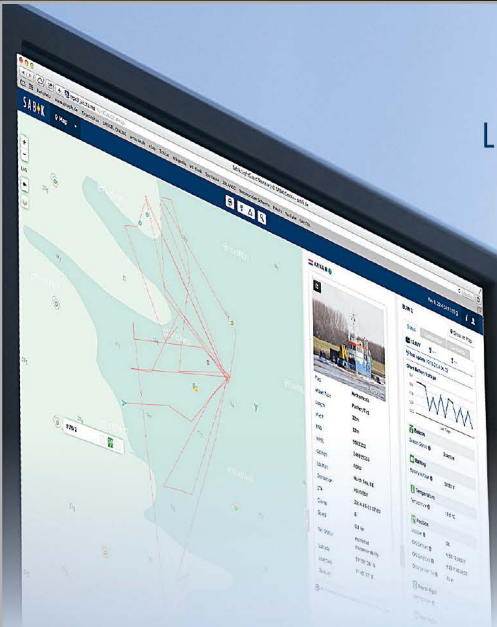




LIGHTGUARD
TECHNOLOGY INSIDE



Intelligent Remote Monitoring

carmanah
SABIK



LightGuard Concept

Is the navigational aid still operational? Is the buoy in position? Does the battery still have sufficient charge? For many years technicians were required to be on site to answer these and similar questions.

Remote monitoring of lighted navigational aids has become standard practice. Now, with the LightGuard concept, remote monitoring is available in a fully-integrated, easy-to-handle, and reliable package.

Carmanah/SABIK have developed a series of products under the label »LightGuard Technology inside« which contain all technical components required for remote monitoring. There are no cables or antennas. Everything is in a single housing, and ready for immediate use. It is easy to monitor multiple essential parameters as required by the type of station.

Our newly developed LightGuard Monitor software solution fits perfectly into this attractive concept. The web-based user interface can be used on any Internet-capable desktop computer, laptop or tablet, no matter what hardware and operating system is in use. It can also be integrated easily into an existing monitoring center.



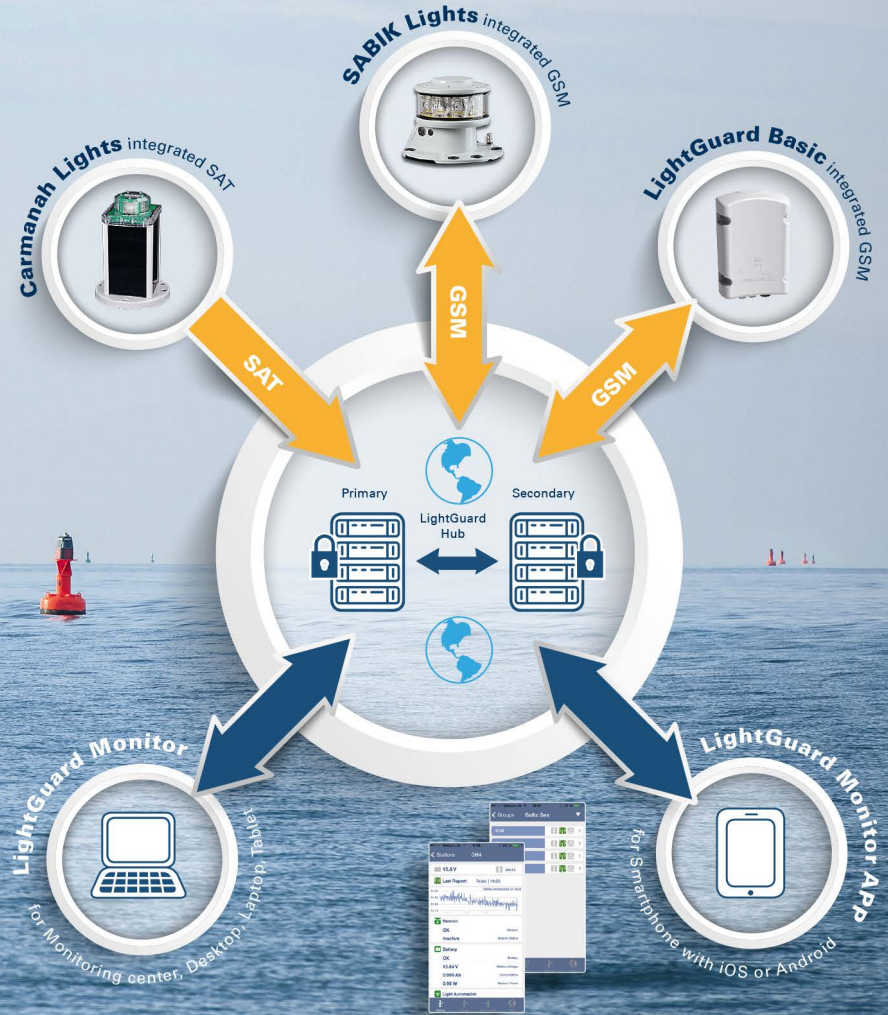
Our LightGuard concept is a well thought out solution for monitoring navigational aids that was developed to have consistently simple handling and high reliability, thanks to the inclusion of the latest technology.

Jens Uwe Reißig and Morten Christensen
Managing Directors | SABIK GmbH



LIGHTGUARD

TECHNOLOGY INSIDE



| ID | NAME | STATUS | BATTERY | TEMP | WIND | WAVE |
|-------|----------|---------|---------|------|---------|------|
| 10001 | Light 1 | OK | 95% | 25°C | 10 km/h | 1.5m |
| 10002 | Light 2 | Warning | 80% | 30°C | 15 km/h | 2.0m |
| 10003 | Light 3 | OK | 100% | 20°C | 5 km/h | 0.5m |
| 10004 | Light 4 | Warning | 60% | 35°C | 20 km/h | 3.0m |
| 10005 | Light 5 | OK | 90% | 28°C | 12 km/h | 1.8m |
| 10006 | Light 6 | Warning | 70% | 32°C | 18 km/h | 2.5m |
| 10007 | Light 7 | OK | 98% | 22°C | 8 km/h | 1.0m |
| 10008 | Light 8 | Warning | 55% | 38°C | 25 km/h | 3.5m |
| 10009 | Light 9 | OK | 92% | 26°C | 11 km/h | 1.6m |
| 10010 | Light 10 | Warning | 65% | 34°C | 19 km/h | 2.8m |

Decades of Experience

With over 30 years of combined experience, Carmanah/SABIK are world-wide leaders in the field of developing and producing visual nautical navigational aids.

In 1997, we had already started our first solution for remote monitoring of navigational aids. Currently more than 1,500 navigational aids in more than 20 countries worldwide are monitored using our products.

Building off this background, we introduce the LightGuard Monitor with a vision to fundamentally revise and future-proof remote monitoring.

We have incorporated not only the requirements of our customers, but also our own direct experiences. With our navigational aid service we directly monitor and service approximately 100 floating navigational aids on the German coastline. Thanks to this setup, we could access data from existing stations throughout the development of our LightGuard products. From the beginning, we were able to develop and test our systems under real conditions.



Thanks to the remote monitoring with LightGuard Monitor, we can perfectly plan and implement our service assignments. This not only prevents unnecessary service assignments, but also allows us to react rapidly if a problem is detected.

Torsten Behm

Navigational Aid Service Manager | SABIK GmbH

List View

The most important information such as Alarm, Light on/off and the status of the communication can be viewed at a glance using the symbols displayed (List View). Additional parameters such as the battery status and the switching on/off times for the stations can also be seen using the detailed view.

74 %



SABOK

List



Apr 16, 2014 20:42:11



BKR1 E



BKR1 N1



BKR1 N2



BKR1 S1



BKR1 S2



BKR1 W



BUE 1



BUE 2



BUG 1



BUG 2



BUN 1



BUN 2



BUS 1



BUS 2



BUW 1



BUW 2



BW2 Nord



BW2 Ost 1



BW2 Ost 2



BW2 Sued



BW2 West 1



BW2 West 2



CH3



Ersatz 1



Ersatz 2



Ersatz 4



Ersatz 5



Riffgat N



GT1 Nord 1



GT1 Nord 2



12.86 V



21:10



06:36

GT1 Sued 2



GT1 West



Riffgat S



MA5



MW G4



13.07 V



21:22



06:23

MW West



NSO S (G2)



NSO SSW (S1)



NSO W (G3)



Intelligent Remote Monitoring

Using LightGuard Monitor, entire sections of the coast or large seaports, with hundreds of objects to be monitored, can be controlled in exactly the same manner as smaller working ports or marinas that have only a few stations. This flexible system can be adapted to your respective requirements and is always exactly as large as your need.

Benefits at a glance

- all technical components required for remote monitoring are fully integrated in the new product series
- independent of the operating system
- modern, clear interface
- map representation with vector-based nautical charts
- optional real time AIS representation for possible fleet management
- supports one and two-way communication
- high data security using redundant servers
- secure two factor login
- simple integration of new stations
- clear licensing model



Carmanah/SABIK have developed a practical series of products in which all technical components necessary for remote monitoring are fully integrated. There are no cables or antennas. Everything is in a single housing, and ready for immediate use.

Damien Hortsing
Product Manager | Carmanah Technologies Corporation

Map View

Map View represents all stations on various charts to provide a comprehensive overview of the individual monitored areas.

74 %

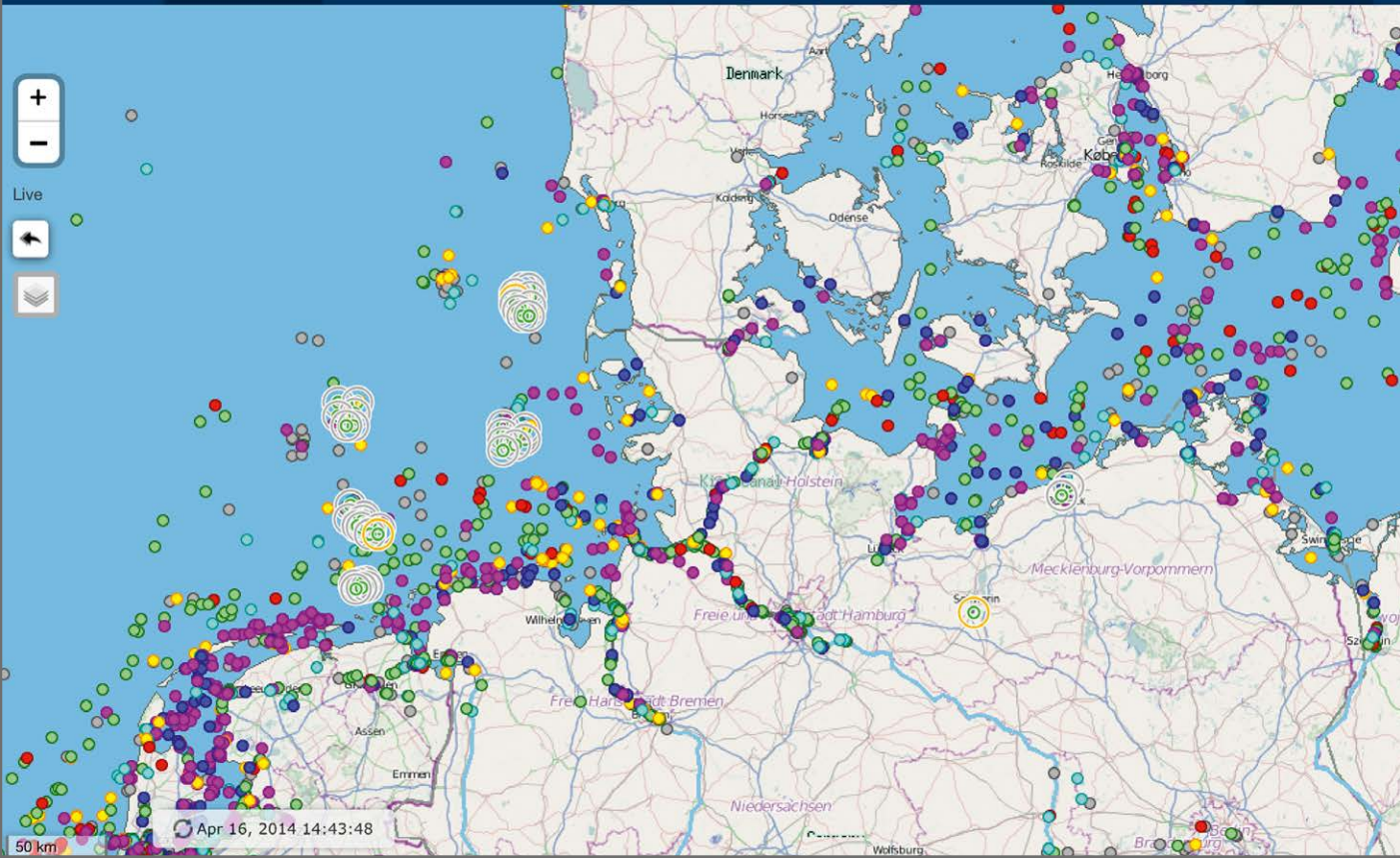


SABUK

Map



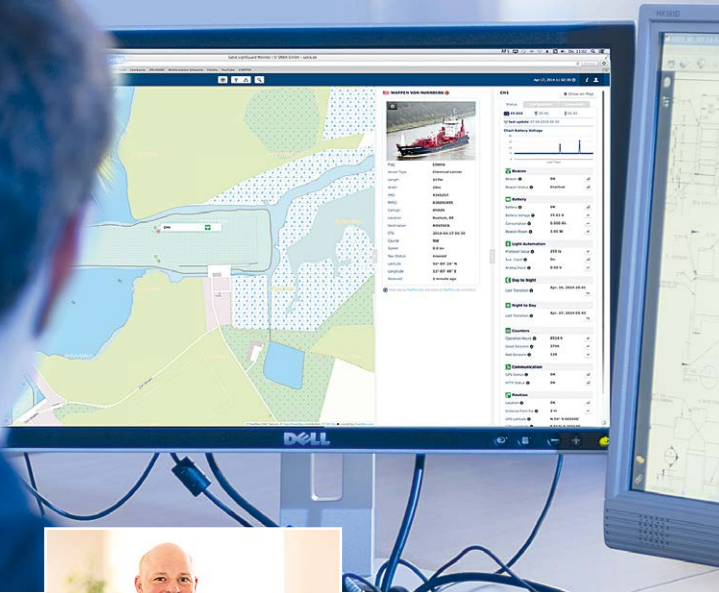
Apr 16, 2014 14:43:50



Apr 16, 2014 14:43:48

50 km

Modern Software Interface



One of the most important guiding ideas for the development of our web-based interface was providing the clearest possible overview. It must be possible in all representation modes to easily view several hundred stations with their monitored parameters.

Maik Gleitsmann
Design Leader | SABIK GmbH

Using our modern, clear software interface, all stations may be represented as a simple list or on an electronic nautical chart. This allows the user to always keep the most important information for each station in view. Station designation, light on/off information, current communication status, and potential alarm messages can all be viewed at a glance.

The system's sorting function additionally offers quick access to stations with an activated alarm.

Upon selecting a station, you receive a detailed status report with corresponding graphical chart representations for multiple parameters. The List View still remains onscreen to provide easy access to data for the other stations.

Using superuser or admin access, you can obtain, via a simple tab, direct access to the configuration of the recently selected station.

Status Report

Upon selection of a station, you receive a detailed status report with chart representation of the important parameters, without losing the overview of the other stations.

74 %

SABOK

List

Apr 16, 2014 14:44:14

BKR1 E

BKR1 N1

BKR1 N2

BKR1 S1

BKR1 S2

BKR1 W

BUE 1

BUE 2

BUG 1

BUG 2

BUN 1

BUN 2

BUS 1

BUS 2

BUW 1

CH4

Show on Map

Status

Configuration

Commands

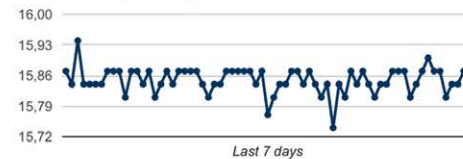
12.86 V

21:10

06:36

last update 16.04.2014 12:10

Chart Battery Voltage



Beacon

Beacon OK

Beacon Status Inactive

Battery

Battery OK

Battery Voltage 15.87 V

Consumption 0.000 Ah

Beacon Power 1.01 W

Light Automation



As a service technician I travel frequently as part of my work. With the LightGuard Monitor App, I can always keep an eye on my stations. In addition, using the two-way communication I can test stations and perform configurations.

Robert Starke

Service Technician | SABIK GmbH

LightGuard Monitor can be used with any Internet-capable laptop and tablet.

We have also developed the LightGuard Monitor App for iOS devices, to give you the opportunity to access your data while you are on the go.

The app and its usage on the smartphone is free of charge for users of the LightGuard Monitor application. Access to the monitored stations is via a secured login.

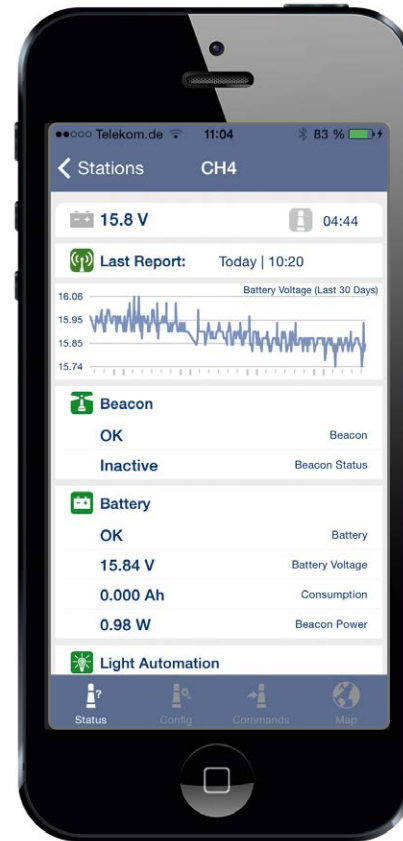
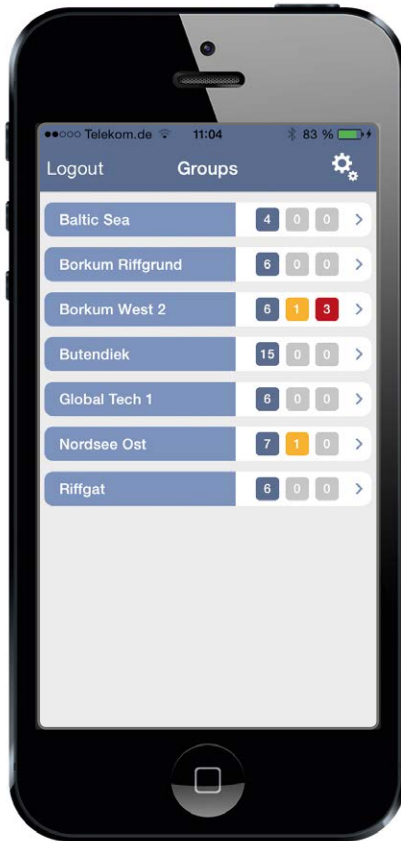
Because the app supports all display and operating functions of the LightGuard Monitor application on a Smartphone, it is also well-suited as a standalone software solution for smaller ports and marinas with only a few monitored stations.

With this app you have station monitoring services with you at all times.



Smartphone App

The LightGuard Monitor App was developed specifically for use on Internet-capable smartphones, and supports all necessary displays and operating functions.



LightGuard Monitor is not only suited for remote monitoring of navigational aids. Optionally, vessel traffic can be professionally monitored by means of real-time AIS data on the electronic nautical chart.

For your personal fleet management, you can permanently mark ships (in-software highlighting) and also access, along with the general ship designation and ship data, the current dynamic data.

For smaller sea ports and marinas, this is the optimal software solution in order to monitor your own nautical aids and the vessel traffic simultaneously.



Thanks to the ability to monitor the AIS vessel traffic, LightGuard Monitor is perfectly suited for monitoring the vessel traffic of offshore wind farm construction fields.

Christian Cammin
Managing Director | SABIK Ltd

AIS Representation

Not only can the nautical aids be monitored, optionally vessel traffic can be displayed in the nautical chart representation using AIS data. Vessels can be permanently marked (highlighted) for efficient and clear fleet management.

SABUK Map

Apr 16, 2014 14:49:28

PETER PAN

| | |
|-------------|---------------------|
| Flag | Sweden |
| Vessel Type | Cargo and passenger |
| Length | 190m |
| Width | 30m |
| IMO | 9217242 |
| MMSI | 265866000 |
| Callsign | SGUH |
| Location | Rostock, DE |
| Destination | ROSTOCK |
| ETA | 2014-04-16 13:00 |
| Course | SSW |
| Speed | 1.7 kn |

Data Security

The safety and integrity of your data is the most important part of our development work.

We guarantee the continuous availability of your data thanks to redundant servers, data security against unauthorised access and encryption of the data transmission using robust methods.

LightGuard Monitor is protected by a secure login against unauthorised access.

For even more security there is an optional two factor login: a disposable password, which is generated from your smartphone, and supplements the entry of your personal password – perfect for use at unsecured workplaces.



You decide whether your data is stored on a secure SABIK server, a regional server in your area, or on your own server. With a primary server and a secondary server, there are, in any event, always two redundant data stores.

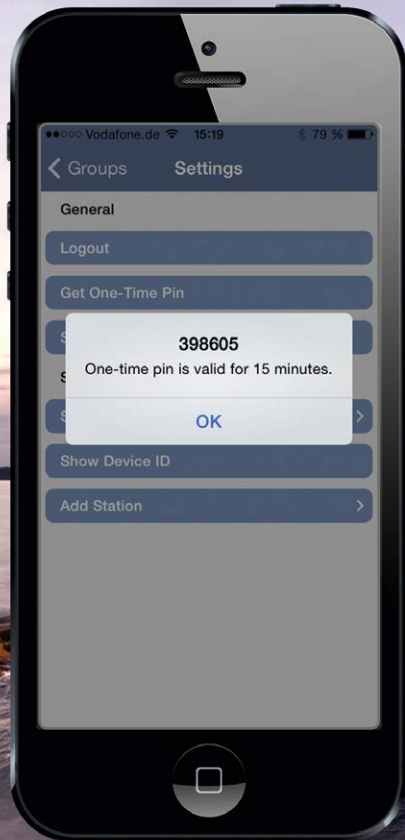
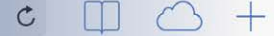
Hannes Rollin

Lead Developer | SABIK GmbH

Two-Factor Authentication

LightGuard Monitor is protected by a secure login against unauthorised access. For even more security there is an optional two factor login.

74 %



smith@sabik.com

.....

OTP

Two-Factor Login

Login

Setting-up New Stations

We have developed our products in the field of visual navigational aids specifically for easy installation and simple configuration.

With each LightGuard Monitor-capable product, our customers receive a personal service card which contains, along with a serial number, also a corresponding QR code.

New stations can be added easily by entering a serial number in the appropriate entry field.

It is even easier using the LightGuard Monitor App and your smartphone. In this case, simply scan the QR code and the station is registered in the software.



Our engineers, technicians and designers are always working to make our products safer and more effective. In our development, we pay particular attention to making the installation and configuration as simple as possible for our customers.

Michael Schulze

Product Development Manager | SABIK GmbH



Configuration

Configuring a station, with the corresponding access rights, is just as easy as accessing status data. A two-way communication option allows new stations to be set-up, configured or tested via the software interface.

74 %



Apr 16, 2014 14:44:37



CH4

Show on Map

Status

Configuration

Commands

Light Automation

Beacon Mode

Photocell Threshold

Flash Code

Beacon

Beacon Intensity

Position

Max. Distance from Fix

Fix Latitude

Fix Longitude

Time Zone

Communication

GPS Synchronization

Silence

Battery

Min. Battery Voltage

Apr 16, 2014 14:44:41



CH4

Show on Map

Status

Configuration

Commands

Beacon

Poll Beacon

Test Beacon

Light Automation

LOD On

LOD Off

Position

Fix Position

Communication

Update Config

Licensing

With the simple LightGuard concept, you automatically benefit from further developments and improvements, without the need to implement software updates.

For optional monitoring of AIS shipping traffic using LightGuard Monitor, you can optionally acquire a license for the use of up to five concurrent users.

When purchasing a LightGuard enabled product we offer you a range of flexible licensing models for LightGuard Monitor with or without the GSM or Satellite communication fee.

You can obtain the associated LightGuard Monitor app for your iOS smartphone free of charge in the appropriate app store.



We have made licensing the software for our customers as simple as the installation and configuration of our LightGuard products.

Lars Mansner

Managing Director | SABIK Oy

Simple Concept

With the LightGuard Monitor, any LightGuard product can be monitored easily and provided with the communication cost included in the license fee.

74 %



SABIK Oy

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