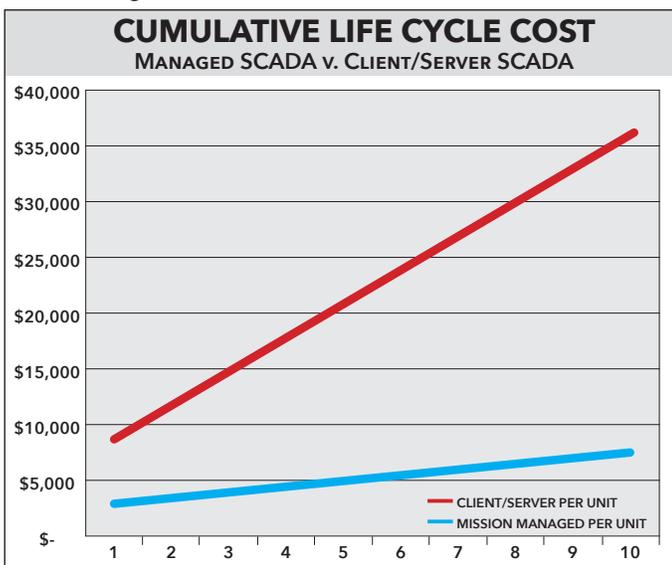# Managed SCADA

What is Included?

You may wonder exactly what is included in the annual service fee purchased with a field Remote Terminal Unit (RTU). What are the actual ongoing costs of the Mission system? Are there any hidden fees? Do I have to buy cellular service to make the RTU work? What about excess messages – are there charges for excessive alarm notifications? Are there any software licenses I have to purchase? How many people can use the system? How long do you keep RTU data? What happens if my RTU is damaged? What about security?

Here's the bottom line: the Mission annual service fee includes everything your utility needs to run your Mission unit in a secure fashion with no risk of hidden fees. This includes all cellular service, the servers that manage and archive the data, web portals, reports, and alarm functions. Mission offers a few optional functions ("Tank and Well" controller software, "OPC Data Transfer," expanded I/O) at additional cost, but the majority of our customers simply buy the RTU and the annual service. You then use your existing computers, smart phones, or tablets to access the SCADA system via the secure web logins.

CUMULATIVE LIFE CYCLE COST
Managed SCADA v. Client/Server SCADA

Legend:
- CLIENT/SERVER PER UNIT
- MISSION MANAGED PER UNIT

Guaranteed Price Stability

Mission pledges a predictable cost of ownership and has guaranteed that the annual service fee will never increase more than the rate of inflation. This guarantee has been in effect since the company founding in 1999. To date, the annual service fee has not been increased. No competitors make the same written pledge. For more information, see the Business Performance Guarantee on the back page of this document.

Software as a Service (SaaS)

Mission combines Software as a Service (SaaS) with purpose-built hardware to provide a highly reliable and cost effective "turn

Executive Summary:

Cellular Services
- Cellular airtime; no overages
- Direct relationships with AT&T, Verizon, and Telenor; managed by Mission; other carriers are available through Telenor
- Secure socket connections for responsive telemetry

Alarm Notifications
- Via phone, fax, email, web, pagers, or text messages; no toll charges
- Sophisticated call-out destination and schedule options
- Alarms can be acknowledged via all methods but fax and pager; toll free number for alarm acknowledgement
- Call-outs recorded and available for review from web portal
- Numerous nuisance alarm reduction features

The User Interface and System
- Web portal built with state-of-the-art technologies; live data feeds, infinite scrolling, responsive window sizing, active graphics, and more
- Mobile app for smartphones and tablets (123SCADA)
- Customizable overview map shows all units at a glance
- Over 50 reports, data views, charts, and graphs optimized for the sensors and features of the RTU
- All historical data available for comparative analysis or download to a spread sheet
- Powerful analytical tools like Supergraph
- All systems managed, hosted, and enhanced by Mission

Options and Advanced Features
- Optional automated remote control features like Tank and Well Control, Pulse Based Automated Remote Control, Digital and Analog Interconnect
- Optional real-time OPC link for customers with traditional SCADA HMI
- Expansion boards and service plan for additional data requirements beyond the built-in I/O

Security
- Data from RTU to servers is encrypted by Mission and sent by carrier over private networks
- RTUs cannot be accessed from the public internet
- Web pages accessed via TLS 2048-bit key encryption
- Logins require credentials; Superadmin can maintain access control list
- Best practices enforced for networks, routers, firewalls, malware protection, and physical access

Support and Warranty
- Toll-free, no-cost technical support
- One-year parts warranty
- Replacement costs guaranteed not to exceed $250 for main board or radio
- Technology and obsolescence guarantee
- Complimentary training and webinars

key" system. The SaaS business model allows you to get more features with less effort at a substantially lower cost than can be achieved in-house. This business model is ideal for applications that are repeatable, like collection system monitoring and smaller water systems.

The engineers of Mission design the electronics and author the software, so we are in full control. Since the data is presented over the web, enhancements are provided system wide with no effort on your part. By combining standardized field hardware, national cellular data networks, and full-featured SCADA software into a single solution we are able to provide a reliable, managed service specialized for the water/wastewater industry.

Mission operates its SCADA service from a carrier grade data center located near Atlanta, Georgia.

You have enough to deal with when managing your water/wastewater system. Let Mission manage the monitoring and SCADA system for you.

The Alternative to Managed SCADA

Before Mission, the only way water utilities could harness the benefits of automation via SCADA was to build their own proprietary system. This required going through the specification and bid process and then managing the engineering, construction, and debugging phases of a new technology. This is a time consuming and expensive proposition. Once the system is running, IT staff is generally required as well as software support agreements.

In-plant processes, like treatment plants and water manufacturing, best served by traditional client/server SCADA systems can accept data from the Mission system via an optional OPC link. This eliminates the complexities of maintaining a utility-wide communications network for the remote assets associated with a collection system.

Included with the Mission Annual Service Fee:

On Boarding – After setup forms are received, Mission staff configures the web portal, labels RTU inputs, and enters the call-out destinations for each customer. Mission Technical Support is available to discuss best installation practices and help test inputs before units are put into production. With minimal training you can adjust virtually all system parameters from the web portal. With a smartphone all of the conveniences of the web portal are available in the field. Free training webinars are held weekly to quickly acclimate new users.

Support – A large part of the Mission value proposition is technical support. Users can talk directly with Mission Technical Support Specialists, use the ticket section of the web portal, or email questions to techsupport@123mc.com. Mission maintains a team of technicians for live telephone technical support from 8am to 7pm eastern. After hours support is always available on a responsive callback basis for emergencies at no extra charge.

Current Status – Upon login, the Map view displays all your units on a local, customizable map. Clicking on the RTU icons displays additional information such as levels, pressures, or flows. Color codes are used to reflect alarm states, faults, or items of interest. Animated icons show pump running status for real time units.

Alarm Reporting – The Mission system has unparalleled alarm reporting functions. The system can dispatch over 40 phone calls per minute and is scaled as our installed base increases. From the web portal, you can set up your "address book" of alarm recipients and your alarm call-out schedule. This even includes Mission's exclusive call recording feature that allows you to playback recordings of alarm call-outs, eliminating any questions regarding received alarms. The system has a number of nuisance alarm reduction features that eliminate annoying alarms. Alarm notification outcomes are logged. Unique day, night, and weekend schedules are supported and easily setup via a drag-and-drop interface.

Mobile Device Application – The 123SCADA application is available for free download from your app store. Respond to alarm notifications or look at full data from the easy-to-use interface. The mobile app makes on-site RTU setup and configuration easier than ever before. Through the app, users can scan the QR code on their RTU and receive a prompt to access RTU view, RTU info, and RTU config for the selected device. These options allow users to configure RTU call-out settings, view the status of device inputs, and change basic device information.

The integration of geolocation allows users to indicate the location of a device without manually inputting coordinates. Additionally, if they choose to share their location, staff members can be found on the map with location markers. This feature streamlines workflows by providing the ability to route and coordinate service calls.

Using the mobile device camera, users can take pictures of site equipment such as RTUs, antennas, enclosures, and expansion modules, and submit them directly to a support ticket, making it even more efficient for Mission Technical Support to troubleshoot and resolve system issues.

Cellular Data – All cellular charges for data used by your RTUs are included in the annual fee. Mission buys airtime in bulk and aggregates it across thousands of RTUs. There are no separate overage charges or early termination fees. Mission

has designed its RTUs to send and receive data very efficiently. In the rare case that we notice a run-away sensor, our technical support team will assist you in resolving the issue so that you receive useful data. Mission understands water and wastewater applications, and we know how much data pump stations, wells, tanks, and instruments require. With nearly 30,000 RTUs deployed, we are the largest purchaser of cellular data airtime in the water/wastewater industry.

Mission monitors the connection status of field units. Technicians are alerted when we see a general reduction of the online units in your area. Since Mission is in control of all aspects of the system we can quickly identify the problem and address it internally, get the cellular carrier involved, or assist you with the resolution of a local issue.

Ready-Made Reports and Data Folders –

- Alarm, alert, and dispatch logs with easy access to call recordings
- Pump information: runtime, starts, alarms, daily, monthly, variance (displayed in tables and graphs)
- Digital data
- Analog data (displayed in tables and graphs)
- Flow data
- Rainfall from national weather service or local tipping bucket (tabular data, graphs, and integrated with other reports like pump runtime)
- Specialty reports- SSO/CSO (sanitary sewer overflow/ combined sewer overflow), SDWA (Safe Drinking Water Act), chlorine, etc.
- Engineering reports: capacity estimator, volumetric calculations
- Weekly management reports for overall system performance
- Disabled inputs reports
- Site access reports: electronic keys
- Web site access: by user and IP address
- Unit health: check-in history, cellular connection history, voltage reports, solar data

Commands – MyDro 150 and MyDro 850 feature three output relays that can be controlled from the web portal with the appropriate password. Use these to manually command pumps or open and close valves. MyDro 850 units can be automated via digital interconnect, where a change of a digital input at one location begets a relay change at another. Use the optional Tank and Well solution to automatically close relays based on an analog value at another location. An optional analog output board is available for setting remote variable values, or with real time units mirroring one analog value to another location.

Continuous Enhancements – Unlike traditional SCADA software that is installed and maintained locally, Mission's SaaS

Security:

Remote Terminal Connectivity

Mission adopts multiple measures to ensure that data is protected at every step – from RTU to end-user. The Mission RTU is purpose-built; it functions for a specific set of tasks, is programmed to understand very limited protocols, and operates without Windows or Linux and their vulnerabilities. The RTU cannot accept an outside connection from an unknown device; the IP address is assigned within a private range. From the RTU to the carrier, Mission encrypts the over-the-air data using two algorithms, one at the application layer and the other at the wireless carrier level. Once the encrypted data reaches the cell towers it is forwarded to the Mission servers over encrypted private networks (VPNs).

Servers

Mission servers are located in a high security data center that requires biometric scans for entry and is guarded 24 hours per day, seven days per week. Access is limited to a small number of Mission personnel. The facility is engineered to withstand a direct F-4 tornado strike and is surrounded by an eight-foot security fence. The site has multiple electric utility interconnects encased in concrete from the substation to the site and 26 MW of generator capacity to last 72 hours. Redundant cooling and fire suppression systems are also in operation. Connections to the internet backbone consists of multiple peering connections accross 14 carriers, redundant internal networks, and a 24-hour network operations center.

Web Access

Once the data is delivered to our servers, it is made available to you via 2048-bit Transport Layer Security (TLS) encrypted website. All activities are logged and monitored. Repeated failed logins are blacklisted by IP address. Access from outside of US and Canada is automatically flagged.

Defense in Depth Security Strategy

The defense in depth security strategy involves layering security measures into the system. Firewalls are configured to minimize entry points and require high levels of validation; VPNs are used to secure the constant connections with cellular providers. Antivirus and antispam tools are used to block malware. The overall system is monitored from several vantage points, which alerts Mission engineers to any anomaly immediately. Mission follows industry standard best practices with respect to configuration and maintenance of all tools and sub-systems.

Practical Issues

Internal threats and shared, stolen, or casual passwords account for many security breaches today. Employing best practices within your organization can reduce security threats. Mission offers five levels of user credentials – public, read only, operator, administrator, and superadministrator. It is recommended to assign a superadministrator to maintain credentials for all of your users. User accounts require a minimum of 6 characters and must include a number. The general rule holds that passwords should be changed every six months.

Comparison of Alternatives

Cellular communications reduce the risk of interception at the RTU due to the complex modulations and the spread spectrum nature of modern radio access technologies. With private radio network (PRN) and wireless ethernet based SCADA systems, the customer must commonly implement encryption on their own. Many private radio based systems are unencrypted and point-to-point wireless. Ethernet WPA/WEP key standards are notoriously easy to circumvent. The beauty of the Mission managed service is that security issues are outsourced to the cellular provider and the professionals at Mission, leaving you to focus on what you do best.

system is continuously maintained and enhanced at our central servers. The enhancements and new features developed by the engineers of Mission are immediately available to you at no extra charge. Each year Mission develops new features, some big, some small, all with a focus on the water and wastewater industry. Your investment with Mission grows in value over time!

Software and Database Maintenance – The Mission engineering team maintains, archives, and optimizes the system continuously. Terabytes of data are stored on high-speed Storage Array Networks. With a staff of engineers, Mission maintains a more responsive and reliable system for you.

Hybrid Systems – The optional OPC Data Link is used to synchronize RTU data on Mission servers with a traditional SCADA-HMI server(s). This allows operators to look at one system while receiving the advantages of managed and low-cost RTU connections. OPC security is assured via credentials and an optional VPN.

Low Risk Field Hardware – After the one year hardware warranty expires, Mission provides a low cost replacement parts commitment. Simply stated, the main circuit boards or radios will not exceed $250. In addition, we offer a technological obsolescence guarantee that eliminates your risk of an orphaned technology. These are some of the ways we have maintained an attrition rate of less than 1% per year.

Business Performance Guarantee:

Service Price Stability Guarantee

For as long as the customer chooses to use the Mission service the annual price will not increase from the initial term price by more than the amount equal to the annual compounded inflation rate as determined by the US Bureau of Labor as measured year-to-year from the start of the initial service term for the unit or as measured year-to-year from the mutually agreed annual service renewal date. This date must be mutually agreed upon by Mission and the customer.

Replacement Hardware Price Stability Guarantee

Replacement components for the originally purchased remote terminal units (RTUs) will be no higher than $250 for the radio module and $250 for the unit's main printed circuit board (PCB). Replacement costs for the Manhole Monitor will be no higher than $450 for the entire Manhole Monitor electronic assembly. Due to conformal coating of the Manhole Monitor unit there will be no sub-assembly replacements.

Technology Guarantee

Mission guarantees to the customer that the radio telemetry technology will be available for use by the customer as long as the customer wishes to utilize the service of Mission. If the original installed radio telemetry technology becomes unavailable or unusable for any customer unit, then Mission will at its sole expense, provide to the customer hardware for the customer to swap out and replace the non-performing unit's radio telemetry module hardware. The new radio module technology will be equal to or better than the original radio telemetry technology. Such equivalency is to be approved by the customer and such approval is not to be unreasonably withheld by the customer. If Mission cannot make such equivalent radio telemetry technology available to the customer within 120 days of the original radio telemetry cessation, then Mission maybe required by the customer to refund any prepaid service fees paid by the customer, minus any used service fees while the radio telemetry performed to the above standard for Service Performance, plus the sum of $500.

Obsolescence Guarantee

From time-to-time Mission intends to introduce hardware and service improvements to existing hardware models and to introduce new hardware/service offerings. Customers utilizing the managed service offerings of Mission (standard monitoring service) may wish to upgrade previously installed equipment to the newest model offering. Customers may trade in and/or upgrade equipment for a price equal to the new model price minus the current trade in value for the existing field equipment. The trade in value is defined as being 100% of the original purchase price in the first year (from date of purchase), 80% of purchase price in the second year, 60% in the third year, 40% in the fourth year, 20% in the fifth year and no trade in value thereafter. Additionally, if the new equipment has a higher annual service fee associated with it, the new fee will be applied to the customer's annual service at the time of field commissioning going forward. All the above are part of, and included in, the Mission annual service fee. Whether you use the legacy series, MyDro series, or the Manhole Monitor all the Mission SCADA services are included.

Mission is simply a better way to perform SCADA.

MISSION
C O M M U N I C A T I O N S

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