55400 Network Synchronization Unit

Software Release Document

Release R3851D

1. GENERAL

1.01 This document provides information about Release R3851D of the firmware for Symmetricom's 55400A plug-in card modules. The cards being updated are listed in Table A.

1.02 Whenever this document is reissued, the reason for reissue will be given in this paragraph.

1.03 Symmetricom is a registered trademark of Symmetricom, Inc. All other product names, service marks, trademarks, and registered trademarks used in this document are the property of their respective owners.

2. NEW FEATURES

2.01 This release firmware release includes the following new features:

- Support for the 55429B Local Node MiniSSU ITH card (similar to 55413B).

- MEASRST event now occurs when the INIT-REG command is used.

- RCKALM events can now be logged in the ITH event log.

3. CORRECTED ISSUES

3.01 This firmware release includes the following corrections:

Issue 2-12: A very small phase bias (less than 2 ns per week, or 3E-15) could accumulate on the ITH card.

Issue 2-14: Changes in SSM are now detected in less than 2 seconds, not 10 seconds.

Issue 2-15: The PRC SIGMODE default value was changed to remove the Unknown response.

Issue 2-18: The IMC card sometimes reset during a firmware download to an Expansion Rack.

Issue 2-19: The LOGCLRD event alarm & log property settings were denied.

Issue 2-21: The SPRD Beyond Threshold event incorrectly reported an input channel.

Issue 2-24: The ITH card initialization sometimes failed.

Issue 2-27: The minor to major alarm promotion was made more robust.

Issue 2-28: The ITH parameter transfer is now more robust.

Issue 2-30: The NIMC LAN port could have locked up if an end-of-session message was not received.

Issue 2-34: The RTRV-USER-SECU command gave an incorrect response if an invalid username was entered.

Issue 2-35: The X.25 port could have locked up if AO messages occurred with no connection.

Issue 2-39: SSMPDH did not disqualify inputs with non-zero SSM values.

Issue 2-40: False ITH Disagree on Channel Quality events occurred if the ITH firmware was mismatched.

Issue 2-46: Output Card Failed events occurred every 10 minutes if a card failed.

4.   KNOWN ISSUES

Issue 1-42: Occasional Output Card Not Accessible or Output Card Type Mismatch events may occur on expansion subracks when the standby ITH card on the main rack is forced active.

Work Around: Use the RTRV-COND command to obtain the correct output card status.

Issue 1-53: Downgrading firmware version R3851D to versions prior to R3744H may result in an incomplete parameter transfer between ITH cards.

Work Around: Do not install firmware versions prior to R3744H.

Issue 1-96: When upgrading a card to firmware version R3851D, an NVRAM Failed event occurs on the ITH and IMC cards. This is normal, due to changes in the NVRAM usage.

Work Around: Remove and re-insert the card (or re-send the ACT-SWDL and CANC-SWDL commands) to clear this event. The event log for the card will be cleared.

Issue 2-04: The ITH firmware reboots occasionally during operation.

Work Around: Always use redundant ITH card pairs.

Issue: If firmware version R3851D is installed in the IMC card but not in the ITH cards, the Local Craft Terminal application (SV-PC) will not be able to retrieve and display the MRTIE and LMRTIE measurements due to the addition of the 1 minute measurement interval.

Work Around: Install this firmware version in the IMC/NIMC card also.

5.   ESTIMATED INSTALLATION TIME

5.01 Table A lists the approximate download time for each card using the IMC card local port at 19200 baud.

Table A. Cards and Installation Times

Download Target Card	Part Number	Firmware File Name	Approx. Download Time
ITH (Version A or B)	55411,55412, 55413, 55414, 55415, 55429	ith_main.s	1 hour, 15 minutes
IMC	55441A	imc_main.s	30 minutes
NIMC - LAN (standard)	55442A	ni_main.s	30 minutes
NIMC - X.25 (option 002)	55442A Opt. 002	nx_main.s	30 minutes
NIMC - TP4 (option 003)	55442A Opt. 003	nt_main.s	30 minutes
Exp. Sync	55419A	es_main.s	1 hour
Exp. IMC	55443A	em_main.s	1 hour, 15 minutes

6. REQUIREMENTS

6.01 The hardware, software, and documentation required to operate this software release is listed below.

A. Hardware

6.02 An IMC card (part number 55441A) or an NIMC card (part number 55442A) must be installed in the main subrack to download this firmware.

B. Software

6.03 A 55400A compatible download software terminal program such as 55450A Local Craft Terminal version 1.22 or newer, OSMF-UX version 3.0 or newer, or OSMF-NT version 3.0 Deluxe is required to download this firmware.

C. Documentation

6.04 Refer to the following documents:

• The 55400A TL1 Programming Reference Manual (part number 097-55401-16 [previously 55401-90016]) Appendix A, Downloading Firmware, for more information regarding firmware download TL1 commands.

• The OSMF-UX 3.0 User's Guide (part number 097-55452-07 [previously 55452-90007]) and the OSMF-NT 3.0 User's Guide (part number 097-55451-03 [previously 55451-90003]) contain complete OSMF download instructions.

• The Local Craft Terminal Users Guide (097-55450-01 [previously 55450-90001]) for more information on using the Local Craft Terminal application.

7. INSTALLATION

7.01 To install this firmware release, follow the steps in Chart 1 if using the Local Craft Terminal Application, or Chart 2 if using the OSMF Application.

Chart 1. Software Installation Procedure Using the Local Craft Terminal Application

STEP	PROCEDURE
**Copy Firmware Files to Computer's Hard Drive**	
1	Create a directory structure on the computer for the firmware files. The following is recommended: `C:\NSU55400\R3851D`
2	Copy the file from each supplied firmware upgrade disk to the directory created in the previous step, or copy the zip file to the directory created in the previous step and decompress the zip file using an unzip utility.
**Configure IMC/NIMC Card**	
3	Remove the IMC/NIMC card from the subrack.
4	Locate switch S3 on the card.
5	Set switches S3-1 and S3-2 to OFF. This sets the local port for communication at 19200 baud.
6	Locate switch S4 on the card.
7	If switch S4-1 is ON, set it to OFF. This disables security (password protection) for the IMC/NIMC card.
8	Reinstall the IMC/NIMC card into the subrack.
9	Press the Reset Local Com Port push-button on the IMC/NIMC card to force the card to use the new baud rate.
**Connect Computer to 55400A**	
10	Attach the DCE-DTE adapter to the Local port (bottom connector) on the front of the IMC/NIMC Card.
11	Connect the null modem serial cable from the adapter to the serial port of the computer.
**Configure Local Craft Terminal for Communication at 19200 Baud**	
12	Start the Local Craft Terminal application.
13	If a prompt asks if the Com port should be opened, click on No.
14	Use the Title bar menu to go to Comm>Baud Rate and select 19200.
15	Verify that the correct Com port (COM1 or COM2) is selected under Comm>Com Port.
16	Select Comm>Enable Com Port (or Comm>Connect) to start communication between the application and the 55400A.
17	Before continuing, wait for the application to retrieve the current status of the NSU.
**Prepare to Download Firmware to IMC/NIMC card**	
18	Verify that no alarms are active, and there are no alarm lamps lit on any of the cards.

Chart 1. Software Installation Procedure Using the Local Craft Terminal Application (Contd)

STEP	PROCEDURE
19	Using the Title bar menu, select Service>Download Firmware.
20	In the Downloading Firmware dialog box, find the Select Card feature and click on IMC.
21	If you have LCT version 1.24 or later, verify that the Main Rack 0 is selected on the Select Rack list.
22	Click on the Start Firmware Download button. At the prompt to start the download process, click on Yes. The Open Download File box opens.
	Download Firmware to IMC/NIMC card
23	In the Open Download File box, find the directory created in Step 1, and select the file which matches the installed card type: Card File 55441A IMC Card imc_main.s 55442A NIMC - LAN (standard) ni_main.s 55442A NIMC - X.25 (option 002) nx_main.s 55442A NIMC - TP4 (option 003) nt_main.s
24	Click on Open to start the download process.
25	A major alarm may occur on the IMC card at this time. It can be ignored for now. During the download process, the IMC card responds only to download commands. Also, automatic messages are turned off on the port in use and the other port is disabled.
26	During the download process, the following messages are displayed in the Downloading Firmware dialog box: Message Meaning Saving Main Memory The current firmware is saved in auxiliary memory on the card in case the download process cannot complete successfully. Erasing Main Memory The area of the memory reserved for the new firmware is erased. Sending Firmware Download The firmware download has begun. Verifying Firmware Download The new firmware is being verified. Ending Download Sequence The firmware download is finishing.
27	After the IMC/NIMC card download process is completed, press the Alarm Cutoff push-button on the card to clear the major alarm. Both communication ports on the IMC card are restored to normal operation.
28	Close the Download Firmware dialog box.
	Prepare to Download Firmware to Standby ITH Card
29	Verify that no alarms are active, and there are no alarm lamps lit on any of the cards.
30	Identify the ITH card that is in Standby mode.

Chart 1. Software Installation Procedure Using the Local Craft Terminal Application (Contd)

STEP	PROCEDURE
31	In LCT, go to the Downloading Firmware dialog box and select the Standby ITH card, either ITH1 or ITH2. Do not attempt to download firmware to the Active ITH card.
32	Click on the Start Firmware Download button. At the prompt to start the download, click on Yes. The Open Download File box opens.
	Download Firmware to Standby ITH Card
33	In the Open Download File box, find the directory created in Step 1, and select the file `ith_main.s`. Click on Open to start the download process.
34	A major alarm is indicated on the IMC/NIMC card because of the loss of ITH card redundancy during the download process. During the download process, the IMC card responds only to download commands. Also, automatic messages are turned off on the port in use and the other port is disabled. The Standby ITH card ceases tracking and displaying any input signal status and shows an alarm condition.
35	During the download process, download status messages are displayed in the Downloading Firmware dialog box.
36	When the download process completes, wait approximately 10 minutes for the parameter to transfer. The Alarm LED on the Active ITH card goes off when the parameter transfer is complete. Both communication ports on the IMC card are restored to normal operation.
37	After the Standby ITH card has re-qualified the input signals, press the Alarm Cutoff push-button on the IMC/NIMC card to clear the major alarm.
	Download Firmware to Second ITH Card
38	When all alarms have cleared on the Standby ITH card, force this Standby ITH card to Active mode using the front-panel push-button.
39	In the Downloading Firmware dialog box, select the Standby ITH card, either ITH1 or ITH2. Important: Do not download firmware to the Active ITH card.
40	Click on the Start Firmware Download button. At the prompt to start the download, click on Yes. The Open Download File box opens.
41	In the Open Download File box, find the directory created in Step 1 and select the file `ith_main.s`. Click on Open to start the download process.
42	A major alarm is indicated on the IMC/NIMC card. During the download process, the IMC card responds only to download commands. Also, automatic messages are turned off on the port in use and the other port is disabled. The Standby ITH card ceases tracking and displaying any input signal status and shows an alarm condition. This is normal.
43	During the download process, download status messages are displayed in the Downloading Firmware dialog box.
44	After the Standby ITH card has re-qualified the input signals following the download process, press the Alarm Cutoff push-button on the IMC/NIMC card to clear the major alarm. Both communication ports on the IMC card are restored to normal operation.

Chart 1. Software Installation Procedure Using the Local Craft Terminal Application (Contd)

STEP	PROCEDURE
45	If it is important to have the same ITH card in the Active mode as at the beginning of this procedure, force this Standby ITH card to Active mode using the front-panel push-button.
46	If the 55400A system contains expansion subracks, the firmware in the Expansion IMC and Expansion Synchronization cards must also be upgraded. LCT version 1.24 or later is required to download firmware to an expansion subrack system. Perform Steps 47 through 68 for each expansion subrack.
	Download Firmware to Expansion IMC Card
47	Verify that no alarms are active, and there are no alarm lamps lit on any of the cards.
48	In the Downloading Firmware dialog box, find the Select Card feature and click on Exp. IMC.
49	Click on the appropriate subrack in the Select Rack list.
50	In the Open Download File box, find the directory created in Step 1 and select the `em_main.s` file
51	Click on Open to start the download process.
52	During the download process, download status messages are displayed in the Downloading Firmware dialog box. During the download process, the IMC card responds only to download commands. Also, automatic messages are turned off on the port in use and the other port is disabled.
53	After the Expansion IMC card download process is completed, press the Alarm Cutoff push-button on the IMC/NIMC card to clear the major alarm. Both communication ports on the IMC card are restored to normal operation.
	Download Firmware to Standby Expansion Synchronization Card
54	Verify that no alarms are active, and there are no alarm lamps lit on any of the cards.
55	Identify the Exp. Sync card that is in Standby mode.
56	In LCT, go to the Downloading Firmware dialog box and select the Standby Exp. Sync card, either ITH1 or ITH2. Do not attempt to download firmware to the Active Exp. Sync card.
57	In the Open Download File box, find the directory created in Step 1 and select the `es_main.s` file.
58	Click on Open to start the download process.
59	During the download process, download status messages are displayed in the Downloading Firmware dialog box. During the download process, the IMC card responds only to download commands. Also, automatic messages are turned off on the port in use and the other port is disabled.
60	After the Expansion Sync download process is completed, press the Alarm Cutoff push-button on the IMC/NIMC card to clear the major alarm. Both communication ports on the IMC card are restored to normal operation.
	Download Firmware to Second Expansion Synchronization Card
61	Verify that no alarms are active, and there are no alarm lamps lit on any of the cards.

Chart 1. Software Installation Procedure Using the Local Craft Terminal Application (Contd)

STEP	PROCEDURE
62	Press the Force Active push-button on the main rack standby ITH card.
63	Identify the Exp. Sync card that is in Standby mode.
64	In LCT, go to the Downloading Firmware dialog box and select the Standby Exp. Sync card, either ITH1 or ITH2. Important: Do not download firmware to the Active Exp. Sync card.
65	In the Open Download File box, find the directory created in Step 1 and select the `es_main.s` file
66	Click on Open to start the download process.
67	During the download process, download status messages are displayed in the Downloading Firmware dialog box. During the download process, the IMC card responds only to download commands. Also, automatic messages are turned off on the port in use and the other port is disabled.
68	After the Expansion Sync download process is completed, press the Alarm Cutoff push-button on the IMC/NIMC card to clear the major alarm. Both communication ports on the IMC card are restored to normal operation.
	Reconfigure IMC/NIMC Switches
69	De-select Comm>Enable Com Port (or Comm>Connect) to end communication between the Local Craft Terminal application and the 55400A.
70	Disconnect the null modem serial cable from the IMC/NIMC local port.
71	Remove the IMC/NIMC card from the subrack.
72	If the IMC/NIMC switch S4-1 was ON prior to Step 8, set switch S4-1 back to ON to re-enable security.
73	If desired, set switches S3-1 and S3-2 to ON to set the local port for 9600 baud.
74	Reinstall the card into the subrack.
75	Resecure the card with the two card-retaining screws.
76	Press the Reset Local Com Port push-button on the IMC/NIMC card.
77	Connect the null modem serial cable to the IMC/NIMC local port.
78	Use the Comm>Baud Rate to select the correct baud rate.
79	Select Comm>Enable Com Port (or Comm>Connect) to start communication between the application and the 55400A.
80	If security is ON, enter a valid username and password.
	End
81	Firmware download to the 55400A NSU has been completed. Exit the Local Craft Terminal application and disconnect the serial cable from the IMC/NIMC local port. Any LAN or X.25 port connections to the NIMC card must be re-established.

Chart 2. Software Installation Procedure Using the OSMF Application

STEP	PROCEDURE
	Copy Firmware Files to Workstation
1	Create a directory structure on the computer for the firmware files. The following is recommended: `\NSU55400\R3851D`
2	Copy the file from each supplied firmware upgrade disk to the directory created in the previous step, or copy the zip file to the directory created in the previous step and decompress the zip file using an unzip utility.
3	The Security-class user (svsec) should be the owner of the firmware files and have read permission on the files.
	Open Firmware Download Dialog Box
4	On the synchronization map, select the symbol for the SSU that is the intended target for the firmware download.
5	Use the Network Element Status display to verify that no alarms are active. Verify that there are no alarm lamps lit on any of the cards. (This is a desirable, but not a must condition.)
6	Choose the Unmanage menu item from the OSMF menu to unmanage the NE.
7	Choose the Firmware Download menu item from the OSMF menu to open the Firmware Download Dialog box.
	Download Firmware to NIMC card
8	In the Firmware Download dialog Card AID field, select the S0 rack and the IMC card.
9	In the Firmware Code File Name field, type the full path of the firmware file. Use the appropriate filename which matches installed NIMC card type: Card File 55442A NIMC - LAN (standard) `ni_main.s` 55442A NIMC - X.25 (option 002) `nx_main.s` 55442A NIMC - TP4 (option 003) `nt_main.s`
10	In the In Steps Of field, enter the number 1000.
11	Ensure that the Directly Download New Code check-box is **not** checked.
12	Click the Automatic button and the download process begins.
13	When the NIMC firmware download has been completed, DONE shows in the Response/Status field.
14	Click the Reset button to reset the dialog box for the next firmware download.
	Download Firmware to Standby ITH Card
15	Use the Network Element Status display to identify the ITH card that is in Standby mode.

Chart 2. Software Installation Procedure Using the OSMF Application (Contd)

STEP	PROCEDURE
16	In the Firmware Download dialog Card AID field, select the S0 rack and the Standby ITH card, either ITH1 or ITH2. Do not attempt to download firmware to the Active ITH card.
17	In the Firmware Code File Name field, type the full path of the `ith_main.s` firmware file.
18	In the In Steps Of field, enter the number 1000.
19	Ensure that the Directly Download New Code check-box is **not** checked.
20	Click the Automatic button to begin the download process.
21	When the ITH firmware download is complete, DONE will be shown in the Response/Status field.
22	After the ITH firmware download completes, wait approximately 10 minutes for the parameter to transfer. The Alarm LED on the Active ITH card goes off when the parameter transfer is complete.
23	Click the Reset button to reset the dialog box for the next firmware download.
	Download Firmware to Second ITH Card
24	Use the Network Element Status display to identify the ITH card that is in Standby mode.
25	Force the Standby ITH card to Active mode using the Network Element Status display to press the front-panel push-button.
26	In the Firmware Download dialog Card AID field, select the S0 rack and the Standby ITH card, either ITH1 or ITH2. Do not attempt to download firmware to the Active ITH card.
27	In the Firmware Code File Name field, type the full path of the `ith_main.s` firmware file.
28	In the In Steps Of field, enter the number 1000.
29	Ensure that the Directly Download New Code check-box is **not** checked.
30	Click the Automatic button to begin the download process.
31	When the ITH firmware download is complete, DONE will be shown in the Response/Status field.
32	After the ITH firmware download completes, wait approximately 10 minutes for the parameter to transfer. The Alarm LED on the Active ITH card goes off when the parameter transfer is complete.
33	Click the Reset button to reset the dialog box for the next firmware download.
34	If it is important to have the same ITH card in the Active mode as at the beginning of this procedure, force this Standby ITH card to Active mode using the Network Element Status display to press the front-panel Force Active push-button.
35	If the 55400A system contains expansion subracks, the firmware in the Expansion IMC and Expansion Synchronization cards must be upgraded. Perform Steps 36 through 60 for each expansion subrack in the system: S1, S2, S3, and S4.

Chart 2. Software Installation Procedure Using the OSMF Application (Contd)

STEP	PROCEDURE
	Download Firmware to Expansion IMC Card
36	In the Firmware Download dialog Card AID field, select the S1 rack and the IMC card.
37	In the Firmware Code File Name field, type the full path of the em_main.s firmware file.
38	In the In Steps Of field, enter the number 1000.
39	Ensure that the Directly Download New Code check-box is not checked.
40	Click the Automatic button and the download process begins.
41	When the NIMC firmware download is complete, DONE shows in the Response/Status field.
42	Click the Reset button to reset the dialog box for the next firmware download.
	Download Firmware to Standby Expansion Synchronization Card
43	Use the Network Element Status display to identify the ITH card that is in Standby mode.
44	In the Firmware Download dialog Card AID field, select the S1 rack and the Standby Expansion Sync card, either ITH1 or ITH2. Do not attempt to download firmware to the Active Expansion Sync card.
45	In the Firmware Code File Name field, type the full path of the es_main.s firmware file.
46	In the In Steps Of field, enter the number 1000.
47	Ensure that the Directly Download New Code check-box is not checked.
48	Click the Automatic button to begin the download process.
49	When the Expansion Sync firmware download is complete, DONE will be shown in the Response/Status field.
50	Click the Reset button to reset the dialog box for the next firmware download.
	Download Firmware to Second Expansion Synchronization Card
51	Use the Network Element Status display to identify the ITH card that is in Standby mode.
52	Force the Standby ITH card to Active mode using the Network Element Status display to press the front-panel push-button.
53	In the Firmware Download dialog Card AID field, select the S1 rack and the Standby Expansion Sync card, either ITH1 or ITH2. Do not attempt to download firmware to the Active Expansion Sync card.
54	In the Firmware Code File Name field, type the full path of the es_main.s firmware file.
55	In the In Steps Of field, enter the number 1000.
56	Ensure that the Directly Download New Code check-box is not checked.

Chart 2. Software Installation Procedure Using the OSMF Application (Contd)

STEP	PROCEDURE
57	Click the Automatic button to begin the download process.
58	When the Expansion Sync firmware download is complete, DONE shows in the Response/Status field.
59	Click the Reset button to reset the dialog box for the next firmware download.
60	If it is important to have the same ITH card in the Active mode as at the beginning of this procedure, force this Standby ITH card to Active mode using the Network Element Status display to press the front-panel Force Active push-button.
	End
61	Choose the Manage menu item from the OSMF menu to re-manage the NE. After the operation is over, the NE will be in a managed state and the database will be updated with the latest firmware revisions.
62	Firmware download to the 55400A NSU has been completed. Exit the Firmware Download dialog box.