



4 Firmware Update Examination Results

4.1 Files Examined

SLI reviewed the Update Image against the Production Image for each of the releases, finding that all common files matched each other and their associated hash codes, as expected. The differentiating files, the Scanner Printer Engine (SPE) board and the Input Output (IOB) board files for the Update Image, and the full WinCE operating system and the "sysload.bmp" bitmap file for the Production Image matched the expected hash codes.

The verified SHA-256 hash of the Production Image file is:

- 5b465b87ff25679a05490893bb867bf962b488825967a88d3171eea2c611b2ba

The verified SHA-256 hash of the Update Image file is:

- 111e25710cd4658e7e152220b027487e0b23e0816a06694ccfb6e187ece725d5

Files found on the Update Image but not on the Production Image, as well as file found on the Production Image but not on the Update Image are listed in Table 4 – File Differences between Images below.

Table 4 – File Differences between Images

Software Version	Firmware Version	Files found on the Production Image but not the Update Image	Files found on the Update Image but not the Production Image
5.2.1.0	1.4.1.0	BOOT.INI	InputOutputBoard.S19
		BLDR	ScannerPrinterEngine.S19
		nk.bin	
		smc9500.dll	
		sysload.bmp	
		SYSLOAD.REG	
		wdapi1130.dll	
		windrvr6.dll	

Each of these files were found to match files in the Trusted Build.

4.2 Functional Examination Summary

4.2.1 Sysload.bmp file

The functional examination showed that two potential hashing results can occur when updating an ExpressVote HW1.0 device from one release to another using the Update Image, in the context of the sysload.bmp file.

One outcome is that if the version of sysload.bmp file originally on the device has the same copyright period as the sysload.bmp file that is part of the newly installed



release, the verification process will log it as a match and not note anything in the "difference" report. This is expected as the two files are identical.

The other outcome is that if the version of sysload.bmp file originally on the device has a different copyright period from the sysload.bmp file that is part of the newly installed release, the verification process will log it as a difference and will note the two files and their corresponding hash codes in the "difference" report. This is expected as the two files are different.

If this second outcome occurs, the jurisdiction must reference "Table 1 – Sysload.bmp files" above and verify that the sysload.bmp file's hash codes noted in the "difference" report match the corresponding hash codes listed in Table 1. If the hashes match, installation may continue. If the hashes don't match, the jurisdiction must follow ES&S recommendations and perform a Production Image installation on the device.

4.2.2 Dynamic files

Of the files noted in "Table 3 – Dynamic Files expected in release" for this release only "firstboot.txt" was seen during the examination. Given different update paths, the files listed in the table may be seen by a jurisdiction. Note that no associated hash codes are given for dynamic files, as by their nature the file is constantly changing and as a result their hash code is constantly changing.

End of Test Report
