



# **SCOM Serial Communications Tool Installation and User Manual**

**SCOM Version 9.27 for Linux on x86 or x64**

**Manual P/N 071-0089 Rev 7 May 12, 2016**



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## Upgrade Considerations

If you are upgrading from a previous release of SCOM, older files will be renamed with a **.old** extension. However, your older files will be overwritten if you run the install script more than once.

## scom Release Notes

The following changes took effect in version 9.27;

- The scom installation program now installs all executable binaries (x86 and x64).
- Due to the limitations of statically linked libraries, the scom.static.\* executable will not allow a DNS name to be used for the host. It will fail with “unknown host” error. Use the IP address of the host instead or the dynamically linked executable (scom.dynamic.\*).
- Solved an issue that made a DNS host name fail with “network unreachable” error in scom.dynamic.x86 or scom.static.x86 executables.
- Change the name of email setup file in (7) monitord scripts from emailsetup.ini to email.ini.

The following changes took effect in version 9.25;

- Added -R option so that email recipients can be included on the command line. This feature is used in conjunction with -E email SMTP mode. Previously email recipients were included in the setupfile (email.ini) using the RecipientEmailAddress keyword. Now either method can be used.
- Added support for ESMTP and password authentication (auth login) in -E email SMTP mode.
- Added timezone offset to SMTP date header so that receiver of emails can better order them by date. This applies to -E mode. It fixes a problem where some email POP clients see emails coming from scom as being out of order in respect of time stamp.
- Fix various bugs in -A email attachment option. These bugs manifest themselves as SMTP error like “resource unavailable”. We also fixed various MIME header sequencing and formatting errors. This makes scom email and attachments work with more recent SMTP mail servers.
- Add anonymous method to access network camera in -C mode.

- Add prompt for password in authenticated access to network cameras in –C mode. The password is saved to a hidden file for subsequent attempts.
- Enable –C network camera mode to work without a setupfile by using certain defaults. These defaults include; username as root, authenticated access, prompt for password, source image file at /jpg/image.jpg. These defaults are well suited to work with Axis Network Cameras and may not work with other network cameras.
- Changes were made to improve error handling and exit codes used in –C network camera mode.
- Changes were made to accommodate newer firmware in Sensorsoft devices that measure temperature. These new devices have an abbreviated var name called TEMP instead of TEMPERATURE. This change allows the Celsius to Fahrenheit conversion to be correctly observed with newer devices. This change affects the –Q Sensorsoft device mode only.
- Add –v option to scom and scomd to report software version, target CPU and OS.
- Changes to scom archive and installer permit download from Sensorsoft web site as an alternative to installation from a CD. Now installer prompts for a license key before installation begins.

The following changes took effect in version 8.1;

- Fixed bug that prevented DNS names from being resolved properly with x64 binaries.

The following changes took effect in version 8.0;

- Added monitord7.sh script for supporting real-time (interrupt based Boolean) Sensorsoft devices.
- Added –X plug-in reader mode to support third party devices that use a simple text based protocol.
- Added scom 64 bit executable (Linux distribution only).

The following changes took effect in version 7.2;

- Added support for interrupt based (Boolean) Sensorsoft devices.
- Added ability to read and write string data types in Sensorsoft devices that support them (SS6420).

The following changes took effect in version 6.0;

- Added support for newer Sensorsoft devices such as SS6610 Humidity Temperature Meter that use new data types (-Q mode).
- Revised the number of authentication strings that can be accepted from Sensorsoft devices, preventing authentication failures (-Q mode).
- Removed support for older Sensorsoft protocol devices that used SSDP version 1.0. The unsupported models include ST6100 and ST6150 Soft Thermometers (-Q mode).
- Added a variety of new setupfile keywords and arguments for -Q mode, to control the data being output and the format thereof.
- When the UnitofMeasure=F keyword assignment is used in a setupfile where a Sensorsoft device is measuring temperature, the unit of measure now correctly outputs in Fahrenheit (F) and not Celsius (-Q mode).
- Changed the action of the setupfile keyword argument, Command=read\_data, from output of the Sensorsoft device reading and unit of measure, to just the reading (-Q mode).
- Added a feature to use generally acceptable defaults when a setupfile is not found in the -Q mode.
- Changed -C mode to work with Ethernet based Network Camera such as the Axis2XXX series. Support for Olympus cameras was removed.
- Added -E mode to send email to an SMTP server.
- Added -A option to include a MIME encoded attachment when an email is sent with the -E mode.
- Changed basic reception of serial port and socket data in all modes for reduced CPU usage.
- Corrected a problem where the SYN (0x16) character was removed from the tty input stream (Sun Solaris only).
- Socket connections can now be specified with either an @ sign or a colon (i.e. hostname:tcp\_port or hostname@tcp\_port).
- Revised exit codes. See scom man page for more details.
- Removed QTEKFLOW option argument from -c option (Sun Solaris).

- Removed `-x` option, as it is no longer needed for use with Sensorsoft device servers like `scomd` version 6.5.
- `Scom` now exits gracefully, closing ports, when it receives a `SIGPIPE` or `SIGTERM` signal (`kill -15 <pid>` or `kill <pid>`). It exits with error code 5.
- Removed a bug that flushed the `tty` port output and prevented a successful SMS page message from being completed on Linux systems with slower CPU's.
- Sensorsoft devices may not power-up correctly on the serial ports of a Sun workstation running Sun Solaris 8. This is due to a driver bug that prevents a system call from asserting RTS and DTR. To correct this problem, install the Sun driver patch 109793-22 (available from [sunsolve.sun.com](http://sunsolve.sun.com)).
- Various changes to the `-P` mode to allow for improved modem hang-up and recovery after a failed session during SMS paging. Revised exit codes for modem connection and timeout failures.
- New `monitord` scripts replace older `splogdata` scripts for improved capability. Log file data output is now compatible with the Sensorsoft Graphing Tool data format and error messages are stored in a separate system-error log file.
- New scripts were added for scanning TCP ports, displaying sensor readings on a web server, detecting su attempts and low disk space. See *Index of Scripts* below for more details.

## scomd Release Notes

The following changes took effect in version 8.0;

- Added `scomd` 64 bit executable (Linux distribution only).

The following changes took effect in version 6.0;

- Changed basic reception of serial port and socket data for reduced CPU usage.
- `Scomd` can now detect when the client is disconnecting without relying on the idle timeout setting or the `SSSP=0` command from client.
- `Scomd` now disables the idle timer when the `IdleTimeout` setupfile keyword is set to zero. The `-d` option now accepts an argument of 0 (zero) and disables the idle timer too. The program default idle timer value has been changed from 2 to 10 seconds.

- Corrected a pointer problem that affected the reading of setup file values.
- Corrected a problem where the SYN (0x16) character was removed from the tty input stream (Sun Solaris only).



## Linux Installation Procedure from download file

Use the following procedure to install from a scom download tar file:

1. Login as root.
2. Type the following commands (where **x.xx** is shown below use the specific version number included the download file name):

```
# cp scom-linux-vx.xx-download.tar /tmp
# cd /tmp
# tar -xvf scom-linux-vx.xx-download.tar
# ./installer
```
3. The installer will then prompt you for your license key. Upon entry of the correct license key the installation process will begin.
4. After installation add the /scom directory (or alternate you chose) to your path variable in the login script (i.e. .profile):

```
PATH=$PATH:/scom
export PATH
```

## Linux Installation Procedure from CD

Use the following procedure to install from CD-ROM. We do not recommend using the auto-mounter as it may prevent you from executing the install script. If the CD auto-mounts after inserting it into the CD-ROM drive, un-mount it and follow the procedure below from step 3:

1. Login as root.
2. Insert the scom CD with in CD-ROM drive.
3. Type the following commands:

```
# mkdir /tmp/scom-mnt
# mount /dev/cdrom /tmp/scom-mnt
# /tmp/scom-mnt/installer
```
4. The installer will then prompt you for your license key. Upon entry of the correct license key the installation process will begin.
5. After installation add the /scom directory (or alternate you chose) to your path variable in the login script (i.e. .profile):

```
PATH=$PATH:/scom
export PATH
```

6. The CD can be un-mounted using the command: `# umount /dev/cdrom`

## Linux Installation Procedure from ISO image

Use the following procedure to install from an ISO image file.

1. Login as root.
2. Type the following commands (where **x.xx** is shown below use the specific version number included in the ISO image file name):

```
# mkdir /tmp/scom-mnt  
# mount -o loop -t iso9660 /scom-linux-vx.xx.iso /tmp/scom-mnt  
# /tmp/scom-mnt/installer
```

3. The installer will then prompt you for your license key. Upon entry of the correct license key the installation process will begin.
4. After installation add the /scom directory (or alternate you chose) to your path variable in the login script (i.e. .profile):

```
PATH=$PATH:/scom  
export PATH
```

5. The ISO image can be un-mounted using the command: # umount /dev/loop0

## Using the SCOM built-in Help

By typing the command name you can access its built-in help.

scom           (client command)  
scomd         (server command)

This built-in help offers a list of command switches and option modes supported by the command with a brief explanation of each. For a more detailed explanation of the commands, see the man pages as described below.

## Viewing the Detailed Man Pages

To read the SCOM man pages, you must use a web browser. These pages are located as shown below, if you chose the default installation directory:

/scom/html/scom.html(client manual)  
/scom/html/scomd.html     (server manual)  
/scom/html/scom\_app.html   (application note)

## SCOM Command Line Examples

In the following examples the serial device names may not be the same as those on your system. Linux systems use device names like /dev/ttyS0 and /dev/ttyS1 for built-in serial ports.

### Reading the temperature from a Sensorsoft Thermometer

To read the temperature from a Sensorsoft Thermometer, use the following command line;

```
# scom -Q /scom/setupfiles/ST6105.ini ttyS0
```

### Reading any Sensorsoft device

If you do not know the model number or type of Sensorsoft device you want to read, use the following command line. Scom will then auto-discover the Sensorsoft device;

```
# scom -Q none ttyS0
```

### Turn a Sensorsoft Relay ON or OFF

The following commands can control an electrical load connected to a Sensorsoft Relay;

```
# scom -Q /scom/setupfiles/SR6171_ON.ini ttyS0  
# scom -Q /scom/setupfiles/SR6171_OFF.ini ttyS0
```

### Sharing a Sensorsoft device on a TCP/IP network

To share a Sensorsoft device on a TCP/IP network, use the following command line;

```
# scomd -F /scom/setupfiles/ssd_shared.ini ttyS0
```

For the above to work, you must add the following line to your /etc/services file;

```
ssd_shared 6100/tcp # Sensorsoft device
```

### Accessing the Sensorsoft device on a TCP/IP network

To read any Sensorsoft device on a TCP/IP network, use the following command line;

```
# scom -Q none hostname:6100
```

The hostname is the name of the server that is sharing the Sensorsoft device. The **hostname** must be listed in your /etc/hosts file or be available through DNS (Domain Name Service).

## Sending an email message

To send an email message to your email account, use the following command line. Be sure to edit the **email.ini** file and enter the correct information for all email addresses.

```
# scom -E/scom/setupfiles/email.ini "testing" "hello" smtp_server:25
```

If using \$variables for the subject and message, enclose each variable in double quotes.

```
# subject="Problem at remote site"  
# message="Disk space is low"  
# scom -E/scom/setupfiles/email.ini "$subject" "$message" smtp_server:25
```

## Sending an email message with recipients on the command line

```
# scom -R alerts@yourdomain.com,support_team@yourdomain.com -E  
/scom/setupfiles/email.ini "Running on diesel power" "Running on diesel power"  
smtp_server:25
```

## Sending an attachment with your email message

To send an email attachment with your message, use the following command line. Be sure to edit the **email.ini** file and enter the correct information for all email addresses.

```
# scom -A image.jpg -E/scom/setupfiles/email.ini "See attached image" "This image  
shows our server room" smtp_server:25
```

## Sending a text message to a cell phone or pager

To send a message to an alphanumeric pager, use the following command line. Be sure to edit the **SMS-TAP\_page.ini** file and enter the correct information for your pager ID, pager modem pool phone number and the type of modem you are using.

```
# scom -P/scom/setupfiles/SMS-TAP_page.ini "Disk space is low" ttyS1
```

If using a \$variable for the message, enclose the variable in double quotes.

```
# message="Message from server watchdog"
```

```
# scom -P /scom/setupfiles/SMS-TAP_page.ini "$message" ttyS1
```

## **Sending a message to a numeric pager**

To send a message to a numeric pager, use the following command line. Be sure to edit the **DTMF\_page.ini** file and enter the correct information for your pager phone number, the type of modem you are using and the period in seconds for DelayBeforeNumericPage.

```
# scom -P /scom/setupfiles/DTMF_page.ini "555-5555" ttyS2
```

If using a \$variable for the message, enclose the variable in double quotes.

```
# message="555-5555"  
# scom -P /scom/setupfiles/DTMF_page.ini "$message" ttyS2
```

## **Downloading an image from a Network Camera**

To download an image to a file, use the following command line;

```
# scom -C /scom/setupfiles/camera.ini image.jpg camera:80
```

## **Downloading an image from a Axis Network Camera without a setupfile**

To download an image, without using a setupfile. This requires Axis camera default settings. You will be prompted by scom for the camera password:

```
# scom -C none image.jpg camera:80
```

## **Store a serial data stream to a file**

The following appends data from a serial port to a file;

```
# scom -s2400 -d0 ttyS0 >> data.log &
```

If you need to view the data use the following;

```
# tail -f data.log
```

## Index of Setup Files in /scom/setupfiles

A setup file is basically a text file with a collection of keywords used to change the behavior of various modes that the scom and scomd tools can operate in. They replace the often cryptic multitude of command line option letters and tokens used in so many UNIX/Linux command tools.

### **camera.ini**

Contains settings for network camera mode. Use with -C option mode of scom.

### **SMS-TAP\_page.ini**

Contains settings for SMS TAP (alphanumeric paging) mode. Use with -P option mode of scom.

### **DTMF\_page.ini**

Contains settings for numeric paging mode. Use with -P option mode of scom.

### **HAYES\_page.ini**

Provides Hayes compatible modem settings as used with the -P option mode of scom. This setup file is referenced in the DTMF\_page.ini or SMS-TAP\_page.ini files if this type of modem is used for paging.

### **OlderHAYES\_page.ini**

Provides modem settings as used with older 300-1200 Hayes compatible modems and the -P option mode of scom. This setup file is referenced in the DTMF\_page.ini or SMS-TAP\_page.ini files, if this type of modem is used for paging.

### **USRsportster\_page.ini**

Provides U.S. Robotics Sportster modem settings as used with the -P option mode of scom. This setup file is referenced in the DTMF\_page.ini or SMS-TAP\_page.ini files, if this type of modem is used for paging.

### **USR56Kvoice\_page.ini**

Provides U.S. Robotics 56K Voice modem settings as used with the -P option mode of scom. This setup file is referenced in the DTMF\_page.ini or SMS-TAP\_page.ini files, if this type of modem is used for paging.

### **email.ini**

Contains settings for sending email using -E option mode of scom.

### **SXXXXX.ini**

These files contain settings for Sensorsoft Devices. Use with -Q option mode of scom.

### **pagerd.ini**

Contains settings for sharing a paging modem on a TCP/IP network. Use with -F option of scomd.

**ssd\_shared.ini**

Contains settings for sharing a Sensorsoft Device on a TCP/IP network. Use with -F option of scomd.



## Index of Scripts in /scom/scripts

Many of the following scripts were originally written in Bourne shell (`#!/bin/sh`) so that they work well with different UNIX systems. You can change them to work in Bash shell which is now more common in Linux. You can do this by changing the first line of the file from `/bin/sh` to `/bin/bash`.

### **sysadmin.sh**

This shell script can be used by a System Administrator to monitor disk space and su attempts and report violations to the console, a logfile and send page or email alerts. The disk monitoring parameters can be set in the file `sysadmin.ini`.

### **dialup.sh**

This shell script dials up a remote modem and verifies login process reliability of modem pools and Internet service providers (ISP). It records the results in a log file.

### **portscan.sh**

This shell script accepts a target hostname or IP address from command line and proceeds to scan the target hostname for open ports, outputting the port information and response to a log file named `scan-<target>.log`.

### **scomd\_launcher.sh**

This shell script is useful if you need to launch multiple instances of `scomd` to share a variety of serial devices.

### **monitordX.sh**

These shell scripts take Sensorsoft device readings at regular intervals, records the readings to an ASCII log file and compares them to high and low alarm limits. In the event of an alarm, these scripts send a message to the console, record the alarm condition in a log file and send a message to the administrator's pager and e-mail address. These scripts can be run in the background and stopped by a signal (e.g. `kill -15 pid`). Edit the desired script(s) as required, before adding them to your machine's `/etc/rc.local` startup file. If you use more than one of the scripts listed below, consider stopping or starting them using the `start_monitoring.sh` and `stop_monitoring.sh` scripts.

<code>monitord1.sh</code>	(script for use with Sensorsoft Thermometer ST6105)
<code>monitord2.sh</code>	(script for use with Sensorsoft Power Sensor SP6400)
<code>monitord3.sh</code>	(script for use with Sensorsoft Flooding Sensor SM6201)
<code>monitord4.sh</code>	(script for use with Sensorsoft Input Contact Module SS6402)
<code>monitord5.sh</code>	(script for use with Sensorsoft Humidity Meter SM6204)
<code>monitord6.sh</code>	(script for use with Sensorsoft Humidity Temperature Meter SS6610)
<code>monitor6.ini</code>	(setup file used by the <code>monitord6.sh</code> script above)
<code>monitord7.sh</code>	(script for use with Sensorsoft devices that operate in real-time: SS6420, SS6402, SP6400, SM6201, SS6201, requires firmware 2.01 or better)
<code>monitor7.ini</code>	(setup file used by the <code>monitord7.sh</code> script above)

start\_monitoring.sh (start all or some of the above scripts)  
stop\_monitoring.sh (stop all or some of the above scripts)

**sensordemo.pl**

This perl script implements a CGI that allows access to Sensorsoft devices at remote sites from any web browser. To install this script on an Apache web server running under Sun Solaris 8, follow the instructions in this file. The HTML web interface that calls the CGI, sensordemo.html, is located in the html subdirectory.

## Getting Help

### Technical Support

If in the unlikely event you should have problems installing or using Sensorsoft SCOM, and the previous sections have failed to provide a solution, we offer technical support to help you overcome your difficulties.

You will receive three (3) support incidents (telephone calls or emails) with your initial purchase of a Sensorsoft SCOM license. After these incidents are used, you must purchase a support package or pay a charge-per-incident fee. None of the included support incidents can be used for those wishing to obtain support to write their own software; this is available on a charge-per-incident basis only.

#### **Before contacting Sensorsoft Technical Support:**

Go through the previous sections of this manual. Even if a direct answer to your question is not found there, it will be helpful for the support technician if you are able to provide information obtained from the diagnostic and troubleshooting process. Please ensure the problem is directly related to the Sensorsoft SCOM software.

**World Wide Web:** <http://www.sensorsoft.com>

**E-mail:** [support@sensorsoft.com](mailto:support@sensorsoft.com)

### 30 Day Money Back Guarantee

If for any reason you want to return a Sensorsoft product for a refund, you can do so within 30 days (calendar days) of your purchase. The refund does not include shipping or brokerage fees you may have incurred or paid.

### Returns

If returning a product or item, please keep in mind the follow guidelines:

- Contact Sensorsoft for an RMA number (Return Material Authorization).
- Provide a detailed explanation or reason for returning the product.
- Return shipments that bear no RMA number (on the outside of the package) or are not prepaid for shipping/clearing charges, will be refused.

## Appendix A – Modem DIP switch settings

### Modem DIP switch settings required for use with SCOM paging software

If you have a 3Com or U.S. Robotics modem with DIP switches, please make sure they reflect the required settings shown below. If you have another brand of modem that has DIP switches, please make sure they reflect the settings shown in the Function column:

#### DIP Switches (External Modems with DIP Switches Only)

Switch	Position	Function
1	OFF - UP	Normal DTR operations
2	OFF - UP	Result codes are words
3	ON - DOWN	Enable result codes
4	ON - DOWN	Echo disabled
5	ON - DOWN	Auto Answer disabled
6	OFF - UP	CD reflects state of carrier
7	OFF - UP	On power-up load user definition
8	ON - DOWN	Modem operates in smart mode