of power you're using based on overall capacity
8. **Temperature** – Average temperature from sensors on managed devices
9. **Humidity** – Average humidity from sensors on managed devices
10. **Battery** – Current battery health of all managed devices with batteries
11. **Energy savings** – Estimated sum of savings for managed devices that use the Eaton Energy Saver System
12. **Service level** – Measure of actual Eaton response time to the contract response time and repair time to the national average



## When you're on-the-go, the PredictPulse mobile app keeps you connected to your devices by providing an overview of open alarms.



## To learn more about PredictPulse, visit **Eaton.com/PredictPulse**

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