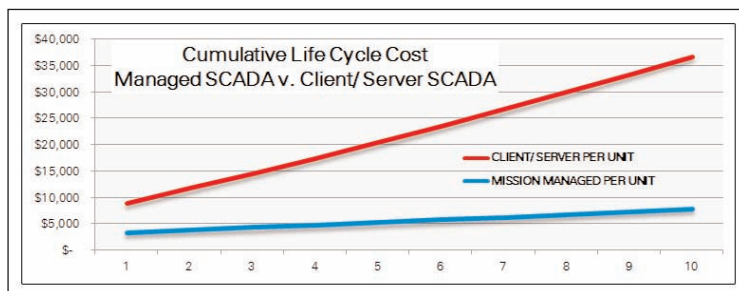# Managed SCADA

What is Included?

You may wonder exactly what is included in the annual service fee purchased with a field RTU (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

CLIENT/SERVER PER UNIT
MISSION MANAGED PER UNIT

Refer to Lifecycle Costs document for more information.

Guaranteed Price Stability

One of Mission's unique business pledges is that the annual service fee is guaranteed never to increase more than the rate of inflation – we like to call it "Predictable Cost of Ownership." Mission has guaranteed this, in writing[1], to all our customers since we were founded in 1999. To date we have not increased the annual service fee. To the best of our knowledge, none of our competitors have put a similar pledge in writing.

Executive Summary:

Cellular Services
- Cellular Airtime; No Overages
- Direct relationships with AT&T, Verizon, Sprint, and Rogers; managed by Mission
- Secure Socket Connections for Responsive Alarming[2]

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
- Callouts Recorded and Available for review from Web Portal
- Numerous Nuisance Alarm Reduction Features

The User Interface and System
- Desktop Web Portal for Full Screen Computers
- "Mobi" Web Portal optimized for Smartphones and Tablets (123mc.mobi)
- Customizable Overview Map shows all your 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 spreadsheet
- Powerful Analytical Tools like Supergraph
- Real Time Viewer – Desktop Application for a customizable HMI-like view of Real-Time Units (M800 Model)
- All systems managed, hosted and enhanced by Mission

Options and Advanced Features
- Optional Tank and Well Control System
- 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 SSL V4, 1024 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
- Technological Obsolescence Guarantee
- Complimentary Training and Webinars

[1] See Business Performance Guarantee on Back Panel
[2] Battery and solar powered devices operate in low power/awake on exception mode

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 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. According to CIO Magazine, utilities are the third largest users of SaaS behind Technology and Financial Service providers[3].

Mission *operates its SCADA service from a carrier grade computer co-location center located near Atlanta, Georgia.*

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.

You have enough to deal with when managing your water/waste water 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 – With a few simple forms Mission staff sets up your web portal, labels the inputs to your RTUs, and configures the call-out list. For installers, our technicians are available to discuss best installation practices and help test inputs before the unit is 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 big part of the Mission value proposition is technical support. You can talk directly with our technicians or use the ticket section of the web portal. Mission maintains a team of technicians for live telephone technical support from 8am to 6pm eastern. After hours support is always available on a responsive callback basis for emergencies, and at no extra charge.

Current Status – Upon login, the Main Map page 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. Complex time-of-day/day-of-week scheduling and conditional alarm rules can be setup by Mission Technical Support staff.

Mobile Device Website – Mission provides a special website optimized for smartphones and tablet computers (123mc.mobi.) The mobile web site allows you to check current status and respond to alarms while on-the-go. Installation and testing is easier and faster with .Mobi at the job site!

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 accurate data. Mission understands water and wastewater applications and we know how much data pump stations, wells, tanks, and instruments require. With over 13,000 RTUs in the field, 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

Real Time Viewer – This software allows you to watch streaming data from real time units in a control room type of environment. View pumps starts and stops within seconds of occurrence and see graphs of levels, pressures, or other instrument values updated in real-time. This software is a desktop application, not a web page, but is launched from the web portal.

Commands – Models M110 and M800 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. Real time units can be automated via digital intertie - 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 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,

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, understands 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

The Mission servers are located in a high security server facility that requires biometric scans for entry. Access is limited to a small number of Mission personnel. The facility is engineered to withstand a direct F-4 tornado strike. The site has multiple electric utility interconnects encased in concrete from the substation to the site, 7.2 MW of constant flywheel uninterruptible power supplies, and 72 hours of backup generation capacity. Redundant cooling and fire suppression systems are also in operation. Connections to the internet backbone consists of four OC-4 fiber feeds, redundant internal networks, and a 24 hour network operations center. These levels of redundancy and security are expensive but reasonable when shared by hundreds of customers.

Web Access

Once the data is delivered to our servers, it is made available to you via 1024-bit Secure Socket Layer (SSL) protocol. 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. Antivirus and antispam tools are used to block malware. The overall system is monitored from several perspectives so Mission engineers know of any anomaly immediately. Mission follows industry standard best practices with configuration and maintenance on 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 four levels of user rights – view only, user, administrator, and super-administrator. It is recommended to assign a super-administrator to maintain credentials for all of your users. 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 because the complex modulations and the spread spectrum nature of GSM and CDMA technologies. With private radio 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.

some big, some small, all with a focus on the water and waste-water 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 – Our Optional OPC Data Link is used to synchronize RTU data on our servers with your traditional SCADA-HMI server(s). This allows your 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 M-800 series unit will be no higher than $250 for the radio module and $250 for the unit's main printed circuit board (PCB). Replacement components for the M-110 series units will be no higher than $250 for the main PCB and $250 for the radio module. Replacement costs for the M-80 will be no higher than $450 for the entire M-80 electronic assembly. Due to conformal coating of the M-80 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 M-80, M-110, or M-800 all the Mission SCADA services are included.

Mission is simply a better way to perform SCADA.

MISSION

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