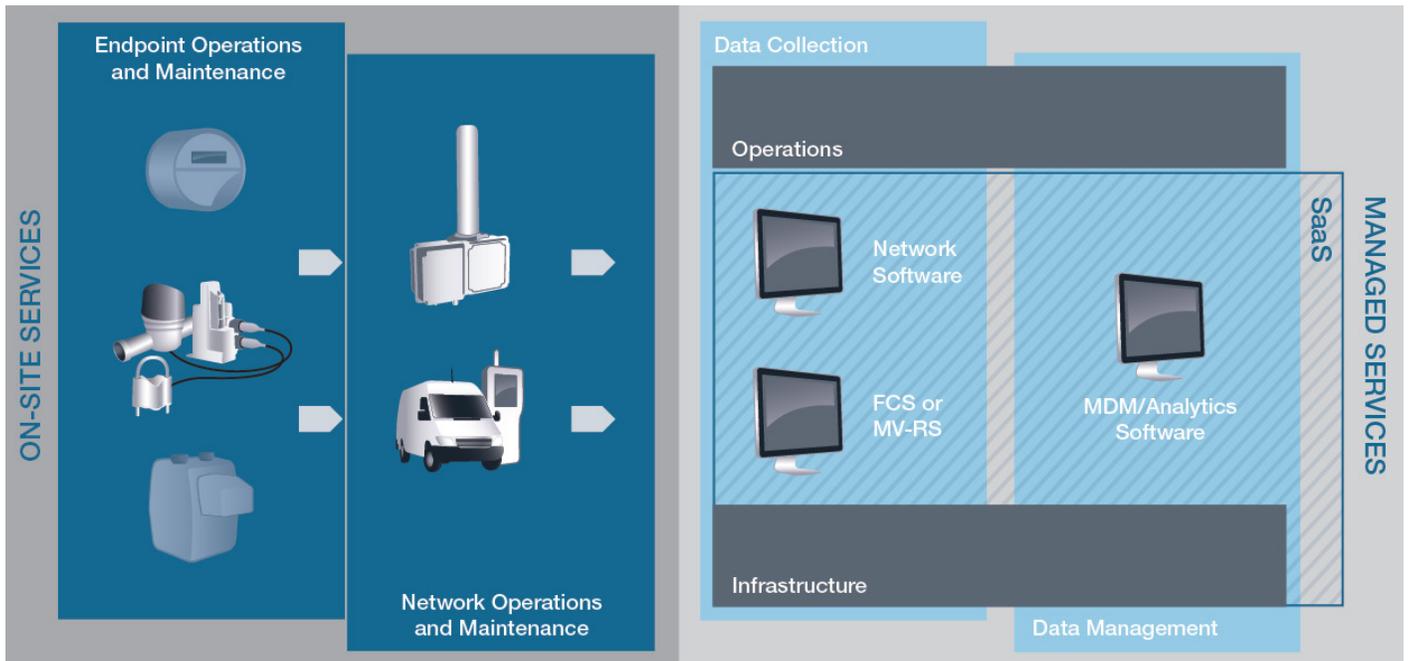


Itron Cloud Services Offering

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INTRODUCTION

Experience, economies of scale and virtualized system resource optimization allow Itron to offer our services for less than what it would cost a Utility to own and operate a similar system. Because we have a team of dedicated, knowledgeable experts on staff to manage your system, setting up a solution in the Itron Cloud Services environment simplifies the implementation process and allows you to realize the benefits of the system faster.

Itron offers a variety of cloud-based Software as a Service (SaaS), Managed Service, and On-site Managed Service models—all of which are tailored to your specific operational and business requirements. These services support a variety of advanced capabilities, including: meter data collection, analytics, meter data management, customer care, web presentation, workforce management and load management programs.

TYPES OF SERVICES

Itron has an unequalled track record of success in delivering smart metering solutions. As the industry leader, we currently provide cloud-based operations for more than 250 utilities throughout North America.

Software as a Service (SaaS)

- » Itron provides our customers with application client and/or web browser access to Itron applications running on a private cloud infrastructure.
- » Itron manages and controls the underlying cloud infrastructure, including network, servers, operating systems and storage.
- » Our customers have operational responsibilities for their application/solution services and configuration settings.

Managed Services

- » Itron provides all services described in SaaS and has operational responsibility for some or all of the consumer's application/solution services and configuration settings.

On-site Managed Services

- » Itron has responsibility for the field network hardware and/or endpoint operations and maintenance (AMI or AMR systems).
- » Itron performs meter reading and endpoint maintenance and provides read data to customer.

BENEFITS

- » Reduce capital expense for lower total cost of ownership (TCO)
- » Better predict and control costs
- » Rapid deployment and accelerated benefit realization
- » Immediate scalability to match business needs
- » Maintain operational effectiveness while focusing on core business objectives
- » Reduce IT burden on existing staff while minimizing overhead and training costs
- » Avoid additional facility costs (power, data center space, network equipment, and so on)
- » High availability, enhanced security and reliability
- » Operations and support provided by dedicated, experienced subject matter experts

INFRASTRUCTURE

Data Center

Itron Cloud Services meets your business needs by offering a variety of applications and scalable services for gradual deployment increases. Additionally, we can implement systems in an Itron-owned data center or in a qualified third-party private data center to meet your business requirements. Itron's data centers are state-of-the-art facilities designed to manage and secure both systems and data for utilities of all sizes and with a variety of business needs.

Itron data centers operate according to the following standards:

Criteria	Service Level Standards
Physical Security	<ul style="list-style-type: none"> » Itron manages a stringent multi-layered security control procedure » 24 x 7 security monitoring » Individual user badges and photo ID access cards required to enter datacenter area
Uninterruptible Power Supply (UPS) and Backup Power Generation	<ul style="list-style-type: none"> » Redundant electrical design and distribution, including redundant UPS and battery backup » Automatic transfer switches ensure smooth transition to backup power » 24-hour backup generator
HVAC	<ul style="list-style-type: none"> » Temperature of 68 degrees +/- 6 degrees » Humidity at 50% +/- 10%
Fire Control	<ul style="list-style-type: none"> » Dry-piped, double-interlocked, pre-action fire protection system
Certification	<ul style="list-style-type: none"> » ISO 9001, ISO 27001
Operations Coverage	<ul style="list-style-type: none"> » Mon-Fri, 2 a.m. to 5 p.m. PST » Additional coverage available as an optional service
Virtualization and Clustering	<ul style="list-style-type: none"> » Clustered enterprise-level servers allow for high availability and real-time performance-based resource allocation.
Server Uptime	<ul style="list-style-type: none"> » Defined by customer service level

Third-party private data center operate according to the following standards:

Criteria	Service Level Standards
Uninterruptible Power Supply (UPS) and Backup Power Generation	<ul style="list-style-type: none"> » N+ 1 redundancy designed to ANSI Tier 3 standards » Includes UPSs and battery backups with on-site backup generators » Automatic transfer switches ensure smooth transition to backup power » 24-hour backup generator
HVAC	<ul style="list-style-type: none"> » N+1 redundancy » Temperature of 68 degrees +/- 6 degrees » Humidity at 50% +/- 10%
Fire Control	<ul style="list-style-type: none"> » Dry-piped, double-interlocked, pre-action fire protection system
Data Center Coverage	<ul style="list-style-type: none"> » 24 x 7 x 365
Compliance	<ul style="list-style-type: none"> » SOC 2 Type II, SAS70, SSAE16/CSAE3416, Safe Harbor Certification

Network Infrastructure Details

Itron Cloud Services data centers provide the following network infrastructure:

Item	Description
Connections to Internet	<ul style="list-style-type: none"> » Two redundant 20 MBit lines from two separate providers.
Routers	<ul style="list-style-type: none"> » Redundant enterprise-class
Firewalls	<ul style="list-style-type: none"> » Redundant enterprise-class
Intrusion Detection and Prevention	<ul style="list-style-type: none"> » Dedicated intrusion prevention system utilizing global correlation
Connections to Corporate Network	<ul style="list-style-type: none"> » Isolated from corporate network

SECURITY

ISO 27001 Certification

ISO 27001 is the formal set of specifications against which organizations seek independent certification for their Information Security Management System (ISMS). ISO 27001 specifies requirements for the establishment, implementation, monitoring and review, maintenance and improvement of a management system—an overall management and control framework—for managing an organization's information security risks.

By adopting ISO 27001 standard principles, Itron data centers comply with security concerns pertaining to operation, user management, physical and electronic access, and data management.

Data Center Security

Itron ensures security and redundancy across its operations to provide high levels of security for both the physical and electronic network infrastructure. The network is designed to ensure the availability, integrity and confidentiality of your data. Security features are designed to deter, detect, and deny access to unauthorized parties.

The physical structure maintains stringent physical security policies and controls access to the data center. The first layer of security includes photo ID proximity access cards. Proximity card reader devices are located at major building entry points and are used to secure the data center. Access to data center controls is further restricted to select employees. All perimeter doors are alarmed and monitored. Authorized customers and vendors are only allowed into the data center with an escort. The access control system continuously monitors and logs all entries. Access records are stored for reference.

- » Guarded Premises
 - On-premise security guards monitor all traffic and ensure that entry processes are correctly followed.
- » Photo ID Card
 - Photo ID card is required on Itron premise and to gain access into the data center.
- » Video Surveillance
 - The data center maintains video surveillance cameras at building entry points and other secured areas within the perimeter. Video is monitored and stored for review.

Network Security

Our networks are protected using redundant enterprise-class firewalls. Firewall rules are specific with respect to address and destination port and are custom-configured for each system. In addition, Internet-facing servers reside in a DMZ. Networks are monitored and managed using state-of-the-art tools.

System Management

Itron's experienced professionals configure all customer systems to use enterprise-class storage and RAID configurations to ensure redundancy, security and high performance levels.

Itron utilizes the appropriate enterprise-class operating system specified by product specifications. Appropriate patches are installed as required, using automatic and manual implementation methods.

Access Management

Role-based security is used to limit and control access. Only those given access by agreement or written approval are granted access to the system at the defined level. Active Directory is used when appropriate. Itron Cloud Services utilize domain forest trusts. Proprietary private message queues are used for customers. Group policies ensure product services are running and proper rights are enforced. User access to any internal employee is immediately revoked upon termination of employment.

Strong password rules are incorporated. Strong passwords have the following characteristics:

- » At least eight characters
- » Lower and upper case characters
- » One special character and one number

OPERATIONS

Proactive Health Checks

Itron Cloud Services operators conduct daily audits and health monitoring, including disk space, system services, application functionality and system availability. They take corrective action when issues are encountered. Operators follow a daily checklist where entries are signed off (date/time stamp and initials). Daily checklists are archived for one year.

24 x 7 Server Monitoring

Itron Cloud Services provide 24-hour monitoring of infrastructure services and components.

- » Alarms set for critical thresholds.
- » Automated notification to Itron Cloud Services when threshold is exceeded.

Change Control Board

Itron employs a Change Control Process to all systems in a production state. Any proposed change to a production system must complete the following process before that change is allowed:

- » Submit formal written description of the proposed change. The submittal requires a detailed description of change, reason and timing for the change request, and preventative and contingency action plans.
- » Submitted change control requests are reviewed and approved during weekly scheduled Change Control Board meetings
- » Submitted change control requests are managed by the Change Control Board Administrator. Change requests are archived for one year

Backup and Recovery

Backups

Daily system and database backups are performed on all systems and stored on a separate server. System backups and snapshots are taken after any change to the system. Weekly backup written to removable media remain on site and are overwritten after seven days and then stored off-site for two weeks. Monthly backups are stored off site for 13 months. System can be easily recovered from the backup in an event of a disaster.

Backup tapes are handled and exchanged using a defined procedure and agreement with a storage partner. All outdated tapes and data are carefully disposed of according to our defined standard operating procedures.

System Recovery

Itron uses a fault tolerant architecture composed of Cisco Unified Computing Systems coupled with VMware, providing high availability infrastructure to maximize system availability. If hardware failure recovery is required, Itron maintains maintenance contracts for all equipment with seven-days-a-week, four-hour response times from all third-party vendors. Using on-site backups, systems can be recovered in as few as two hours.

Disaster Recovery

Itron includes Cold Site recovering in their standard service level offerings. Other disaster recovery options above the standard approach are available.

Site Recovery Options

Cold Site

A cold site is a disaster recovery plan. Itron has made arrangements for access to recovery sites with qualified infrastructure services. We also have vendor arrangements to purchase necessary equipment to mount and restore SaaS and Managed Services operations. This option is best suited for businesses or organizations that can tolerate one to two weeks of downtime.

Warm Site

A warm site is essentially a hot site without data replication. That is, a warm site offers access to space, utilities and equipment, but requires current backups be installed, and systems and services brought online to become operational. A warm site may be a complete duplicate of an original site, but will typically provide only a subset of mission-critical equipment, services and data. A warm site works for businesses or organizations that can tolerate one or two days of downtime, which represents the typical delay between when a primary site goes down and a recovery site comes up.

Hot Site

Full or partial duplicate for a primary IT operation, including complete computer systems and near-real-time backups for systems, applications and data. In its most extensive form, mirroring software is used to keep a hot backup site and primary site synchronized. A hot site is used when an organization can tolerate little or no downtime. Switchover typically takes no more than a few hours, and may occur more quickly than that.

Support and Escalation Management

Itron's Technical Support Services (TSS) department is the single point of contact for any issues or concerns relating to Itron products and services. Standard hours are 5 a.m. to 5 p.m. PST business days. Technical Support Services also provides after-hours support for severity 1 issues. TSS works very closely with our engineering and Itron Cloud Services team and is committed to resolving issues quickly.

SERVICE LEVELS

We know that downtime is not an option for your business. This is one reason that Itron's service level agreement (SLA) can guarantee up to 99.9% application availability outside the scheduled service windows. Itron offers three service levels to best suit your organization's business and operational requirements.

Three Tiered Service Levels: Silver, Gold, and Platinum

Features	Silver	Gold	Platinum
Account Management			
Change Control Services	X	X	X
Anti-Virus Management Services	X	X	X
24 x 7 Server Monitoring	X	X	X
Database Optimization	X	X	X
Database Error Logging	X	X	X
Firewall Log Monitoring	X	X	X
Daily Database Backups	X	X	X
Once Weekly Backup to Off-site Storage	X	X	X
Support and Escalation Management	X	X	X
7 a.m. – 5 p.m. PST Business Day Application Availability Monitoring	X	X	X
2 a.m. – 6 p.m. PST Business Day Application Availability Monitoring		X	X
KPI Reporting		X	X
KPI Plus Reporting			X
24 x 7 x 365 Application Availability Monitoring			X
Quarterly Status Meetings			X
Facilities Options and Service			
Level Applicability			
Itron-Owned	X	X	X
Qualified Third-Party Private Data Center			X

Service Level Standards

Service Level	Silver (M-F 7A-5P)	Gold (M-F 2A-6P)	Platinum (24x7)
Facility (Infrastructure)			
Itron-Owned	99.99%	99.99%	99.99%
Qualified Third-Party Private Data Center			99.99%
Product			
Application Availability	98%	99%	99.9%
Business Continuity/Recovery (After issue identification)			
On-Site Recovery Time for restore from on-site backup (hrs)	8	4	2
On-Site Recovery Time for backup restore from Off-Site backup (hrs)	24	12	8
On-Site Recovery Time for hardware failure (hrs)	24	12	8
Cold Off-Site Disaster Recovery (days) – included in base price	16	16	16
Warm Off-Site Disaster Recovery (hrs) – optional	N/A	72	72
Hot Off-Site Disaster Recovery (hrs) - optional	N/A	N/A	TBD



Itron is a global technology company. We build solutions that help utilities measure, monitor and manage energy and water. Our broad product portfolio includes electricity, gas, water and thermal energy measurement and control technology; communications systems; software; and professional services. With thousands of employees supporting nearly 8,000 utilities in more than 100 countries, Itron empowers utilities to responsibly and efficiently manage energy and water resources.

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