



# Cloudbase Data Logger

Autonomous vessel data collection system  
with secure web based access



- **Reliable unattended operation.**
- **Configured and managed remotely.**
- **Secure data transfer.**
- **Minimal bandwidth usage.**
- **Interface to ANYTHING.**

Blue Spider Cloudbase Logger is a comprehensive and integrated data logging solution that allows data to be collected from a wide variety of external sources. The data is not only collected but also uploaded and made immediately available to authorized users anywhere in the world. A uniquely powerful and versatile data collection system which, due to its flexible and extensible configuration, can be interfaced to almost anything. It is ideal for use on any vessel and perfect for collection of voyage, performance, engine, gearbox, cargo and condition monitoring data; designed for completely unattended operation so that configuration changes, diagnostics and software updates can be securely performed by remote control without the need of support from crew or engineer visits.

Collected data is automatically sent to a web-based management system using exceptionally high compression and minimal bandwidth usage. Received data is automatically archived in an efficient historian system appropriate for management of big data and/or forwarded on to 3rd party systems. Data acquisition with centralized access is invaluable for speedy decision making, preventative maintenance and analysis of cost reduction strategies, making this system the perfect solution to compliance with your current and future policy objectives.

On the vessel, the data can be gathered from many different sources: navigational, AIS, ECDIS, cargo monitoring systems, engine and turbine monitoring systems, water pumps, gearbox, generators, anemometers and other instruments. Industry standard OPC DA support is built-in to simplify interfacing cargo and other complex subsystems, along with drivers or simple scripts which can be written to interface to anything else. Data is easily exchangeable with other on-board systems, and this facilitates unification of otherwise disparate third party products including vessel performance optimization software.

An on-board web server provides pages to allow for manual data entry which can be used to record significant events or time spent in port.

The remote web management system may be configured to automatically forward collected data to your own servers using a variety of means such as FTP, SFTP, email or database replication. Alerts can be configured and notifications sent via email or instant messaging. Users of the Cloudbase system can be assigned fine-grained permissions in order to restrict access to specific vessels, system configuration or even to particular categories of data.

### Typical Uses

- Unattended collection of data from multiple sensors of different types, and/or where a large number of incoming messages may need processing
- For collection of data from OPC servers or subsystems, and even where communications protocols may be challenging, our script support makes this easy
- Where centralized, secure, web-based data storage and access is required or where data needs to be forwarded automatically



Our simple pricing plan means that use of the system is inexpensive and easily budgeted. The annual licence covers use of the data logger, web front end, automated data transfers, bulk storage and report generation - all for a single flat rate.

**Unattended Data Collection**  
**Remotely configurable and automatic software updates**  
 Ideal for collection of performance / condition monitoring data  
**Interfaces to multiple 3rd party systems**  
 Automatically sends back collected data  
**Simple pricing plan**

## Data Logger Key Features

- Full AIS support including optional sophisticated filtering which can reduce the amount of data that needs to be recorded.
- Fully customizable inputs, scriptable when required.
- Fully customizable outputs, also scriptable.
- Fully customizable logging, scriptable.
- Logging to files may be triggered by external events.
- On-board web server for manual data entry.
- Advanced JavaScript engine for custom data processing in the server.
- Custom server-side variables can be defined, as well as alarms and non-scalar data.
- Serial data can be routed via any computer on the network.
- Supports direct TCP/IP inputs as alternative to serial.
- Modbus master and slave roles plus passive snooping modes.
- Supports connections to one or more 3rd party OPC servers.
- Remote web monitoring from the office.
- Alarm and Timeline applications highlight any issues with configuration, interfacing etc.
- Automatic software updates: when software updates are available they can be applied automatically at any specified time.
- Remotely configurable: updates to configuration can be applied remotely. Changes to configuration may be applied without the need for an engineer visit. Configuration editor included.
- A fully featured JavaScript debugger is included for developers to debug their own scripts, but we can undertake this work for you as well.
- The Gateway software will work happily through a firewall (only ports 80 or 443 outbound TCP need to be open) and also via a proxy server, thus easing deployment on 3rd party vessels.
- Automatic archiving of collected data in a NoSQL database with a secure web front end for bulk retrieval of data and generation of reports. Cloud Data storage is included in the licence subscription.

Cloudbase Data Logger is designed to run continuously, reliably and unattended, requiring no operator intervention or logged-on user. The Gateway software (included in the package) underpins the transfer of collected data back to the web management system and runs on the ship as a service process alongside the data logger. It provides the primary means for accessing the data logger remotely and facilitates remote configuration diagnostics and maintenance.

We supply a range of suitable equipment for use with the data logger and can supply and install this for you. DIN rail and various other mounting options are available.



You are welcome to provide your own equipment and undertake the installation and commissioning yourself or we'll do it all for you. We can recommend suitable equipment and advise or assist as required.

The Data Logger and Gateway software are both very high performance, use minimal system resources, and will run reliably on slower machines. Lower specification machines will still be more than adequate for most data acquisition needs, but we do believe that the small additional price for a greater specification machine is worthwhile as it adds an element of future proofing and reduces latency.



A number of our recommended computer equipment models are available with a SIM card slot which can be used for network access when or where satellite coverage happens to be unavailable.



The Cloudbase Data Logger infrastructure provides all the necessary framework for a unique and complete solution to data collection and monitoring needs. We firmly believe you will not find a similar product with these capabilities, and are committed to helping you achieve your specific goals and targets both now and in the future. The ability to collect data this way creates vast potential for reducing costs and assisting in preventative maintenance.

# COMMUNICATIONS GATEWAY

The Gateway server, included with the Data Logger, can also handle automatic sending / receiving emails and attachments, uploading and downloading files to a web server via FTP or HTTP, and management of local or network files.

Able to compress zip files and run programs to perform file conversions, it is commonly used to monitor folders for new files or changes to existing files. According to user defined rules, such files may then be sent to remote servers. Gateway servers can communicate and exchange data with each other regardless of location.

It is completely scriptable using JavaScript allowing functionality to be tailored to specific needs.

Developers can create their own scripts using the documentation and examples given. A set of tools are provided for this, including a powerful JavaScript debugger.

## Common Gateway Uses

- Automated processing of incoming emails (attachments in these) and sending the results to a list of recipients
- Automated sending of email, web or FTP/SFTP uploads when files arrive in designated folders
- Returning data generated by the Data Logger from ships or outstations
- Zipping and unzipping files automatically and archiving data
- Transforming files from one format to another before sending on to a new location
- Tunnelling arbitrary TCP connections over HTTP or serial links

The program runs 24/7 as a Windows service and will run with or without a logged-on user. It can be installed just about anywhere from web servers to machines where the internet connection is less than reliable as on a ship using a VSAT or 3G connection.

The Gateway comes as part of the Data Logger package but is also available separately.

Also included with the Gateway is our file converter application which is a powerful scriptable file conversion utility. This provides a JavaScript environment tailored specifically for facilitating conversions between different file types and formats. Examples and a detailed user manual are provided. This converter is very diverse in its capabilities and is used in conjunction with the Data Logger and Gateway to transform CSV files into other formats. This file converter program (or indeed any other program) may be invoked by the Gateway in order to transform incoming data into formats suitable for sending on to 3rd party systems. It is also used to pre-process CSV files to obtain significantly higher compression ratios prior to upload of data.

Uploading and downloading is secure, operates over port 443 and can automatically work via most proxy servers without the need for configuration.



## Support

A full range of support services is offered, including assistance with Data Logger configuration, training, site visits when required for installation, and remotely via TeamViewer. We can set up the configuration or work through more complex requirements as needed. We are also happy to provide equipment such as industrial PCs suitable for use with the Data Logger. Web-based hosting services or assistance with setting up your own "in house" is also provided.



# SECURE WEB FRONT END

The screenshot shows a web browser window with the URL bluespider.im. The page title is "Blue Spider" and the main heading is "Data Logger Alarms for Shell Gemmata". Below the heading are links for "<< View Details" and "<< Query Again", and a "Refresh" button. The "Active Alarms" section contains two entries: a red one for "08/01/18 10:29:00 #042 Nav GPS1 (primary) input has timed out" and a yellow one for "08/01/18 10:30:09 #828 OPC Connection to 'MHI.GWCOPCServer.1' on 'OPC1' has resorted to sync polling mode". A "Save as CSV" button is located below the alarms.

Following login to the Cloudbase Control Centre a list of all of the ships in your fleet is presented with further options available per vessel.. Individual users can be given access to specific ships and, similarly, permissions to perform configuration changes and view details can be granted or denied to each user. Click on a vessel to be taken to the main page for viewing summary details with links to various commands, options for configuring, uploading and downloading data and much more. When making changes to the configuration for a ship, those changes are automatically validated preventing application when any errors are present. All configuration changes are automatically version controlled and revertible and this provides a log showing who made changes and when. Various details regarding the status of each ship are shown and commands can be sent to the Gateway in order to carry out various diagnostic functions such as viewing the status of alarms or capturing data arriving on serial ports.

The screenshot shows the "Cloudbase Process Status for Shell Gallina" interface. It includes links for "<< View Details" and "<< Query Again", and a "Refresh" button. There is a checkbox for "Show all processes". Below is a "Process List" table with columns for PID, Image, CPU %, VM size, Peak VM, Threads, and Handles. A "Save as CSV" button is at the bottom.

PID	Image	CPU %	VM size	Peak VM	Threads	Handles
764	BSPGateway.exe	12.0000	162971648	315039744	13	192
3252	BSPLogger.exe	0.0000	142934016	152072192	12	213
1748	BSPNet.exe	12.0000	76791808	79413248	13	516
1788	BSPUpdater.exe	0.0000	73203712	75825152	4	89
1840	BSPWorkstation.exe	0.0000	80334848	89497600	6	106

The screenshot shows the "Cloudbase Serial Data from NavSystems TestShip2" interface. It includes links for "<< View Details" and "<< Capture Again". Below is the heading "Captured serial port data: COM8" and a block of hex dump data.

```
AMI VDR K905 Startech port #4
SYFHKD,5,0,0,0000,5,0,0,0,0001,5,0,0,0,0002,5,0,0,0,0003*70
$GPDTX,MS4,,00.0000,N,00.0000,E,1004*41
$VRMCA,227**08
SYFHOD,5,0,0,0004,5,0,0,0,0005,5,0,0,0,0006,5,0,0,0,0007*4B
$GPRMB,K,0,00,1,0000,0000,3043.0000,N,00115.5000,W,10.9,77.0,0,0,V,2*40
$VRMCA,227**08
SYFHOD,5,0,0,0,0000,5,0,0,0,0000,5,0,0,0,0010,5,0,0,0,0011*4B
$GPGBS,1525*4.00,001.9,001.8,003.9,,,,*49
$PARIV,C,-001,000,000,000,*22
$HEHDT,030.0,T*2C
```

The screenshot shows the "Cloudbase File Upload for NavSystems TestShip" interface. It includes a link for "<< File Transfer for NavSystems TestShip". The endpoint is "NavSystems/TestShip/DataLogger Configuration". A green checkmark indicates "TestShip\_BSPLogger.zip" is valid and ready to send to the vessel. There is a text area for "Briefly describe the reason for upload and changes made". At the bottom are "Commit and Send to Ship" and "Cancel" buttons, and a field for "Enter your version control comment...".

Cloudbase helps avoid the need to make remote desktop connections to the ship, as doing so can be frustrating and performance (if successful) may be very poor. Who wants to wait 30 seconds between each keypress! Cloudbase is designed for high latency, low bandwidth networks which are inherently unreliable, and to send a command to a ship while it has no internet connection, simply queue the command and just let Cloudbase wait until it is connected again.

## Try it out for yourself

Just drop us a message using the contact form on our website and we can grant access to a demonstration account. An evaluation of the Data Logger software suite to run on your own computer can also be arranged and we'll create a Cloudbase account to go with it. We have a number of example configurations to aid evaluation and can simulate many data input types or just plug-in your own equipment.

Exciting new features are frequently being added and subscription users automatically benefit from these. Tell us about features you would like to see and, if deemed useful for others, we will certainly consider adding at no charge. We are always interested in hearing your ideas and receiving feedback.

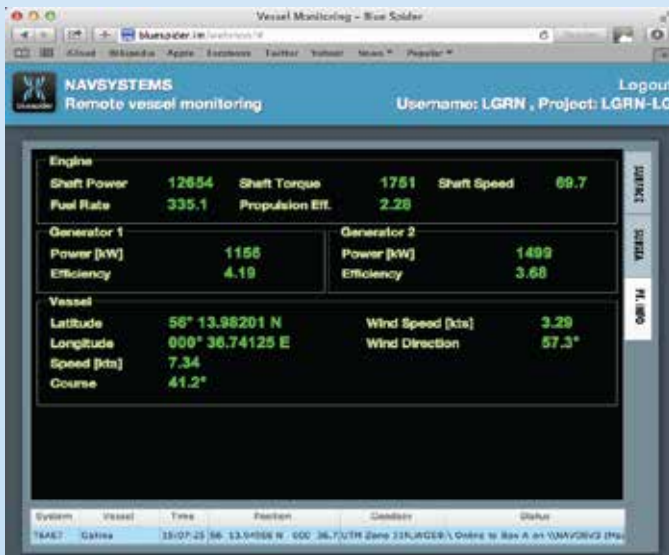
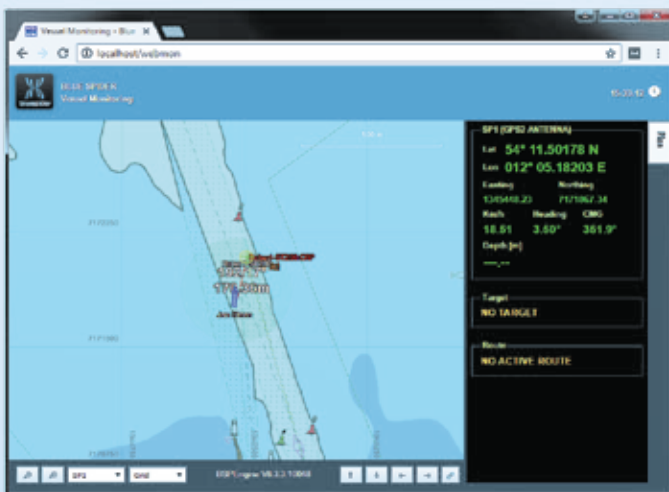
Updates are available to all subscription holders and are automatically installed depending on individual preferences.

# WEB MONITORING

Watch vessels during operations in near real time. With our web-based monitoring service, they can be located precisely and viewed whilst the job is in progress. Typically, vessels are shown on a chart background along with relevant data from the ship. Additional panels may be customized upon request to display any other job-specific information on a "per ship" basis. The connection uses very low bandwidth over the link from the ship to the web server and automatically reconnects if the satellite link fails. The web-monitoring features were originally developed to monitor vessels with the full Survey Positioning suite installed (see Survey Positioning brochure). Web Monitoring can also be used with the Data Logger product and the ability to define custom panels is of great benefit here. The lower screenshot shows a simple example of a customized panel.

The web monitoring is an optional extra but there is no additional charge for its use.

Please contact us for details and we will be more than happy to discuss your requirements.



## NAVSYSTEMS IOM LIMITED

We are an Isle of Man software company, providing innovative design services and products for use primarily within the Marine and Automotive sectors.

Producing applications which are versatile, durable and adaptable to constantly changing requirements is always our primary objective. It is our aim and intention that the product range should continue to evolve and grow in accordance with industry needs and aspirations.

The Blue Spider product family is engineered to meet the ever-changing and evolving needs of its user base. Electronic architecture is a term used in the automotive industry to describe frameworks within which subsystems from different vendors are easily able to coexist and communicate. Our software products for the marine sector follow this same principle of modularity and interoperability.

Cloudbase Data Logger combines all the components required with no hidden costs. Simple yet powerful configuration options enable diverse subsystems to be easily interfaced. Unattended operation reduces the need for engineer visits to ships which, as vessels often only have short stays in port, can be notoriously difficult to arrange.



**Highly capable software for marine survey, positioning, monitoring and data collection.**

We are members of



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## DATA SECURITY

Security of your data is of paramount importance to us and we take all possible steps to prevent any unauthorized access. Measures taken include the use of secure SSL data transfers, but all data to and from ships is further protected by extra layers of encryption. Even without SSL, the data content being exchanged is designed to be exceptionally difficult for an unwelcome 3rd party to intercept and correctly decode. Vessels with high value cargo may be operating on a spot trading basis, so even information regarding a ship's position is something we take all steps to protect. As an additional security measure that might be appropriate for certain deployments, we can assist you in preparing your own private servers to host the web based functionality.

## COST EFFICIENT

**Schedule of fees are available on the website and upon enquiry.**

There is a standard annual licence charge per vessel (Data Logger instance) and no initial fee except for optional equipment and system setup. The cost will depend on whether the system is fully managed by us, by yourselves or somewhere in between and also whether you use our hosted web services or your own.

The installation is typically very straightforward and can be carried out either us or by your own engineers. All that is required is to find a suitable location (DIN rail mounting can be provided), connect power, internet and all communications inputs. Once this is done our engineers can remotely commission the system.

Each licence subscription fee also includes network transfer of all incoming and outgoing data and data storage of up to a fair limit of 120Gb per ship or 5 years duration, whichever is arrived at first. Automated data transfers can be set up according to your requirements.

The only additional costs that might apply are for:

- a) Installation and/or initial set up of configuration for your ships where you request this service from us
- b) Major revisions of configuration for data collection on the ship or for automated data transfer or processing if you need to make such changes and ask us to do this for you \*\*
- c) When bulk storage or server side data processing needs are far greater (or longer duration) than those we would normally expect, in which case we may negotiate a small additional fee to cover our increased costs for adding extra storage capacity or load balanced servers etc. \*
- d) If you wish to host the Gateway and other web services on your own web servers
- e) Any additional development, customization or configuration \*\*

\* Since data is stored in a compressed format you are unlikely to exceed our fair usage policy.

\*\* In most cases prepaid support time can be used for these purposes.

Additional development work:

At our standard hourly rate or discounted if prepaid at time of licence renewal or purchase

On site support

At our standard hourly rate plus 10% and expenses (8 hour day)

Discounts for multiple vessels and fleet-wide options.



**We can always tailor quotations to suit your precise needs. If you have any special requirements or are interested in the Web Monitoring features, then please get in touch.**



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