

Keep equipment—and customer relations—running smoothly.

Solution brief

Condition Based Maintenance transforms reactive operations into proactive ones.

Traditionally, equipment maintenance meant reacting to the latest machine breakdown or equipment failure. It often required halting a production line, or shutting down operations while a service technician was called and dispatched to make repairs.

Or, worse yet, entirely replace the machine.

Now, with Verizon Condition Based Maintenance (CBM), you can get ahead of repairs—and the competition—by adopting a proactive maintenance model. Rather than wait until something goes wrong, you can remotely monitor any equipment with an embedded module to reduce the risk of downtime or failure.

While our CBM solution was initially designed as a remote monitoring solution for industrial machinery, we've added a critical new feature: Edge Management and Monitoring, which expands the platform's remote monitoring capabilities to edge gateway devices and embedded PCs.

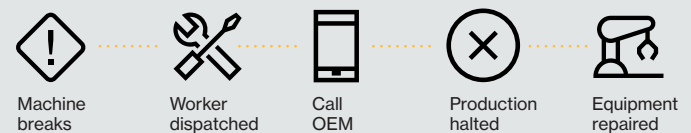
That means you can service machinery before problems happen, reducing downtime and frustrated customers.

CBM now provides:

- Proactive and predictive intelligence
- Remote access
- Device health with visualization
- Workflow-based alerting capabilities
- Ticketing and reporting
- System configuration for remote troubleshooting
- Software and patch distribution
- Integration into third-party applications

Reactive

Traditional equipment maintenance



Predictive and proactive

Verizon Condition Based Maintenance



Who could benefit from CBM?

With CBM, you can manage and monitor any device with an embedded module, including:

- Healthcare monitors
- Factory automation
- Transportation
- Security systems
- Digital signage
- Facility management
- Robotics
- Smart buildings
- Automated point of sale
- Internet of Things (IoT)-enabled consumer and smart home products
- Much more

Condition Based Maintenance architecture



CBM, which is delivered as a service on our Asset Tracking and Management IoT platform, transforms physical assets into virtualized, software-based models with integrated analytic fields. Third-party sensors are connected to the equipment and, using IoT Security Credentialing architecture, securely relay diagnostic data to the Condition Based Maintenance platform, so you get the insights you need to keep your equipment up and running smoothly.

Powerful data aggregation delivers intelligence from:

- Full location-based services and a GPS data engine
- Application programming interface (API) connectors to business intelligence (BI), enterprise resource planning (ERP), enterprise asset management (EAM) and customer relationship management (CRM) systems

Diagnostic key performance indicators (KPIs), like runtime, temperature, kWh and energy use can be aggregated to transform and enrich raw data from equipment, assets and machines into meaningful, actionable information. This can help you:

- Take action to prevent equipment failures
- Decrease mean time to repair (MTTR)
- Increase mean time between failure (MTBF)
- Measure overall equipment effectiveness (OEE)
- Maintain overall asset health and performance

With the inherent rules engine and data analytics, you get key insights on critical events, statistics, algorithms and KPIs, to help you make better-informed decisions.

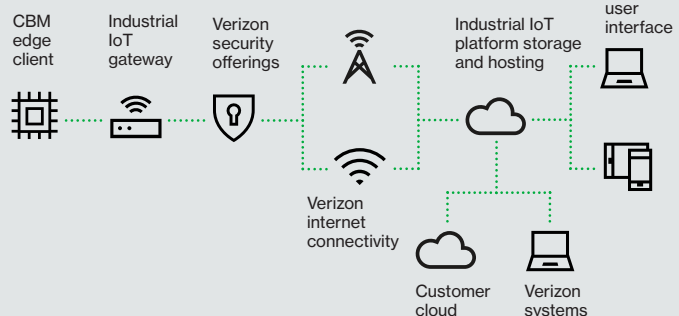
Edge Management and Monitoring architecture

Customized to your business

The CBM platform can be customized with your branding and API integration for third-party management apps, like workforce automation and fleet management.

Business analysts, product managers and mechanical engineers can easily calculate complex aggregations across one or a family of connected devices, using CBM's built-in analytics. And the data can be graphed on your customized dashboard or displayed in your own application. You can add building or site diagrams and overlays, too.

Solution architecture

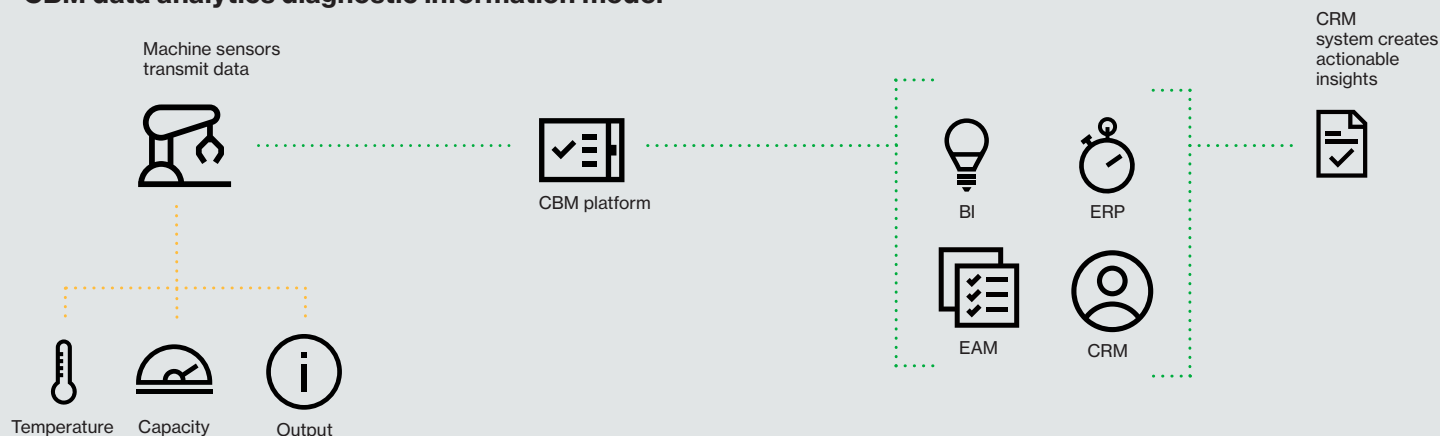


The platform also makes it easy to define the logic, workflow and algorithms specific to your operations. You'll also benefit from inherent, rules-based analytical capability, plus multilevel, role-based access for deployment that enables:

- OEMs to gain visibility across all levels and all accounts
- Service providers to see their geographic region and customers
- Customers to access and monitor their own equipment

We can help you apply your customized dashboard elements and vertical template apps to create a unique monitoring console with data visualization, tables, charts, graphs, maps, dials and gauges.

CBM data analytics diagnostic information model



Advanced features

You can further streamline and improve equipment life-cycle and data management with these advanced CBM features:

- ThingSpace Manage—device connectivity manager for wireless
- Data normalization and data storage across different asset types
- Asset data use and diagnostics
- Physical asset tracking and service/warranty management
- API integration with enterprise applications, i.e., service management, CRM, ERP, etc.

How can CBM help you?

By adopting a proactive maintenance model, you can:

- Save money by repairing equipment, rather than replacing it
- Increase use and extend equipment life
- Simplify asset management and maintenance

Why Verizon

Our expertise in IoT, networking and cloud solutions can help you create a more responsive and predictive CBM solution, customized to your business needs.

Learn more:

Contact your Verizon Business Account Manager to learn more about how Verizon CBM can help your business become more proactive and less reactive.