

Senstar® 100

Application Note # 06

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Starcom IP implementation

Introduction

Starcom (Version 2.0) is Senstar's generic serial data interface protocol as defined in TM-8045-001-00C. Senstar 100 (S100) supports one or many Starcom serial device interfaces as defined in each S100 database. The Starcom interface provides integration of a wide variety of host devices into the S100 PIDS for input / output control and display purposes. Any host device that has implemented a Starcom communications interface can be connected to S100 via a serial port.

With the installation of QNX4 TCP/IP networking protocols on S100 systems as part of the Network Time Protocol (NTP) function it is possible to provide the Starcom communications protocol with IP sockets connectivity. Since most Senstar 100 PCs have Ethernet Network Interface Cards (NIC) hardware, a Starcom IP implementation can take advantage of Ethernet LAN infrastructure for S100 and Starcom device connectivity.

Starcom IP Implementation is available with Senstar 100 version 6.22 and later.

Protocol Messages

Starcom IP will use the same application messages as serial Starcom. See the Starcom Communication Protocol Version 2.0 Technical Memorandum (TM-8045/001/00). Physical (serial) interface control will no longer be required and so will not be part of the data packet exchange. Serial packet escape codes, STX, ETX, handshaking, error detection and flow control will be dropped. As such, message handlers above the physical and network interface layers i.e., the transport layer, will not need to be changed on any host implementation.

Message Format

Messages sent or received have the following format:

SIG	LEN	DATA
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Where:

SIG: signature bytes: always 0xE0, 0x34

LEN: 2 byte length of data block: LSB, MSB e.g., 07 00

DATA: data bytes to be sent or received. This constitutes the Starcom application message(s).



e.g., SET POINT NUMBER and ALARM STATUS VALUE messages:

02	02	01	00	03	01	01
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Messages are variable length, they start with a 2 byte Signature (0xE0, 0x34) followed by a 2 byte Length. The Length gives the number of data bytes making up the message data. The maximum length supported is 128 bytes. This is more than enough since Starcom protocol messages are always less than 20 bytes (except for DATALOG messages).

For the above SET POINT NUMBER and ALARM STATUS VALUE Starcom message, the IP data packet (in hex bytes) is:

E0	34	07	00	02	02	01	00	03	01	01
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Senstar 100 database changes

To take advantage of the new IP connectivity existing Starcom devices in S100 databases will only need to have their physical connection type changed using the S100 site creation hardware setup application. The device i/o point space and application message exchange with the S100 system will not change. Similarly the physical Starcom serial interface device will need to change to a Starcom IP interface device. This IP capable client host device will need to allow for redefinition of its physical interface from serial to IP, and to manage redundant IP connections, one to the PIDS and one to the FAAS.

Connections

Senstar 100 systems often are multi-CU (Control Unit). A CU is a PC running the S100 software and a site specific database. The dual S100 system is to distribute operator functionality and provide redundancy. In CSC terminology these CUs are known as the PIDS and the FAAS. Generally speaking when both CUs are UP, the PIDS handles perimeter sensors and cameras, and the FAAS handles everything else (internal building sensors and controls).

The serial interface from a Starcom device is split via a serial mux / switch to connect to this pair of S100 PCs (PIDS and FAAS). The S100 system handles which connection is active, the Starcom device is unaware it can be communicating with different PCs.

In an Ethernet LAN the Starcom IP client device will now need to be configurable to connect to one S100 (PIDS) or the other (FAAS). One to be a primary interface choice, the second to be an alternate if the connection is lost. Connection timeouts and retries should be configurable as well.

Upgrade of Senstar 100 Software

Senstar 100 support for Starcom IP is available with software (s/w) version 6.22.

To upgrade to version 6.22:

- a. Boot the CU with the QNX boot disk (p/n J2SW2200).
- b. Load J2SW2300-622 and J2SW2500-622 software packages.

Note that site creation database version has been incremented to handle the Starcom IP connectivity settings. After upgrade to version site creation s/w version 6.22 you must up convert your site creation database(s) using the command:



cvrt_cfg_db.exe

On the QNX command line.

It is recommended that you save your site creation database(s) to floppy disk before performing the up conversion.

S100 application software version 6.22 will run on previous site data (e.g., version 6.21). However to get the Starcom IP connectivity you will have to regenerate your database with the new Starcom IP settings as you define in the site creation hardware configuration menus.

Senstar 100 Configuration

Within site creation, hardware configuration menus the Starcom device type has added fields to define:

Mode: Server or Client, the Starcom device is usually a client (connects to a listening S100).

IP Address: in dotted decimal notation (e.g. 192.168.1.101).

Port: the base socket port number for the connection. This will be a port ≥ 4001 .

IP primary node: in a multi-CU database this defines the preferred connection, usually the lower node ID of the two CUs. In a single CU system this can be 0 to default to the current CU node ID.

IP number of hosts: this is typically 1. If the Starcom IP connection is to a dual-CU system then set this to 2.

Once these settings are entered, select a **NETWORK** port assignment for the Starcom device for each CU in the system.

More on IP number of hosts

Typically the Starcom device is a client that connects to the one of the listening S100 servers, either the PIDS or the FAAS with preference given to the lower numbered CU node ID. This is usually the PIDS computer. If this connection is not available the Starcom device will alternately connect to the next higher numbered CU node ID (FAAS).

In the case of the S100 system operation as a client, it is asserted that this S100 is a single CU system that is connecting to a dual S100 system (PIDS and FAAS). The IP address defined for the Starcom interface is for the preferred connection. The alternate connection is determined by that IP address +1. Therefore it is necessary for the PIDS and FAAS servers in this case be adjacent IP addresses.

e.g.,

PIDS	192.168.1.101	
FAAS	192.168.1.102	
S100 Starcom Client	192.168.1.105	Single CU satellite system

Note this corresponding sample /etc/hosts file:

192.168.1.101	node1
192.168.1.102	node2
192.168.1.105	node5

Example Site Creation Setup

The following is the setup of a single Starcom IP device in the PIDS/FAAS database and in a single CU satellite S100 database using the IP addresses listed above.

S100 PIDS and FAAS (servers) database

Starcom Device

Mode	Client	: we are the server
IP	192.168.1.105	: this IP is for reference only
Port	4003	
IP primary node	1	: the dual-CU system will favour the connection to node 1
IP number of hosts	1	: connecting to a single CU system

S100 Starcom Client database

Starcom Device

Mode	Server	: we are the client
IP	192.168.1.101	: this is the preferred server IP, alternate server IP is 192.168.1.102
Port	4003	
IP primary node	0	: default to my node ID
IP number of hosts	2	: connecting to a PIDS/FAAS system



Version 6.xx software features

This bulletin outlines changes that have been implemented in the Senstar 100 software version 6.xx release. The first section is a description of the most recent release (Version 6.22). All previously released 6.xx versions are described in reverse order (6.21 to 6.00).

Version 6.22

This section includes an explanation of the new support features in the version 6.22 software.

New support features

The following support feature has been added to software version 6.22:

1. Support has been added for Starcom IP implementation.
This is available provided QNX TCP/IP Runtime Manager is installed (s/w J2SW4400-xyx).
The QNX TCP/IP Runtime Manager requires a QNX TCP/IP license (p/n X0315) for each PC.

Version 6.21

This section includes an explanation of the new support features, software changes and problems that were fixed in the version 6.21 software.

New support features

The following support feature has been added to software version 6.21:

1. Support has been added for the Blue Storm serial cards (replacement for the Blue Heat serial cards).

Software Changes

The following software changes have been incorporated in version 6.21:

1. The memory calculation has been revised to accommodate the large amount of RAM available on modern computers.
2. The Date and Time setting now functions with the Panasonic 550 video switchers.
3. The Scope Cabaret Handler was ported from QNX2.
4. The Control RocketPort driver has been replaced with a newer version.

Problems that have been fixed

The following problem has been corrected in software version 6.21.

1. A problem was fixed in which erroneous report logger failure error messages could be announced despite there being no report logger defined in the database.
2. A problem was fixed in Alarm Simulation. If Map Concealment was enabled on the third and fourth computer nodes, the Alarm Simulation did not work correctly on those computers.
3. A problem was fixed in which random startup problems occurred on modern computers.

Version 6.20

This section includes an explanation of the new support features and software changes in the version 6.20 software.

New support features

The following support feature has been added to software version 6.20:

1. The 3rd monitor now supports the Colorgraphic model 612602 and 612402 dual graphics cards.

Software Changes

The following software change has been incorporated in version 6.20:

1. The keyboard macro utility can now perform increments greater than 1 (the default remains 1).

Version 6.19

This section includes an explanation of the new support features, software changes and problems that were fixed in the version 6.19 software.

New support features

The following support features have been added to software version 6.19:

1. Camera presets are now supported for the Panasonic 550 video switcher.
2. The B & E fibre Ethernet card has been added to the Operating System disks.
3. New Ethernet network drivers have been added to the Operating System disks for the 82557, 905, i82540 and via chipsets.
4. A new driver has been added for the Blue Heat serial cards.
5. A second subtype of the mimic panel has been ported to QNX4.
6. Support has been added for the B & E Ethernet cards.

Software Changes

The following software changes have been incorporated in version 6.19:

1. Protection was added to prevent race conditions between user input and alarms during alarm simulation.
2. Backing up the user data now includes newer files from the active partition. This prevents the omission of some setup files.
3. Alarm Simulation now respects restricted map viewing, and will not allow a user to view restricted maps without the appropriate permission.
4. The PPS Custom Handler has been changed to support tamper alarms.
5. Intelli-FLEX cut and climb alarms have been combined into one alarm type. This prevents a problem, which caused output points to become latched.
6. Communications to the David cards have been improved.

7. It is now possible to have Sennet Networks in the same system configured as single and dual ported. Previously, it was not possible to mix the two configurations in one system.
8. Improvements were made to the accuracy of timed group events.
9. Problems that have been fixed
10. The following problems have been corrected in software version 6.19.
 11. A problem was fixed in alarm simulation, in which sensor state changes sent when the Pause/Resume screen was being displayed, would cause the map to be incorrectly displayed, and would prevent further alarm simulations from occurring.
 12. A problem was fixed in Site Creation database conversions, in which CUs that included blue heat cards were being incorrectly converted. This problem affected early 6.1x databases.
 13. A problem was fixed in which daylight savings time was not taken into account when a Starcom device (master) was determining the time for a CU.
 14. Active and previously active detection alarms on the CM were both displayed as "D" on the status report. The detection alarms are now correctly indicated as "d" for previously active alarms and "D" for active alarms.
 15. A problem was fixed in Alarm Simulation, where under certain conditions the map screen would be displayed rather than the pause/resume screen.
 16. A problem with the maintenance test reports, whereby the test button, report rate, and print rate were not necessarily accurate after the first page of equipment, has been corrected.
 17. A problem has been corrected with the alarm simulation. On the pause/resume screen the user could enter and exit the help menu, but not be returned to the pause/resume screen.

Version 6.18

This section includes an explanation of the new support features and software changes that are incorporated in the version 6.18 software.

New support features

The following support feature has been added to software version 6.18:

1. Support has been added for the Colorgraphic 612402 dual VGA card.

Software Changes

The following software changes have been incorporated in version 6.18:

1. It is now possible to adjust the Acknowledge Timeout for video switchers. This was done for VS that are connected via the Blue Heat or RocketPort serial expansion cards.
2. Two Sennet network X/Y data path error rate reporting problems, related to Perimitrax Sensor Modules, have been corrected. When the X/Y data path error rate was extremely high for a Sensor Module, the datapath error rates could be missed, or reported incorrectly. In addition, for a dual ported Network Controller that was connected to two CUs, the data path error alarm could be intermittent.
3. The CM reset report now identifies the CM by its assigned number rather than by the port to which it is connected.
4. Two problems related to Panasonic video switchers were corrected; an intermittent communication failure that always cleared immediately, and a rare lock up condition.
5. The Ziton CP3 fire alarm Custom Handler now accepts alarm points.

Version 6.17

This section includes an explanation of new support features and software changes that are incorporated in the version 6.17 software.

New support features

The following support features have been added to software version 6.17:

1. Support has been added for the RocketPort 8 Universal PCI serial port expansion card.
2. Support has been added for the Colorgraphic 612602 video card.
3. The Siemens Video Control Bar custom handler and custom output driver were ported from QNX2.
4. A custom handler was written to support an external timer for synchronization.

Software Changes

The following software changes have been incorporated in version 6.17:

1. The speed for operator input on the login screens has been improved.

2. The PS/2 mouse can now be disconnected, and will become operable within 30 seconds of reconnection.
3. CCTV monitor numbers can no longer be higher than the number of monitors that are configured for a given video switcher.
4. A problem was corrected whereby the alarm beep could become a single beep (rather than three beeps) after running an alarm simulation.
5. Version 6.16
6. This section includes an explanation of new support features and software changes that are incorporated in the version 6.16 software.
7. New support features
8. The following support features have been added to software version 6.16:
9. Support has been added for the Pelco ASCII protocol.
10. Support has been added for the Blue Heat 2-port serial card.

Software Changes

The following software changes have been incorporated in version 6.16:

1. A reset report has been added for the Perimitrax Sensor Module.

Version 6.15

This section includes an explanation of new support features and software changes that are incorporated in the version 6.15 software.

New support features

The following support feature has been added to software version 6.15:

1. Support has been added for Zip Drive backup.

Software Changes

The following software changes have been incorporated in version 6.15:

1. Previously, when the Sennet Network X or Y datapath was changed (enabled/disabled), the datapath error reporting for individual Sennet cards was also changed. Now, disabling the Sennet Network X or Y datapath, still disables the datapath error reporting for individual Sennet cards. However, enabling the Sennet Network X or Y datapath does

not enable the error reporting for individual cards. Error reporting for individual Sennet cards must be manually enabled, on a card by card basis.

2. It is now possible to select the alarm list when there is only one alarm.

Version 6.14

This section includes an explanation of the software changes that are incorporated in the version 6.14 software.

Software Changes

The following software changes have been incorporated in version 6.14:

1. The generic memory mapping routines have been changed to correct for PCI addresses that are not on 4k memory boundaries. This was required for the Siemens Simatic computer.
2. An issue with the Multifunction card, whereby it was affecting serial switching cards at 22 minutes after the hour, has been resolved.
3. Bypassed FOIDS input points now appear in the bypassed points summary.
4. Sample Site Data now defaults to a PS/2 mouse and the PCI Multifunction card.

Version 6.13

This section includes an explanation of new support features and software changes that are incorporated in the version 6.13 software.

New support features

The following support features have been added to software version 6.13:

1. Support has been added for the WSA mimic panel, the Ziton ZCP2 and 3 fire alarm systems, and the Aritech type 1 and 2 security panels custom handlers.
2. It is now possible to adjust the following Sennet® Network Parameters:
Enable X/Y data path at the Network Controller
Adjust the Tx time before polling
Adjust the Slave retry time
Adjust Slave fail re-audits (nw_fail_filter)
Adjust the X/Y data path error period
3. Support has been added for the Microcomm, and Secutron custom handlers.

4. Support has been added for the RocketPort universal PCI 16-port serial cards.
5. The ISA version Multifunction card can now be tested similarly to the PCI version, from the Senstar 100 Startup menu (F7 Test Multifunction Card).
6. Weather Logger Feedback control points have been added to disable weather alarm logging (wlog files) and weather datalogging (wdat files). The output control points are WL card 0 point 1 (weather alarm logging) and point 2 (weather datalogging). These points can be tied in to the OFF (secure) output drive of a display zone that has scheduled access and control defined. This allows weather logging to be automatically scheduled.

Software Changes

The following software changes have been incorporated in version 6.13:

1. The IRQ verification has been improved for any serial ports not using the QNX standard device driver (i.e., serial port cards other than Blue Heat or RocketPort).
2. The ACK transmission operation has been improved for Custom Handlers connected to serial ports using the QNX standard device driver (i.e., Blue Heat or RocketPort serial cards).
3. The sanity hits within integ.exe are now faster to compensate for the faster timing of the Multifunction card.
4. Opr_nor.exe has been changed so that map stepping does not cause a persistent current output drive, if one is defined in the first zone (sensor) of the map. In addition, a change has been made so that first level output timeouts to the Panasonic 500 series VS will not cause opr_nor.exe to halt automatic video stepping.
5. A new Joint Domain Alarm Processing (JDAP) relation has been added - the absolute AND, for which the terms of the equation must be detected as TRUE. The absolute AND has no conditional TRUE, which becomes automatically active if the term originates on a hardware device that has a fatal failure (e.g., Comm Fail).
6. Delayed ON (activation filtering) has been added to the VTICS custom output driver.
7. A faster alarm beep has been added for higher priority alarms. The faster alarm beep is set in system options.
8. A CU database exchange timeout diagnostic alarm has been added for when mate link communication is marginal.

- The settable range of Sennet device input noise tolerance has been increased from 0.0 - 0.3 volts, to 0.0 - 0.6 volts. In addition, the ability to specify an alternate resistor value, customized by the user, for Sennet inputs where single resistor supervision is available, has been added.

Version 6.12

This section includes an explanation of new support features and software changes that are incorporated in the version 6.12 software.

New support features

The following support feature has been added to software version 6.12:

- Software detection support has been added for the 7 PCI/6 ISA slot computer (J2SP0900) and for the auto-detection of ISA ARCNET cards.

Software Changes

The following software changes have been incorporated in version 6.12:

- The input point bypass option has been added to also work within the weather logger process.
- A startup toggle (ON/OFF point and output point number 1) has been added to disable alarm reporting from the PALS Custom handler.
- Support for the QNX4 ARCNET driver initialization in the J2SP0900 computer has been improved for operation in a 2 CU network, where there is an increased probability of a single CU booting without communications to another CU. The improved s100_netmon.exe initialization program will regularly provide large periods where it does not monopolize the CPU's resources. This will allow other Senstar 100 processes to run, as required, and will result in a more responsive system.

Version 6.11

This section includes an explanation of new support features and software changes that are incorporated in the version 6.11 software. Version 6.11 includes the support features and software changes up to and including version 6.05.

New support features

The following support features have been added to software version 6.11:

- Support has been added for 4 and 8 port Blue Heat PCI multi-serial (port) expansion cards.
Note: Sennet[®] (SN) and Control Module (CM) devices that are connected to Blue Heat ports must have an ACK timeout set in the site database.
- Support has been added for the PCI Multifunction card relay outputs.
Note: The PCI Multifunction card serial ports can no longer be used to communicate with secondary devices (i.e., touchscreen, mouse, serial printer).

Software Changes

The following software changes have been incorporated in version 6.11:

- The Senstar 100 system now comes in one size, with all options enabled. If a Multifunction card is installed in the computer, the system is a Senstar 100. If there is no Multifunction card installed, the system is a Central Controller with map and site size restrictions, and fewer options than the Senstar 100.
- Languages can be loaded under single monitor site creation.
- The system Supervisor can enable or restrict access to the site creation utility, and site data loading, individually.
- Additional menu navigation has been added to the Config HDW site creation menus.
- Additional functions have been added to the boot disk.

Version 6.10

This section includes an explanation of new support features that are incorporated in the version 6.10 software. Version 6.10 includes the support features and software changes up to and including version 6.03.

New support features

The following support features have been added to software version 6.11:

- Support has been added to allow serial port Baud rates up to 38400 Baud. The previous maximum was 9600 Baud.
- Preliminary support has been added for the PCI Multifunction card.
- Support has been added for 8 and 16 port RocketPort[®] PCI multi-serial (port) expansion cards.
Note: Sennet (SN) and Control Module (CM) devices that are connected to RocketPort serial ports must have an ACK timeout set in the site database.

Version 6.06

This section includes an explanation of new support features and software changes that are incorporated in the version 6.06 software.

New support features

The following support feature has been added to software version 6.06:

1. Virtual memory points that are bypassed are now reported.

Software Changes

The following software changes have been incorporated in version 6.06:

1. The operator and maintenance test functions can be changed to support individual SN card tests. A SN device test becomes a sequenced card test if the /actv/user_text/nw_test_time file exists. A ¶ symbol as the first character of this file provides the default value 20 second delay. The ¶ symbol is obtained by typing <Ctrl>t.
2. The Intelli-FLEX test has also been changed to support the sequencing of each card test by one second (depends on whether the /actv/user_text/nw_test_time file exists).
3. The maximum setting range for secondary alarm acknowledge and process transfers has been extended from 15 minutes to 30 minutes.

Version 6.05

This section includes an explanation of new support features and software changes that are incorporated in the version 6.05 software.

New support features

The following support features have been added to software version 6.05:

1. Support has been added for the VTICS (Voice Type Inmate Cell Call System) custom output driver.
2. Support has been added for the Activation Filter custom output driver.
3. A restart function has been added for the Hostess™ iA card, for instances when a problem is detected with the card.
4. The David® 300 support has been fully ported from the QNX®2 version 5.45 software. In addition, corrections and enhancements have been added to the support.

5. Support has been added for the Simplex Cell Call, and the Siemens®-Cerberus MXL Fire and Riot Alarm panels custom handlers.

Software Changes

The following software changes have been incorporated in version 6.05:

1. The ability to change Network Controller (NC) parameters from within maint_db has been added.
2. A startup toggle (ON/OFF point and output point number 1) has been added to disable alarm reporting from the PALS Custom handler.
3. The periph_in process has been changed so that Local CTRL bit fail reports in the activity archive, are generated only for Sensor Module (SM) cards.
4. An RTS/DTR toggle has been added to wake up the Panasonic 500 video switcher, after a serial switchover.
5. The Edwards custom handler has been changed so that space padded lines will not affect the alphabetic sort and search functions.
6. The Sennet cards X/Y data paths default settings have been changed to disabled. Previously the data paths were enabled. This has also been changed in the sample site databases.
7. A file size check has been added before copying to DOS formatted disks, so that maint_pro.exe does not block on the file copy, while the file copy is waiting for the user to insert another floppy disk. This change affects the copying of files greater than 1.44 Mb.
8. The audit period for the Sennet X/Y data path error checking has been increased to four times the timeout frequency. In addition, it is now possible to view data path errors when the path is disabled, by selecting the Status Report View All mode.
9. The Maintenance user is now prevented from altering Sensor Module (SM) or Intelli-FLEX (IF) parameters before the parameters have been uploaded, after a re-activation/reboot. This prevention function can be superseded by advanced menu entry.
10. An alternate site data activation mode has been added that will keep current Sennet card parameters. The alternate mode will reuse all applicable current active Sennet settings, including TU, LTU, and SM input point parameters (debounce time, noise tolerance, line drop) and SM and IF detection parameter settings.

11. Protection has been added to the super_pro.exe archive file read and display, to prevent a corrupt file structure from causing the process to terminate. The file structure could be corrupted by a poorly formatted datalog string, received from a connected Starcom device.
12. The time that a Sennet card can be online without having sent a slave diagnostic report has been increased from 10 to 60 seconds. After the timeout (now 60 seconds) a card reset message is sent. In addition, resetting the slave card time for the reconfiguration request has been added, for when a slave card comes back online. In this way, card configuration timeout comparisons are meaningful, and comparisons do not automatically result in performing slave reconfigurations.
13. DTR and RTS are now explicitly set in the touchscreen driver.
14. The automatic background download of IF parameters from the maintenance database is now prevented if not in Host mode (no previous required upload has occurred).
15. The equipment fail report code has been combined into the same archive (log) text line with the equipment fault declaration.
2. The Intelli-FLEX™ parameter upload function has been added, and occurs after new site activation.
3. The Sennet data paths (X and Y) are now individually monitored for errors. Excessive errors cause a hardware fault, if the data path is enabled in Site Creation. Previously, the enabled flag was used only to determine whether the errors were shown in the status report. Now, the enabled flag enables and disables the X/Y data path error rate monitoring. NOTE: A data path may still be connected, and providing communications to the Sennet card, even if it is set to disabled.
4. The indexing on the /etc/config/hdwc_intr.xx file has been changed from the xx being the CU number to the xx being the QNX Node ID. As a result, to index to the correct file, the network node number MUST be set in the CU Configure Hardware menu of the Site Creation utility.
5. The way that interrupts are verified by sysinit.exe has been changed to prevent incorrect assignment of interrupts to serial ports.
6. Another address range has been added for the DFLEX 8 multi-serial port card to provide alternative addresses due to conflicts with I/O ports 0X290 and 0X298 in some computers. NOTE: The new DFLEX address range includes 0X278. Therefore, the system parallel port should be set to an address other than 0X278. If two DFLEX cards and a network are used, then the network IRQ MUST be changed to 10, to allow the second DFLEX card to use IRQ 5 (via edit of the /etc/config/hdwc_intr.nn file).

Version 6.04

This section includes an explanation of new support features and software changes that are incorporated in the version 6.04 software.

New support features

The following support features have been added to software version 6.04:

1. Support has been added for the Portable Alarm Location System (PALS) custom handler.
2. Support has been added for the Digital Video Capture System (DVCS) custom handler.
3. A network active monitor utility has been added to monitor the QNX®4 ARCNET® driver, and to prevent the driver from failing on initialization. This was required for the MITAC® 3685A computer.
7. It is now possible to select IRQs 3, 4, 5, 9, 10, 11, or 12 for the Hostess i smart cards using the /etc/config/hdwc_intr.nn file.
8. The map concealment files are now the first type of files to be transferred during resync.
9. A soft reboot function has been added, and is activated under the same circumstances as the hardware watchdog timer timeout. (The soft reboot function relies on only one program (integ.exe) NOT going insane.) This function will provide system sanity reboot for Central Controllers (no Multifunction card, hence no hardware watchdog timer). The soft reboot function is disabled by creating a file (/work/save/Dont_soft_reboot) in the event that a process termination message is desired, to be viewed, before automatic reboot.

Software Changes

The following software changes have been incorporated in version 6.04:

1. The Virtual Memory (VM) device is now included in the input point bypass function.

Version 6.03

This section includes an explanation of new support features and software changes that are incorporated in the version 6.03 software.

New support features

The following support features have been added to software version 6.03:

1. The capability of saving all maintenance reports to DOS formatted floppy disks has been added. This includes plot data and status reports.
2. Custom support for the Siemens Matrix switcher was added with the porting of the SIMATRIX custom handler (CH).
3. The custom output driver support has been added into the Senstar 100 baseline. The time periods of the flash and pulse output drives has been expanded within custom output driver number 1. The times are now definable up to hours. The custom message output driver (driver type 2) (formerly called the custom VS message output driver) was ported from QNX 2.
4. Support has been added for an interface unit (IU) communication output timeout reset for non-smart cards. If an output timeout occurs for an IU on a non-smart card, the output timeout can be reset after communications are re-established.
5. The dio_ctrl.exe process supports a second PCI DIO card in a computer.
6. Support has been added to enable a contact VS device to use CU DIO card outputs.

Software Changes

The following software changes have been incorporated in version 6.03:

1. The maximum number of maps has been changed from 64 to 128.
2. The way that the status report data is presented has been changed. Previously, an upper case letter indicated that the input status had changed to active since the last reset, or print report request. This is now indicated by a lower case letter. An upper case letter is used to indicate that an input is currently active.
3. The ISR for the American Dynamics video switcher (VS) has been changed so that output timeouts can be detected. Now, control units (CUs) can accurately determine if they can transmit to the VS for indirect (via the other CU) video selection.

4. The output configuration reports have been changed to display more custom output type data. These reports have been standardized for all devices.
5. The Virtual Memory (VM) device has been added to opt_pro start and stop simulation point status save and restore.
6. A soft reboot capability has been added to the integ.exe process. It can now reboot the computer on fatal failures, even if no reset wiring (or Multifunction card) is installed.
7. The information listed in the View Software Configuration screen has been expanded.
8. The Sennet status report has been changed to indicate:
 9. card software version,
 10. minimum and maximum voltages for LTU inputs,
 11. error counts to a maximum of 255 (increased from 100),
 12. that data is unavailable by '-' (dashes),
 13. current active conditions by '*' (asterisk),
 14. active since last report reset with '+' (square),
 15. card status for the control panel (CP).
16. The David (DV), Fiber Sensys (FS) and FOIDS® (FI) devices have been added to the report sent to maint_db.exe when an output timeout has occurred. Proper output timeout reporting to maint_db.exe is ensured upon an output_reset.
17. The VM device status report screen can be reset.
18. The display of the Video Mode softkey is governed by the same rules as the messages sent out to the video switcher (VS).
The Video Mode softkey is displayed:
 19. if direct communications are available and the CU has direct control of the VS, or
 20. if indirect communications are available and the CU has indirect control of the VS (that CU's monitor configuration is unique).
21. In addition, if proper communications are not available, as described above, the softkey is now displayed in DENY_ACCESS (greyed-out) mode.
22. A status report will be immediately displayed when all data has been received from a Sennet Network.

Version 6.02

This section includes an explanation of new support features and software changes that have been incorporated in the version 6.02 software.

New support features

The following support features have been added to software version 6.02:

1. The Senstar 100 now supports two Predator[®] LT2 Dual VGA cards (PCI). This provides support for the auxiliary monitor.
2. Support for PCI DIO cards has been added.
3. Language conversion support has been added. Language load support has been added for QNX 2 language versions 5.42 and 5.52. Language conversion is not done automatically with a software upgrade load as it was in QNX 2. Language conversion is performed, as required, on all languages that are on the hard disk, when any language is loaded. Language conversion can also be performed manually, in order to update existing languages on the hard disk. (The same procedure that is used for the update conversion of site creation data in QNX 4 is used for language conversion). The language conversion program is `cvrt_lang_db.exe`. It creates files named `/work/tmp/cfig/lang/langname/cvrt_lang_log.xxx`. These files can be viewed to determine what language conversions were necessary to update a language so that the converted language can be edited, and checked where the updates occurred. Language versions that are convertible include QNX 2 Senstar 100 versions 5.42 to 5.45 and version 5.55.
4. Up to two DFLEX8 cards (ISA) are now supported. This replaces the Smart Hostess, Hostess i8 and single Hostess i16 cards.
5. The import of QNX 2 user data support has been added in the setup menus.
6. Serial printer support has been added to QNX 4.
7. Support for CH types 3 digiLARM device and 4 Edwards device has been added.

Software Changes

The following software changes have been incorporated in version 6.02:

1. Some computers prevented access to the Multifunction card serial ports until the UART was written to. Code was added to do this in `sysinit.exe` so that the serial ports are detected and included in the computer hardware list. In addition, a delay was added in the test interrupt routine.

2. It is now possible to do site creation with a single monitor, when the secondary monitor is disabled.
3. The target system information has been added to Site Creation data so that the setting is saved onto floppy disk and will follow Site Creation data reloads.
4. Some computers were corrupting dual ported smart card memory on boot-up. Senstar 100 now waits for the card to signal that the memory is OK after data load. In addition, `cust_hand.exe`, `periph_in/out.exe` task waits were introduced, based on the memory data being valid.
5. It is now possible to read a screen set of Alarm Prompt or Alarm Location data from a temporary file set up by the QNX editor. In addition, the cut and paste function for alarm prompts and locations has been expanded to more than one line.
6. It is now possible to perform alarm simulation on a single CU in a multi-CU system.
7. Screens have been added for the System Shutdown and End of Alarm Simulation.

Version 6.01

This section includes an explanation of new support features that have been incorporated in the version 6.01 software.

New support features

The following support feature has been added to software version 6.01:

1. In previous software versions, it was mandatory to copy Activity Archive files to floppy disk before the files could be deleted. The copying files to floppy disk portion of this function is now a selectable option under the System Options menu. The default setting (option enabled) for copying Activity Archive files remains unchanged from previous versions.

Version 6.00

The QNX 4 Senstar 100 version 6.00 software is functionally equivalent to QNX 2 version 5.55.

This section includes an explanation of new support features and software changes that have been incorporated in the version 6.00 software.

New support features

The following support features have been added to software version 6.00:

1. Senstar 100 now operates under the QNX 4 Operating System (OS) Version 4.23. This is a POSIX compliant OS, which provides support for modern computers and equipment.

Although the user interface remains the same, there are numerous software enhancements to the system. The QNX 4 OS provides:

- support for modern computers, i.e. Pentium® III, Pentium IV (the QNX 2 limit was Pentium I-166),
 - support for hard disks larger than 8 gigabytes,
 - support for modern peripheral equipment such as CD-ROM,
 - support for the PS/2 mouse,
 - improved floppy disk access speed, and
 - support for Ethernet.
2. Support has been added for the Colorgraphic® Predator LT dual-VGA card. The Predator dual-VGA card (PCI card) is the replacement for the Colorgraphic Warp dual-VGA card. All previous dual-VGA cards are still supported by software. However, some older cards (e.g., MVP2) will not operate on faster computers.
 3. Support has been added for Ethernet networks. Senstar 100 networked system CUs can now communicate via Ethernet and ARCNET.

Software Changes

The following software changes have been incorporated in version 6.00:

1. The Central Controller is capable of having up to four maps. A “target system” field has been added in the site creation main screen to further define the type of Central Controller.
2. The Site Data generation and activation speed has been improved.
3. There have been significant changes to the installation program for the QNX 4 version. Refer to the QNX 4 Operating System Installation Instructions (J2DA0307) for details.
4. Network node numbers can now be independent of CU numbers. In QNX 2 the network card determined the node number. With QNX 4, the node number is selected during the OS software installation.
5. There is a new menu in setup, under file and data utilities that is used to backup and load user data. Formerly, the computer had to be started from the boot floppy to backup user data.
6. Although the QNX 2 and QNX 4 floppy disks are not compatible, the Senstar 100 version 6.0x software can read QNX 2 disks. The Senstar 100 version 6.00 software automatically converts site creation data (for Senstar 100 software versions 5.41, 5.42, 5.51 and 5.52) to version 6.00. Language data conversion support is pending. Any site creation data versions prior to 5.41 must first be upgraded under QNX 2, and then be converted to version 6.00. The copy from floppy menu in the site creation utility allows the selection of either QNX 2 or QNX 4 floppy disks.
7. Custom Handler integration is now a part of the Senstar 100 application and is no longer supplied separately. This is to prevent version incompatibility issues. Selecting CH drivers is now done within site creation, and not by installed separate software. (There is no longer any CH specific software). Each QNX 2 CH type will be converted to QNX 4, as required. Currently, the generic Starcom CH (Starcom without audit) and the SurGard CH have been ported.
8. There is a different parallel port driver in the QNX4 software version. If the LPT port address is not selected correctly, the board field in the hardware configuration listing will be ‘????????’, and the printer will not work. Therefore, in QNX 4 it is necessary to select the correct LPT in site creation, to coincide with the BIOS setting. Select the LPT as follows: LPT1:3BCh, LPT2:378h, LPT3:278h. Formerly, in the QNX 2 version, if the port address was not selected correctly, the board field in the hardware configuration listing was ‘????????’. However, this did not cause a port discrepancy as the QNX 2 software automatically adjusted to the different address.
9. The QNX 4 floppy disk access speed is much faster. This improves the speed of all floppy disk related activities such as activity archiving, site data loading and site data backups. Because QNX 4 is a 32-bit operating system, many of the files are larger. Therefore, it is now standard to archive (compress) the files to disk.
10. The DOS Activity Archive is now a standard feature. Formerly, it was a separately purchased option. Printers are frequently abandoned in favour of the activity archive. Copying the activity archives to DOS disks enables them to be used with standard analysis tools in a Windows® environment.
11. Support for monochrome monitors has been discontinued in version 6.00.d



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