

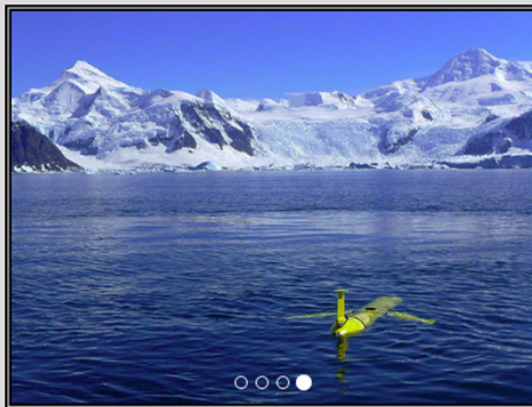
# Slocum Fleet Mission Control

## Software Installation & Setup Guide

**P/N M313589-NFC, Rev. A**  
**Software Version 8.6**

### Slocum Fleet Mission Control

Slocum Fleet Mission Control is a Web application used to manage a fleet of Slocum gliders in a secure and real-time manner. This application supports control from Desktop and Mobile platforms with use of an HTML5 Web browser.



Slocum Fleet Mission Control was developed by Teledyne Webb Research in partnership with the Rutgers University Center for Ocean Observing Leadership.



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**Refer to the applicable parts of this user manual before installing, setting up, connecting to, and using the SFMC web application.**

# CONTENTS

<b>Preface</b> .....	<b>v</b>
Conventions Used in This Publication .....	v
Customer Service .....	vi
RMA Request Form .....	vii
<b>1 Introduction</b> .....	<b>1-1</b>
<b>New</b> .....	<b>1-1</b>
<b>Upgrade</b> .....	<b>1-1</b>
<b>Noteworthy Changes in Latest Release</b> .....	<b>1-1</b>
<b>2 New SFMC Installation</b> .....	<b>2-1</b>
<b>Host System Installation Requirements</b> .....	<b>2-1</b>
<b>Installation Dependencies</b> .....	<b>2-1</b>
<b>SFMC Software Installation</b> .....	<b>2-2</b>
<b>3 Upgrade SFMC Installation</b> .....	<b>3-1</b>
<b>Upgrade Dependencies</b> .....	<b>3-1</b>
<b>CentOS/RHEL Upgrade Steps</b> .....	<b>3-1</b>
<b>Ubuntu Upgrade Steps</b> .....	<b>3-1</b>
<b>A Abbreviations and Acronyms</b> .....	<b>A-1</b>
<b>B SFMC Dock Server Folders</b> .....	<b>B-1</b>
<b>The <code>/var/opt/gmc/</code> Folder</b> .....	<b>B-1</b>
<b>The <code>/var/opt/sfmc-dockserver/stations/&lt;groupName&gt;/gliders</code> Folder</b> .....	<b>B-1</b>
<b>C Creating a Self-Signed SSL Certificate</b> .....	<b>C-1</b>

## LIST OF TABLES

Table 2.1: Recommended Partition Sizes . . . . .2-1

## Preface

Teledyne Webb Research Slocum Fleet Mission Control (SFMC) is a collection of software services that enables tracking of Teledyne Webb Research Slocum gliders, displaying their reported data, and creating mission plans for them using a standard HTML5-supported Web browser.

## Conventions Used in This Publication

### Safety Symbols

Where applicable, safety information is presented as follows:



#### Note

Identifies information of particular interest that the reader must be aware of, a referral to another part of this manual, or a referral to another manual.



#### CAUTION

Identifies a potential hazard that could result in damage to equipment or loss of data.



#### WARNING

Identifies a potential hazard that could result in injury or death to the operator or to other personnel.

Other symbols include:



A referral to: another part of this manual, an external reference, or general information applicable to Slocum Fleet Mission Control.

### Menu Options and Paths

Menu options are in bold type. Rather than writing out "From the **Admin** menu, select **User Administration**, then select **Users**," angle brackets are used to show the next menu level down:

Select **Admin > User Administration > Users**.

## File Types and Extensions

File names are written as `file.typ`, where **file** is the descriptor and **typ** is the extension.

- When the text mentions a specific file name, it is written as `sfmc.xml` or something similar.
- When the text mentions file types in general, it is written using the extension in all caps without the period before it; for example, INI files or XML files.

## Typographical Conventions

Font	Description
<b>Bold</b>	The name of a folder, node, path, menu option, or icon.
<i>Italic</i>	The name of a window, page, tab, dialog box, panel, area, field, button, or drop-down list within the software interface.
<b>[blue square brackets]</b>	The label of a physical key on the computer's keyboard or device's keypad.
Monospace	A system value or text displayed by the screen or computer.
<b>Monospace Bold</b>	A user value or text the user enters.

## Customer Service

We welcome your comments and suggestions for improving our products and documentation as well as developing better ways of serving you. Should you require service or support for SFMC, contact Teledyne Webb Research customer service using any of the following means:

TELEDYNE WEBB RESEARCH  
 Attention: Customer Service  
 49 Edgerton Drive  
 North Falmouth, MA 02556  
 U.S.A.  
 Telephone: (508) 548-2077  
 Fax: (508) 540-1686

E-mail: [webbresearch@teledyne.com](mailto:webbresearch@teledyne.com)  
 Email support: [glidersupport@teledyne.com](mailto:glidersupport@teledyne.com)

[www.teledynemarine.com/webb-research/support](http://www.teledynemarine.com/webb-research/support)

## RMA Request Form

To request an RMA for repair of any Webb Research products:

1. Please follow the link below.  
[RMA Request Form Link](#)
2. Complete all information in the form and select SUBMIT.
3. You will receive an automated confirmation that your form has been received.
4. We will respond within 24–48 hours to provide your RMA number and shipping instructions.

Please do not ship any goods until you have received the RMA number.

5. Please mark the shipment clearly with the provided RMA number.

# 1 Introduction

## New

If installing the software for the first time, please follow steps in Chapter 2, "New SFMC Installation."

## Upgrade

If upgrading an existing installation, please follow steps in Chapter 3, "Upgrade SFMC Installation."

## Noteworthy Changes in Latest Release

The following are noteworthy for this latest release:

- SFMC Postgresql Upgrade from 9.6
- Support for RockyLinux 8
- Support for Ubuntu 20
- Support for Java 11
- dbd2asc version 2.6  
Integrated changes from 2.5 and performed minor code cleanup.
- Apache Tomcat WebSocket Denial of Service  
Changed to use newer log4j.
- G3S Dock Server Script with -num=3  
Limits transfer of 3 files from flight and 3 files from science.



## 2 New SFMC Installation

### Host System Installation Requirements

This section specifies the installation platform requirements to install and run the SFMC software.

The recommended resources for SFMC are:

- One or more CPUs that allow for 8 cores operating at 2.7GHz
- 16 GB RAM
- 500 GB hard disk

The allowed resources for SFMC are:

- One or more CPUs that allow for 4 cores operating at 2.7GHz
- 8 GB RAM
- 300 GB hard disk

### Installation Dependencies

- The SFMC software requires usage of one of the following operating system distributions:
  - CentOS 7 — SELinux should be disabled
  - RockyLinux 8 — SELinux should be disabled
  - Red Hat Enterprise Linux (RHEL) 8 — SELinux should be disabled
  - Ubuntu 18.04
  - Ubuntu 20.04
- To ensure maximum disk space in the **/var** folder, following the recommendations for disk partition sizing in Table 2.1:

Table 2.1: Recommended Partition Sizes (1 of 2)

Partition Name	Partition Capacity
/boot	1 GB
swap	5 GB
/home	20 GB
/tmp	10 GB

Table 2.1: Recommended Partition Sizes (2 of 2)

Partition Name	Partition Capacity
/opt	50 GB
/	20 GB
/var	Remaining

- An SSL Web certificate is required to complete the install.  
You can use a self-signed certificate if you wish. However, if connected to the Internet, the recommendation is to use an SSL Web certificate provided by a well-known and trusted Certificate Authority.



## Note

Both the SSL certificate and private key files are required to complete the installation.

- SFMC Installation files, where *<version>* represents the SFMC version:
  - CentOS 7, RHEL 8, or RockyLinux 8 — **rpm-install-sfmc-*<version>*.bsx**
  - Ubuntu 18.04/20.04 — **deb-install-sfmc-*<version>*.bsx**

## SFMC Software Installation

Perform the following steps:

- Log in as the root user or a user with “sudo all” permissions.
- In a terminal window, ensure the Linux system time is set to UTC:  
**timedatectl set-timezone UTC**
- Install SSL Web server certificate and private key files to:
  - /etc/pki/tls/certs/localhost.crt**
  - /etc/pki/tls/private/localhost.key**
- In a terminal window, change directory to the location of one of the appropriate files:
  - CentOS 7, RHEL 8, or RockyLinux 8 — **rpm-install-sfmc-*<version>*.bsx**
  - Ubuntu 18.04/20.04 — **deb-install-sfmc-*<version>*.bsx**
- In the terminal window, enter the appropriate command depending on the operating system platform:
  - CentOS 7, RHEL 8, or RockyLinux 8 — **sudo sh ./rpm-install-sfmc-\***
  - Ubuntu 18.04/20.04 — **sudo bash ./deb-install-sfmc-\***

The system displays:

```
Will this installation utilize a static IP? Answer y or n >
```

6. Enter one of the following answers:

- **y** — for a Dock Server system that utilizes a static IP
- **n** — for a mobile Dock Server system that connects to various Wireless Access Points

The system displays:

```
Please press any key to review the license agreement >
```

7. Press the **[Enter]** key and review the license agreement.

8. After reviewing the license agreement, press the **[q]** key to quit out of the license agreement view.

The system displays:

```
Please enter y if you accept the terms of the license agreement >
```

9. Press the **[Enter]** key to accept the license agreement terms and begin the installation process.

10. Wait for the install to complete.

The system displays:

```
The firewall will need to be updated to allow for external access to the ports for HTTP (80), HTTPS (443), FTP(21), SMTP (25), SSH (22) and the following ports: 6564, 6565, 6566, 6567, 6600, 6601.
```

```
Please update the firewall settings and press any key upon completion. >
```

11. Update the system firewall settings to allow external access to the specified ports, then press **[Enter]**.

The system displays:

```
The system requires a reboot. Please press any key to initiate the reboot >
```

12. Press the **[Enter]** key.

The system restarts.

13. Log in to the system using:

- Account — **localuser**
- Default password — **WideOpen**

14. Use the **/opt/sfmc-dockserver/localuser/bin/port-dockserver** program to configure the Dock Server to include your desired ports.

# 3 Upgrade SFMC Installation

## Upgrade Dependencies



### CAUTION

Ensure there are no gliders expected to call into the SFMC being upgraded.

- The individual completing the upgrade has the ability to use the root account or has access to an account with sudo all permissions.
- The SFMC upgrade expects that an existing version of the SFMC software was already installed.
- The administrator completing the upgrade has access to the appropriate file, where *<version>* represents the SFMC version for the new version being installed:
  - CentOS 7, RHEL 8, or RockyLinux 8 — **rpm-upgrade-sfmc-*<version>*.bsx**
  - Ubuntu 18.04/20.04 — **deb-upgrade-sfmc-*<version>*.bsx**
- The upgrade will take about 15 minutes to complete.

## CentOS/RHEL Upgrade Steps

1. Log in to the SFMC machine as the root user or a user account with “sudo all” permissions.
2. Attach the media holding the **rpm-upgrade-sfmc-*<version>*.bsx** file.
3. In a terminal window, change directory to the location of the rpm-upgrade-sfmc-*<version>*.bsx file; for example, `cd /var/run/media/root/KINGSTON`.
4. In the terminal window, run the following command, replacing *<version>* with the actual version details (for example, 8.5.0-1):  
**sh ./rpm-upgrade-sfmc-*<version>*.bsx**
5. Wait for the upgrade to complete.
6. Log out of the root user session.

## Ubuntu Upgrade Steps

1. Log in to the SFMC machine as the user account with “sudo all” permissions.
2. Attach the media holding the **deb-upgrade-sfmc-*<version>*.bsx** file.
3. In a terminal window, change directory to the location of the deb-upgrade-sfmc-*<version>*.bsx file; for example, `cd /var/run/media/root/KINGSTON`.

4. In the terminal window, run the following command, replacing *<version>* with the actual version details (for example, 8.5.0-1):

```
sudo bash ./deb-upgrade-sfmc-<version>.bsx
```

5. Wait for the upgrade to complete.
6. Log out of the user session.

# A Abbreviations and Acronyms

This appendix includes the abbreviations and acronyms pertaining to Slocum gliders.

Abbreviation or Acronym	Description
AC or ac	Alternating Current
ASSY	Assembly
BAM	Beam Attenuation Meter
CTD	Conductivity/Temperature/Depth
COTS	Commercial Off-the-Shelf
DC or dc	Direct Current
DDM	Degrees Decimal Minutes Latitude/Longitude format displayed as: -70° 34.50' W (entered as -7034.50)
DG	Dangerous Goods
DMS	Degrees Minutes Seconds Latitude/Longitude format displayed as: -70° 34' 29.9776" W
GLMPC	Glider Mission Planning and Control
GMC	Glider Mission Control
GPS	Global Positioning System
IR	Infrared
ISO	International Organization for Standardization
ISU	Iridium Subscriber Unit
LNA	Low Noise Amplifier
MS Plug	Military Standard Plug
MSDS	Material Safety Data Sheet
OC	Operations Center
OEM	Original Equipment Manufacturer
QCP	Quality Control Process
PPE	Personal Protective Equipment
RHEL	Red Hat Enterprise Linux
RHN	Red Hat Network
RUDICS	Router-based Unrestricted Digital Internetworking Connectivity System
SE	Systems Engineering
SHCS	Socket Head Cap Screw
SN	Serial Number
SOP	Standard Operating Procedure

Abbreviation or Acronym	Description
SSL	Secure Sockets Layer A security protocol that creates an encrypted link between a web server and a web browser.
STE	Secure Telephone Equipment
TWR	Teledyne Webb Research
U.S.	United States
USB	Universal Serial Bus
UUV	Unmanned Undersea Vehicle
VAC	Volts Alternating Current

# B SFMC Dock Server Folders

## The `/var/opt/gmc/` Folder

The `/var/opt/gmc` folder represents the `/var/opt/sfmc-dockserver/stations/default` folder.

The `/var/opt/sfmc-dockserver/stations` folder includes all of the group-specific `<groupName>` folders, including the `default` group folder:

- `/var/opt/sfmc-dockserver/stations/default`
- `/var/opt/sfmc-dockserver/stations/group1`, `group2`, and so on

In each group folder are the following:

- `<groupName>.xml` — An XML file that must **not** be modified.
- **scripts** — A folder that can contain Dock Server scripts for the group.
- **maps** — A folder that can contain maps for the group.
- **gliders** — A folder that contains a list of folders for each glider registered in the group.
- **backups** — A folder that contains archives of specific glider folders that have been backed up by users.

## The `/var/opt/sfmc-dockserver/stations/<groupName>/gliders` Folder

The folder `/var/opt/sfmc-dockserver/stations/<groupName>/gliders` contains one or more glider folders, each named `<gliderName>` and each representing the glider as in the following examples:

- `/var/opt/sfmc-dockserver/stations/default/gliders/hostglider1`
- `/var/opt/sfmc-dockserver/stations/group1/gliders/hostglider4`
- `/var/opt/sfmc-dockserver/stations/group2/gliders/hostglider5`

In each glider folder are the following:

- **archive** — A folder that stores archived files associated with **dockzr** command executions for the glider.
- **configuration** — A folder that contains mission planner files to be transferred to the glider.
- **from-glider** — A folder that contains files transferred from the glider.



- **logs** — A folder that contains Dock Server created log files capturing glider dialog for each communication session with the glider.
- **to-glider** — A folder that contains flight files to be sent to the glider.
- **to-science** — A folder that contains science files to be sent to the glider.

# C Creating a Self-Signed SSL Certificate

This appendix is only applicable for users who plan to use a self-signed Web server certificate instead of a valid Certificate Authority-signed Web server certificate.

Secure Sockets Layer (SSL) is a security protocol that creates an encrypted link between a web server and a web browser.

An SSL Certificate is a digital certificate that authenticates your website's identity and enables an encrypted connection.

Perform the following steps:

1. Generate the **server.key** file. Type the following in a command line:

```
openssl genrsa -des3 -out server.key 1024
```

The system displays:

```
Enter pass phrase for server.key:
```

2. Enter the pass phrase.

The system displays:

```
Verifying - Enter pass phrase for server.key:
```

3. Re-enter the pass phrase.

4. Generate the Certificate Request. Type the following in a command line:

```
openssl req -new -key server.key -out server.csr
```

The system displays:

```
Enter pass phrase for server.key:
```

5. Enter the **server.key** file pass phrase.

The system requests certificate request parameters.

6. Enter the following required parameters:

- Country Name
- State or Province Name
- Locality Name (for example, city)
- Organization Name

7. For all other parameters, press the **[Enter]** key.

8. Copy the **server.key** file to server.key.org. Type the following in a command line:

```
cp server.key server.key.org
```

9. Re-create the **server.key** file so that a pass phrase is not required. Type the following in a command line:

```
openssl rsa -in server.key.org -out server.key
```

The system displays:

```
Enter pass phrase for server.key:
```

10. Enter the **server.key** file pass phrase.
11. Generate the Web server certificate. Type the following in a command line:

```
openssl x509 -req -days 365 -in server.csr -signkey server.key -out server.crt
```