DDC-I Announces Certifiable Fast File System for Deos Safety-Critical Real-Time Operating System

DDC-I today announced the availability of the Certifiable Fast File System (CFFS) for DDC-I's DeosTM safety-critical real-time operating system (RTOS). The embedded certifiable file system, which supports flash devices such as CompactFlash, uses time and space partitioning, journaling and direct memory access(DMA) to enhance performance and availability. CFFS is certifiable to DO-178B Level A, has achieved certification by the FAA, and is currently flying in avionicssystemsusing CompactFlash devices as the storage media.

"DDC-I's CFFS is the next valuable offering in our mission to deliver best-in-class certifiable COTS RTOS and layered products for the safety-critical, DO-178B-certifiable software market," said Bob Morris, president and CEO of DDC-I. "We are committed to enhancing our product offering with the key featuresaviation manufacturers require to leverage COTSsoftware to lower the development costs of their avionics devices."

The CFFS is an embedded file service engine for the Deos RTOS.The CFFS is designed from the ground up to meet DO-178B certifiability and the most demanding real-time requirements, utilizing high-speed DMA to move file data between user applications and CompactFlash. To further boost performance, the CFFS also utilizes pipelining, which enablesprocesses to cue up multiple operations (reads, writes) on one or more files, invoke them all concurrently (non-blocking), then service the data as it arrives. This minimizes the need to wait for completion of I/O operations.

The CFFS enhances reliability, safety and security by utilizing partitioning to separate critical processes and data. Each user process can own one or more CFFS partitions, and each partition may contain one or more files. Only the user process that owns a given CFFS partition can modify files stored in that partition. Other user processes can be granted read permission to that partition, but cannot modify the files therein.

To guarantee data integrity across power upsets or system restarts, the CFFS utilizes journaling.Through journaling, file system data structures are written to a temporary (but power cycle preserved) area before committing them to the flash disk destination.

The CFFS is highly configurable, making it easy for integrators and process designers to set file partitions, interrupt frequency, DMA transfer size, and access priorities for processes and files. The CFFS supports a variety of non-volatile memory including NVSRAM, EEPROM, flash memory and popular compact flash disks, including devices fromSanDisk andSmart Modular Technologies.

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