Scientific Computing System
NOAA Office Of Marine and Aviation Operations

Release Notes for SCS 5.0.24

Software Engineering Division
Marine and Aviation Cyber Center

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Related Documents: SCS User Manual
HTML - https://scsshore.noaa.gov/help
PAD - https://scsshore.noaa.gov/Home/Downloads

Visit website to learn more about SCS: http://SCSshore.noaa.gov

New Features & Significant Changes from Previous SCS

- SCS Web Server (IIS) & Database Server (MySQL)

SCS 5.0 runs on a web server developed with the latest web technologies. Raw data collected by the server will be saved to a database server and also a copy to local drive on the web server. Both web server and database server can be installed to a single computer or two separated computers.

SCS clients access to SCS data and functionalities over the web via modern web browser, such as Google Chrome, Firefox or IE.

- User Accounts

For security and privacy, user account is required to access SCS 5.0, the purpose is to ensure that data and works are well protected. CAC access is not available. Each user account is associated to a role of *Scientist* or *Administrator*, account with an *Administrator* role has more authorization to do works, such as editing CFE, etc.

- Data Visualization Tools - Layouts, Widget Groups

SCS 5.0 brought users a brand new visual experience to watch the real time data. Available widget options are Charts, Linear/Radial/Numerical Gauges, Real Time Monitor and Displays. To view data, users have to build *layouts*, *widget groups* and *widgets*. *Layouts* are the main data visualization page and sits at the highest level of the user defined interface, layouts are used to wrap one or more Widget Groups together in a set. Widget Groups are used to wrap one or more Widgets together in a set.

Among those new experiences, SCS 5.0 also provide a new way to skip the formal default creation process and quickly add a temporary default widget to the layout page, those quick visualization are temporary and read-only so will be ignored during save process.

- Sensor Automatic Detection

This new feature provides the capabilities to automatically detect new sensor feeds on COM ports hooked up to the primary server. This is accomplished via the Sensor Automatic Detection service running at all times in the background constantly scanning all open COM ports for new data. If it finds something new it attempts to match it up against known definitions inside SCS. It will then present the find to you in the Auto-Detect tab of CFE.

- Data Submissions - SAMOS, TSG and NCEI

In SCS 5.0, submission processes have been integrated as seamlessly and automatically as possible to reduce the workload of submitting data packages. Users no longer create or modify template files, it's all taken care by the new system. Users can set the preferred daily submission time for SAMOS, TSG and NCEI, or turn on/off the automatic processes. Please refer to user manual for more detailed description for each submission if needed.

- Quality Assurance / Quality Control (QA/QC)

The new feature expanded significantly the original DataMon of SCS 4.9 by adding a lot of powerful functionalities. The user interfaces comprise a *QA/QC Definition Builder and a Monitor*, the builder creates customized rulesets and manages the system-generated rules, the monitor views the up to date state of the sensor suite.

- Events

Events now comprises a re-constructed *Event Template Editor and Event Management*, it has been designed to handle the ideas and terminologies used in previous SCS and combined with popular features from OEL. All events now run by a window service in the background, the website only provides users with a point-and-click interface to this service. This service is why you can log in, interact with an event and log out without terminating the event.

- Scheduler Service

The Scheduler Service is a background service which performs scheduled system tasks internal to SCS. It major duty is to perform database backups.

- GIS Trigger

SCS 5.0 offers a helpful tool to trigger actions inside the system based upon the ship's current location in the world and the direction it is traveling. There are three main types of triggering mechanisms- trigger when you are around any port, a specific port or a custom point (latitude/longitude). The actions can be associated are to start or stop Event(s), Service(s), and custom messages or send email notifications.

- NetCDF

NetCDF is the format most data pulled from SCS should be in. It has become the format requested by NCEI and many scientists and so SCS has switched from RAW files to *NetCDF* as the primary output. SCS writes sensor data to *NetCDF* both in real time and as requested by users. A *NetCDF Generation Service* developed to take sensor raw data and dump it into a NCEI compliant *NetCDF*-formatted file.

Future Improvements + Known Issues

Data Extraction & Data Submission			
SAMOS	Improvement	Radiation sensors should have an up/down indictor.	SCS-1241
SAMOS	Improvement	Move wind-direction, anemometer zero ref and pressure-adjusted variables from a global down to the physical devices themselves (1 value per device)	SCS-1240
SAMOS	Improvement	Cleanup submitted SAMOS data packages	SCS-1250
SAMOS	Bug	True Wind element missing physical device references in SAMOS package	SCS-1540
Custom Message	New	Add option for checksum to Custom Message Builder.	SCS-158
Custom Message	Bug	The Timestamp string is cutoff when custom time constraint was selected.	SCS-1615
Custom Message	Bug	Inconsistent Lat/Long format in display of the sensor value and it's Referenced value.	SCS-1663
Custom Message	Bug	Need to be able to change format for Reference Lat/Lon values	SCS-1666
Custom Message	Bug	Fix CSS issues	SCS-1621
NetCDF	Improvement	Improve the parsing of malformed messages	SCS-1604
NetCDF	Improvement	All exported or saved file name format throughout the system should be consistent.	SCS-1369
NetCDF	Improvement	Add Vessel Profile information to override DqrConstants in NetCDF	SCS-890
NetCDF	Improvement	Cleanup NetCDF exported packages/files	SCS-1196
NetCDF	New	Create Interface for NetCDF metadata and variables	SCS-963
NetCDF	New	Add QA/QC metadata to NetCDF dump of RAW data	SCS-692
ERDDAP	New	Integrate with ERDDAP into next SCS system.	SCS-490
CTD Tansmitter	New	Develop tool to package and transmit CTD data	SCS-550
Data Extraction	BUG	Raw Data - Access denied to export raw data files	SCS-1659
ACQ			
Data	Improvement	Improve the data parsing to handle more errors encountered on incoming raw messages.	SCS-1611
SignalR	Improvement	Refactor the Observation module to listen the load on the SignalR DataHub by minimizing the message size.	SCS-1647
SignalR	Improvement	Improve and minimize the load on SignalR; only push current subscription to SignalR; need a lighter version of the observation class.	SCS-1648 SCS-1647
Serial Port	Improvement	Upgrade the serial port implementation to give more accurate readings on the incoming messages.	SCS-1265

CFE			
	Improvement	Improve the publish process performance - reduce any redundant function calls.	SCS-1592
	New	Filter the Base Field Definition (Calculation Parameters) - Be able to typing text to filter what's selectable	SCS-863
	New	Make the 'Unspecified' data field category not selectable; the user should be selecting 'Other' instead.	SCS-441
	New	Keeping "Installed" meta data up to date - f sensor goes down for 'x' amount of time and comes back up prompt user to see if the sensor was swapped (update metadata, install, calculation, etc.)	SCS-399
FSDB	Improvement	Sync more information from ship to shore	SCS-897
Sensor Automatic Detection	BUG	The detection process becomes idle and stop scanning after a period of time. Have to force it to detect the specified port.	SCS-1720
QA/QC			
	Improvement	Develop a feature to log and report on Time Source discrepancies	SCS-398
Monitor	Improvement	Improve the performances while user tries to cleanup a big chunk of qaqc messages	SCS-1713
Monitor	Improvement	Provide users more options to view QAQC status.	SCS-1618
Builder	Improvement	Improve the Definition Builder interface	SCS-1617
	Improvement	Improve the QAQC hub handlers	SCS-1069
	Improvement	Make Timeout duration default a configuration setting. Add configuration setting to turn on or turn auto-generated QAQC definitions	SCS-1587
Layouts/Widget Groups/Widgets			
	Improvement	Improve the layout interfaces	SCS-1704 SCS-1146
	Bug	Fix bridge theme for gauges and charts	SCS-1393
	New	Add system or Event notices to Charts - start/stop logging, start/stop events, start of actions or button presses, etc. When occur add a vertical line or other indicator to the chart	SCS-1334
	New	Improve the performance by creating service for server-side box plots.	SCS-150
	New	Add new scatter plot data visualization component that includes the editing and displaying of real-time and historic scatter plots	SCS-52
	New	Gust visual control - Add a max value over a period of time control for specific data value.	SCS-1330
	New	Add ability to search templates	SCS-952
Quick Visual	Bug	Clicking Quick Visual button on homepage no longer opens the layout in quick viz mode	SCS-1717
Events			
	Improvement	Improve auto-trigger Boolean logic builder with new Kendo filter tool	SCS-1448
	Improvement	Implement automatic trigger which launches a sequence when a meta item being modified.	SCS-1399
	Improvement	Add event action which allows user to change the color/theme assigned to a button	SCS-1341
	Improvement	Global meta item - The options should be values or names	SCS-1285

	Improvement	Allow output of NavSec data to various formats	SCS-547
	Improvement	Sensor Pair Selection (eg lat/lon for a summary MI) then automatically force same source selection.	SCS-503
	Improvement	Add an id (incrementing integer) for each event to ease identifying it in the manager page	SCS-446
	Improvement	Implement the "Wizards" section for events	SCS-461
	Bug	'Summary' meta items shouldn't be available to any Outputs	SCS-1705
GIS Trigger			
	Improvement	Warn user if they setup a GIS trigger to stop SCS ACQ	SCS-1060
		Website Core	
	Improvement	Improve lat/long coordinate formatting	SCS-1650
	Improvement	Integrate the QAQC hub into arrangement page	SCS-1114
	Improvement	Implement "Notification" list to home page	SCS-1087
	Improvement	Do not automatically save new empty widget to database.	SCS-1034
	Improvement	Use "Display Name" or not has to be spread throughout SCS	SCS-1344
	New	Add checksum parsing to end of NMEA string to DataHub	SCS-434
	Bug	Fix CSS issues	SCS-1621
	Bug	Precisions of non-derived defined in CFE got ignored in displays.	SCS-1670
Website Shore	New	Create an SCS.Web.Shore configuration for test server release	SCS-1509
Database (MySQL)			
	Improvement	Add port reference Little Creek to database.	SCS-1687
	Improvement	Continue to improve database performance.	
		Installer	
	Improvement	Improve the installer by adding more pre-install inspection and configuration.	SCS-1278
System Maintenance			
Security	Improvement	Add OAuth or OpenID Connect to restrict API access	SCS-977
Error logging	Improvement	Improve the error logging performance - reduce duplicated errors logged from different application sources.	SCS-1727
Cleanup	Improvement	Add recurring tasks to maintain the SCS system and the computer server disc.	SCS-645
Cleanup	New	When SDAT marks a day as 'published' then automatically delete local copy from the ship	SCS-964
Ownership	New	Add ability to transfer template ownership from one to the other.	SCS-933
Manage Users	New	Add ability to manage stale users	SCS-970