



WATER & WASTE WATER UTILITIES

Satellite Data Solutions for
Proactive Plant Management

WATER & WASTE WATER UTILITIES

Satellite Data Solutions for Proactive Plant Management
In the water utilities sector your operational efficiency, sustainability and customer experience are only as good as the data that drives your decision making. For remote sites and disaster recovery, where cellular data solutions fail to deliver, satellite is the answer.

DATA DRIVEN DECISION MAKING

360° DATA

The key to operational success in the water industry is to collect accurate, real time data from infrastructure and assets, at every point in the supply chain, from your networks, plants, treatment environments and customers. A 360° view of your data gives you the business intelligence you need to solve the challenges of population growth, climate change, environmental responsibility, asset health, lone worker safety and system resilience. It also addresses the customer experience (CX) requirements of OFWAT's Water 2020 and WaterworCX initiatives.

REMOTE & CHALLENGING LOCATIONS

One of the biggest barriers to 360° data visibility is that critical water and sewerage infrastructure is frequently located in remote and harsh environments where data is unreachable via traditional cellular solutions. This creates silos and fragmented data, giving an inaccurate picture of operations and assets. Data gaps lead to bad business decisions resulting in customer complaints, high OPEX, redundant capacity, regulatory fines and reputational damage.

CLOSING THE DATA GAP

Ground Control creates end-to-end, satellite Machine-to-Machine (M2M) and Internet of Things (IoT) data solutions. These maximise telemetry and SCADA capabilities, lower OPEX, and bring your data home, wherever it's located. Our satellite and hybrid cellular, radio, satellite solutions go beyond the reach of terrestrial networks to provide coverage in even the most remote locations. They are scalable and customisable to enable precise measurements and near real time data aggregation, to assess critical business factors such as:

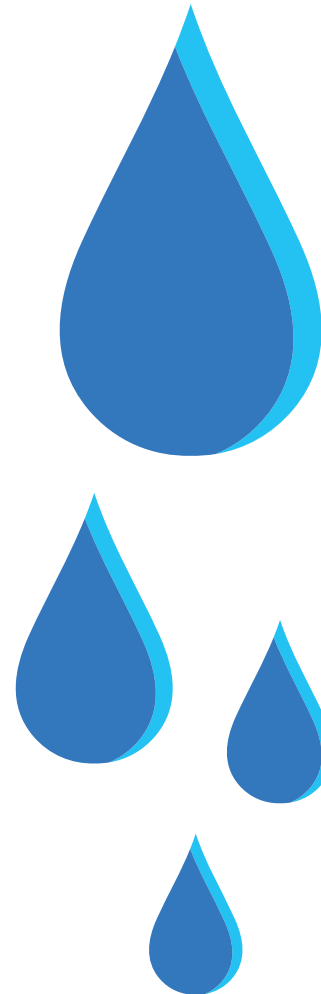
- Water Level, Flow and Quality
- Sewage Treatment
- Climate and Environmental Conditions
- Reservoir Monitoring
- Flood and Leak Prevention
- Water Asset Tracking, Monitoring and Recovery
- Near Real Time Control and Managed Assets
- Remote activation and control of pumps and other equipment
- Monitoring pumping stations and water control structures

REACTIVE TO PREDICTIVE MANAGEMENT

Ground Control's satellite M2M solutions provide total network visibility, improving the integrity and quality of your data, for early risk detection. This business intelligence enables water companies to quickly move from reactive operations, infrastructure and asset strategies to a more efficient, proactive approach. With strategic reporting and analytics, you can create a predictive model with high levels of automation

DISASTER RECOVERY

In the event of a natural disaster or other crisis, that causes cellular and terrestrial communications to fail, our satellite solutions are a reliable option. We also create hybrid GPRS/satellite solutions that operate on Narrowband LTE and switch to satellite when the network coverage fails. This automatic back-up ensures telemetry and SCADA applications remain operational and your personnel, services, customers and reputation are protected, even in a crisis.



So, how can you close the water data gap and predict problems before they occur to avoid service deterioration?

SATELLITE DATA SOLUTIONS & SERVICES

SECURE PRIVATE SATELLITE NETWORKS

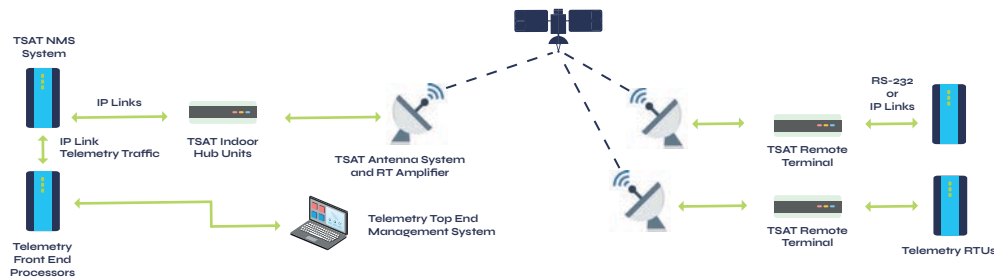
Cybersecurity is the top government concern for critical national infrastructure. Our TSAT satellite solution operates over a private satellite network, which is isolated from public infrastructure like the internet. Our clients own the network equipment and communications links, creating a secure platform that is virtually impermeable to hacking. Our solutions also offer two-way encryption and powerful firewall controls. If your preferred solution is one that utilises the internet, we enhance security with VPNs. These security measures mean our solutions are perfectly positioned to meet Water Sector Security and Resilience Plan requirements, and industry regulations.

PRIVATE WIRE SERVICES CESSATION

In response to BT's removal of their private wire services in 2020, Ground Control has created easy to integrate, "like for like" replacement Private Satellite Network and on-demand satellite modem solutions, to provide our water industry clients with uninterrupted data services.

TSAT FOR SCADA & TELEMETRY

We provide our water industry clients with a complete, turnkey solution for high volume, two-way satellite data communications over the TSAT secure Private Satellite Network.



CLOSING THE DATA GAP

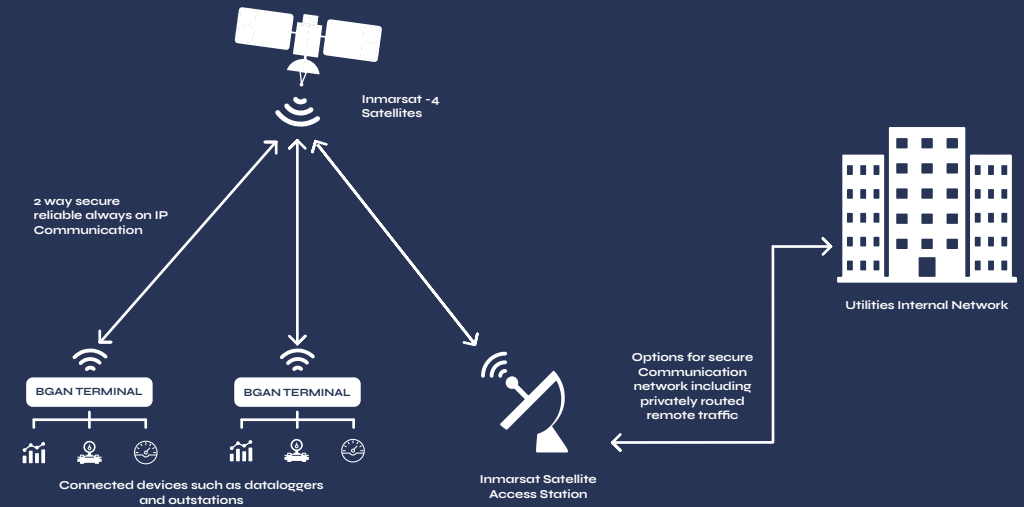
This variant on the Very Small Aperture Terminal (VSAT) is fully optimised to overcome common VSAT issues like frequency stability, phase noise, interference and insufficient bandwidth. TSAT provides enhanced security and optimal performance for low bandwidth, two-way data transmission in SCADA and telemetry applications. Collection and distribution of critical, near real time environmental, ecological, seismological and surveillance data is easily transmitted in a direct channel between your process control centre and your remote assets.

FLEXIBLE, CONFIGURABLE & SCALABLE

The modular design of TSAT makes it a flexible and scalable option. You can extend the network by adding a main unit to the HUB station to increase inbound links and dividing the network into sub-networks to increase the outbound link capacity.

COST EFFICIENT

This two-way data system is also a cost-effective option, even for smaller networks, due to the lowcost HUB station, minimal investment required in ground station equipment and low OPEX.



BGAN M2M SOLUTION

Ground Control's partnership with Inmarsat, brings the benefits of portable Broadband Global Area Network (BGAN) to our water industry clients.

EXTENDING THE REACH OF M2M

BGAN enables water industry applications for monitoring, analysis, reporting and control to access and process near real time and logged data at high speed, with simultaneous voice capabilities. This satellite solution is secured with two-way encryption and extends the capacity of your M2M applications so you can access your data in the most remote and demanding environments, across disparate locations. In addition to being lightweight, the terminals can be solar-powered, reducing your carbon footprint. They also operate over low bandwidth with low latency and are robust and resilient to bad weather.

COST EFFECTIVE

BGAN offers low data rate plans and no reconnection fees for a truly cost-efficient option.

EASY INTEGRATION & SCALABILITY

An excellent option for lower level data requirements, the BGAN terminals are small, portable and easily integrated with existing systems, so your field teams can install and maintain them, scaling the network up or down, without any technical training.

ONGOING SUPPORT

BGAN users benefit from free, regular, over-the-air firmware upgrades.

BGAN WATER INDUSTRY APPLICATIONS

- Telemetry and SCADA
- Remote Surveillance, Telemetry and Tracking
- Remote Assets Control / Smart Metering
- Lone Worker Safety

INTRODUCING IRIDIUM CERTUS 100 AND IMT

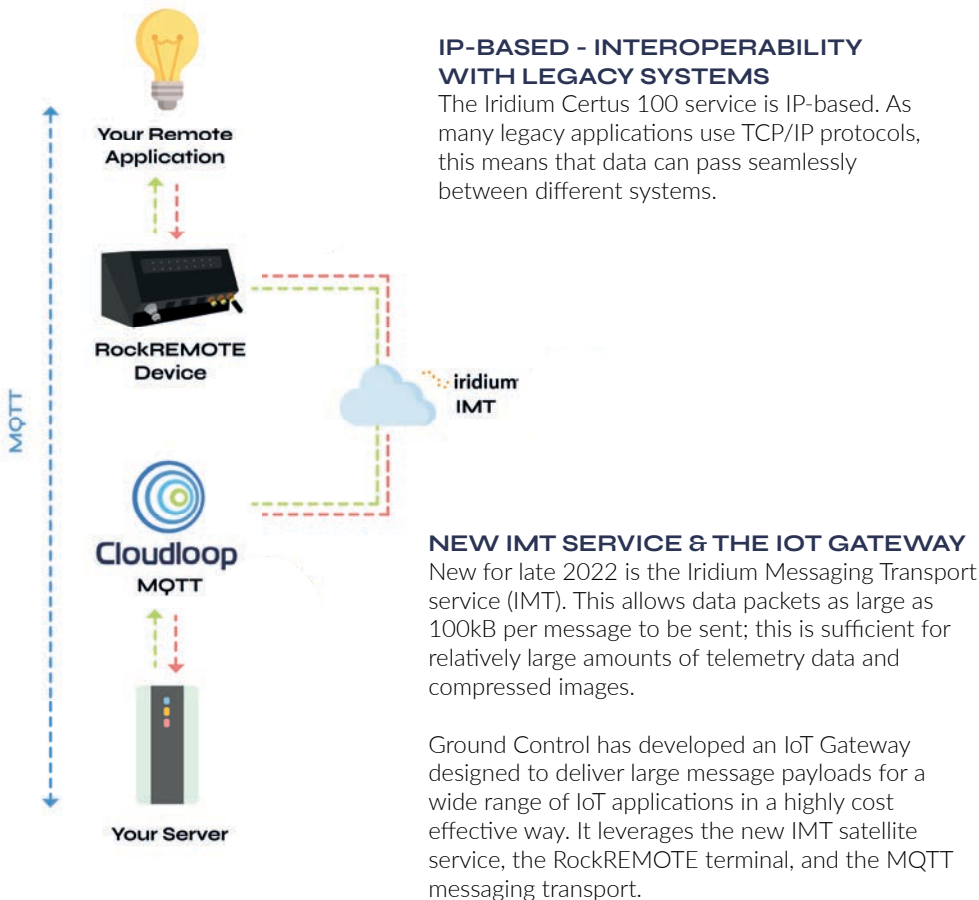
Unlike the TSAT and Inmarsat BGAN solutions, Iridium's satellite constellation is in Low Earth Orbit (LEO). LEO satellites deliver several benefits for IoT and tracking applications.

LOW LATENCY

As LEO satellites orbit the Earth at much lower altitudes than geostationary satellites, the latency is lower, at less than one second. This compares to approx. two seconds for geostationary satellites. This means that antennas can be small and low profile, and they typically use less power to send and receive data.

REDUCED 'LINE OF SIGHT' ISSUES

Woods and mountains can present problems for geostationary satellite transceivers as they need to point in a specific direction to connect to the satellite. LEO-enabled devices can send a signal in virtually any direction, and it will be 'collected' by one of the many orbiting satellites.



COMPARING SATELLITE DATA SOLUTIONS

Which service is right for you will depend on your intended application, and we'd encourage you to talk to us so we can help identify the best solution.

Here's a quick reference to the key features of the three services discussed in this guide.

	TSAT	BGAN M2M	Certus 100 / IMT
Satellite orbit	Geostationary	Geostationary	Low Earth Orbit
Latency*	<2 seconds	<2 seconds	<1 seconds
Security	Highest: private satellite network with no reliance on public infrastructure	Very high**: protected by VPNs, encryption, and/or firewalls	Very high**: protected by VPNs, encryption, and/or firewalls
Antenna	Large VSAT antenna for fixed installation	Small antenna designed for fixed installation	Small antenna designed for fixed or mobile applications
Power usage	Higher: needs mains connectivity	Very low: can operate on battery / solar	Low: with usage optimisation, can operate on battery / solar
Costs	Higher set up costs, low OPEX	Lower set up costs, medium OPEX	Lowest set up costs, low to medium OPEX
Ideally suited for	Sensor data retrieval in critical infrastructure applications e.g. gas pipelines	Sensor data retrieval from remote locations with a clear view of the sky	Sensor data retrieval from remote locations with look angle challenges / assets that are on the move
Example device:	TSAT 3500	Cobham Explorer 540	Ground Control RockREMOTE

*Approximations only.

**Security comes from the associated terminal/networking, not from the messaging transport.

WHY GROUND CONTROL?

Ground Control is a respected water industry solutions provider with breadth and depth of knowledge of applications and hardware, and an excellent understanding of the relevant IT infrastructures and protocols. We operate across both the clean water and waste water sectors:

- Solutions Consultancy and Engineering - our solutions are tailored to each client's legacy systems and protocols, data needs, budgets and timescales. Regulatory compliance, cost efficiency and innovation are at the heart of our design and deployment of end-to-end solutions for SCADA and telemetry, M2M, data logging and remote monitoring applications.
- Device Management - our comprehensive management platform, Cloudloop, consolidates all aspects of satellite and cellular M2M device control, management, administration, billing and support in a single intuitive interface, for maximum performance and efficiency.
- Partnerships - our clients benefit from Ground Control's strong partnerships with Inmarsat, Iridium, Globalstar, TSAT and leading cellular operators.
- Continuous Growth - our recent acquisition marks the beginning of our global expansion into the M2M and IoT space, continuously increasing our expertise and enabling us to provide cutting-edge products and services.



WORLDWIDE INDUSTRIAL TELEMETRY STANDARDS PROTOCOL

The water industry's increasing reliance on telemetry to enhance operational efficiency and CX, has created the need for a common telemetry standard.

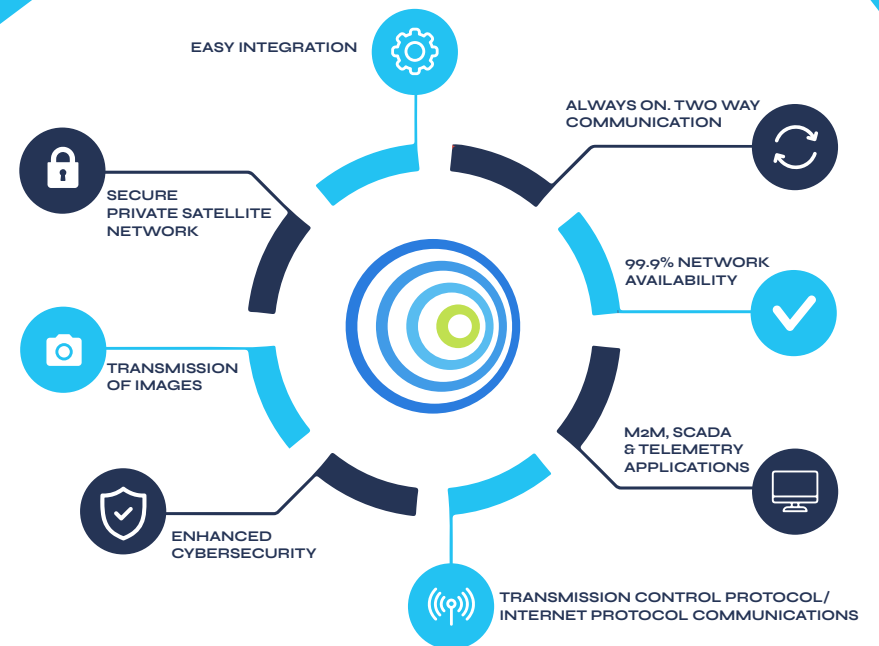
AN INTERNATIONAL STANDARD

The WITS Protocol Standards Association is a partnership of telemetry experts who have created the WITS-DNP3 Protocol. This international standard for telemetry communications provides plug and play interoperability between field devices and top-end master stations. It offers water companies a wider choice of regulatory compliant equipment and solutions and prevents vendor lock in. It also improves data integrity, reduces the risk of negligence and personal injury and enhances CX.

WITS & SATELLITE SOLUTIONS

Ground Control has close ties with WITS and actively attend "Plugfest" events. This has included showcasing how the WITS-DNP3 works over satellite. We used the BGAN M2M service running over Inmarsat satellites. We're delighted to be pioneering this new standard for the water industry in the satellite space and we look forward to the benefits it will bring our clients.

BENEFITS OF SATELLITE SOLUTIONS IN THE WATER INDUSTRY





Ground Control is a global satellite, cellular and radio data solutions consultancy and provider of satellite solutions and managed services for land, air and sea.

We are network agnostic and tailor our solutions to the individual needs of industrial sector clients in over 100 countries. We specialise in satellite and hybrid solutions that bring your data home, wherever it's located.

To discover how Ground Control's satellite solutions can improve your data driven decision making, contact our water industry specialists on **+44 (0)1452 751940**.

Website: www.groundcontrol.com

Email: hello@groundcontrol.com

Twitter: @GCSatellite

LinkedIn: ground-control

**Ground Control Technologies Ltd
Unit D2, Churcham Business Park
Churcham, Gloucestershire
GL2 8AX**