Concurrent Linux Solution
Aerospace Testing/Hamilton Sundstrand

Customer:
Hamilton Sundstrand Engine & Control Systems, a division of United Technologies

The requirements were demanding. Hamilton Sundstrand needed a robust Linux® solution for its hardware-in-the-loop propulsion system simulators used in the development and test of military and commercial electronic engine control software. They also needed reliable hard real-time performance and Linux expertise to support their custom engineering requirements.

Specific challenges

Having standardized on the Debian® Linux distribution, Hamilton Sundstrand asked Concurrent to provide its RedHawk™ Linux real-time components - kernel, frequency-based scheduler and NightStar™ tools - in a Debian-based user environment.

Solution Overview

Concurrent accepted this challenge and provided a solution on time and in accordance with Hamilton Sundstrand requirements. Concurrent's Debian-based RedHawk Linux distribution has been in use since June of 2009 and is now Hamilton Sundstand's standard real-time Linux solution for its test systems. Several hundred existing systems running the RTLinux microkernel will be upgraded to Debian-based RedHawk.

Application Overview

Hamilton Sundstrand designs and manufactures aerospace systems for commercial, regional, corporate and military aircraft, and is a major supplier to international space programs. Headquartered in Windsor Locks, CT, the company employs more than 17,000 worldwide. Hamilton Sundstrand's special test equipment group:

◆ Designs, builds and supports propulsion system simulators used in the development and testing of military and commercial engine controls.

◆ Provides systems for the development and test of flight controls, engine control monitoring systems for ground and flight test and simulation systems.

◆ Partners with Pratt & Whitney to provide core software technology for engine test stand and rig test stand control and data acquisition systems.
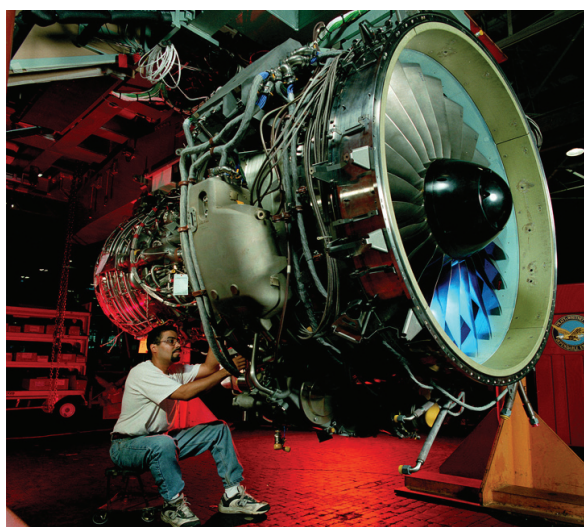

Photo courtesy of Hamilton Sundstrand.

To maintain its position as a market leader that has earned the trust of major airframe manufacturers, Hamilton Sundstrand continuously looks for ways to upgrade its test systems to improve efficiency, cost savings, reliability and time to market. This is often a complex undertaking. Systems used to analyze prototypes must be as sophisticated as the technology under development.

Hamilton Sundstrand needed a dependable, flexible and deterministic real-time Linux solution. The company had standardized on the Debian Linux distribution because of the strengths of its package management system. Having been a long time Concurrent user, Hamilton Sundstrand asked Concurrent if its RedHawk real-time kernel, scheduler and tools could support the Debian user environment as an alternative to Red Hat®.

concurrent
www.ccur.com

The new Debian-based RedHawk distribution delivered by Concurrent provided the same guaranteed real-time performance and determinism as standard RedHawk. Hamilton Sundstrand could now take advantage of the real-time performance of the RedHawk kernel, the powerful system debugging and analysis features of NightStar and Concurrent's exceptional Linux expertise.

Hamilton Sundstrand worked closely with Concurrent to fully test the kernel, frequency-based scheduler and Nightstar tools re-hosted to the Debian userland. As a result, Hamilton Sundstrand is now implementing a fully integrated, turnkey test stand using Concurrent-supplied Linux products to support its product lines.

Why Concurrent?

RedHawk Linux and NightStar tools are used in the development and deployment of hundreds of time-critical automotive, aerospace and defense, energy and industrial automation applications worldwide. In addition, Concurrent offers a range of consulting services and delivers fully integrated hardware and software solutions engineered to customer specifications.

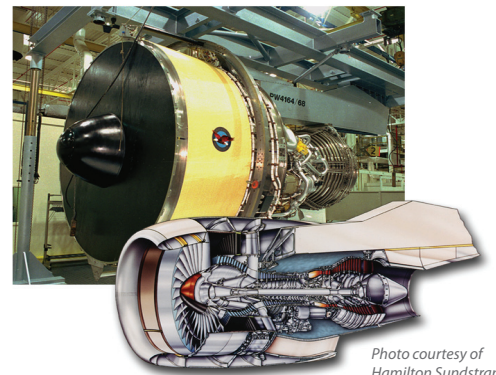Hamilton Sundstrand chose Concurrent's Debian-based RedHawk solution because:

◆ Concurrent has a long history of success with other United Technologies divisions including Pratt & Whitney and Sikorsky Aircraft.

◆ Concurrent has a proven ability to provide complex solutions and engineering support for mission-critical avionics applications.

◆ Concurrent offers kernel-level technical expertise and exceptional customer support.

"Concurrent is user-focused and really listens to the customer," said Dean W. Anneser, Fellow, Hamilton Sundstrand Engine & Control Systems. "We needed a supplier who's flexible and provides rock-solid, reliable systems that get the job done day after day," said Anneser. "One of Concurrent's strengths is its customer focus – the people there really listen to the customer. They answer their own phones and get right back to you. They very much want to help you. I have had nothing but good experiences working with Concurrent."

"Bottom line,
RedHawk and NightStar is
THE real-time solution here."

Photo courtesy of
Hamilton Sundstrand.

ABOUT CONCURRENT

Concurrent Computer Corporation's *Real-Time business is one of the industry's foremost providers of high-performance real-time computer systems, solutions, and software for commercial and government markets.*

The company's 45-year-old real-time business focuses on areas that include hardware-in-the-loop and man-in-the-loop simulation, data acquisition, industrial systems and software.

Operating worldwide, Concurrent provides sales and support from offices throughout North America, Europe, Asia and Australia.

CONTACT

Concurrent Computer Corporation
2881 Gateway Drive,
Pompano Beach, FL 33069, USA

Phone:
1-800-666-4544 or 954-974-1700
info@ccur.com
www.ccur.com

Results

Hamilton Sundstrand's Special Test Equipment group is now standardizing on Concurrent's Debian-based RedHawk real-time operating system and NightStar advanced debugging and analysis tools. Hamilton Sundstrand application software is deployed in over 200 test systems at Hamilton Sundstrand customers. Debian-based RedHawk has recently been deployed to the rocket area of Hamilton Sundstrand. The company plans to continue its deployments of RedHawk in order to maximize efficiency and reliability.

concurrent
www.ccur.com