



LEGACY COMPUTER REPLACEMENT SYSTEM (LCRS)

LCRS is a drop-in SEL/Gould/Encore host replacement solution that runs unmodified legacy code on Commercial-Off-The-Shelf (COTS) hardware/software, delivering 100% code compatibility and dramatically improved performance at a fraction of the cost and risk of traditional re-hosting. LCRS is comprised of the following elements, each of which is further described below.

- COTS System Environment (Linux®-based hardware/software)
- COMPRO's Real-Time Environment (RTE)
- COMPRO's LCRS software

COTS System Environment

LCRS uses Commercial-Off-The-Shelf (COTS) AMD computer systems running the SuSE™ Linux® distribution. It fully supports most built-in I/O including:

- Gigabit Ethernet® (for networking and network printers)
- PS2 I/O (console keyboard/mouse)
- Video Out (LCD console)
- DAT drives
- Removable hard disk drives

Additional I/O controllers (multi-port serial, SCSI, Gould High Speed Device, etc.) are also supported.

While COTS offers wonderful performance and maintenance advantages, it also poses long-term supportability risks. In response, COMPRO's LCRS has migrated from Alpha™, SPARC®, and Intel® based products, demonstrating its portability and largely hardware-independent advantage. Bottom line – LCRS can "future-proof" your application.

COMPRO's Real Time Environment (RTE)

The Real Time Environment (RTE) is a Linux® extension (hardware and software) that adds high-performance interrupt latency and determinism to COTS systems. RTE includes:

- PCI Real Time Option Module (PCI-RTOM)
- Executive Scheduler
- GUI Performance Monitor
- Linux® Real Time Extensions (RTEX)

The RTOM is a central component in virtually all legacy SEL/Gould/Encore host computers. The PCI-RTOM is a plug-compatible replacement for the legacy RTOM.

- ### BENEFITS
- Executes Unmodified Legacy Applications
 - Uses COTS Hardware and Software
 - Plugs into Existing Subsystems
 - Retains Legacy Timing and Improves Performance
 - Slashes Host Replacement Costs
 - More Maintainable and Reliable
 - Reduces Risk and Speeds Deployment
 - Assures Compatibility and Increases Frame Headroom
 - Flexible Expandability



LCRS (Continued)

COMPRO's LCRS Software

LCRS is an application that simulates legacy SEL/ Gould/Encore hardware while retaining inherent system timing. LCRS will run existing binary code.

LCRS uses a simple Linux® user-configurable data file to specify system characteristics at runtime. Elements include memory size, simulated disk path names, device handlers and shared memory partition names permitting concurrent LCRS instances on multiple computers.

Because legacy code seldom requires modification, LCRS offers the best-value solution when it is time to replace outdated hardware. Undeniably, re-writing application code for a new computer system represents enormous risk and cost. LCRS eliminates these re-hosting downfalls entirely.

Input/Output Considerations

Most legacy systems connect with a variety of subsystems using I/O connections such as Ethernet®, High Speed Device (HSD), Real Time Option Module (RTOM), Reflective Memory System (RMS), RS-232, etc. LCRS addresses connectivity to these existing subsystems by offering PCI versions of the legacy controllers.

LCRS is designed to protect not only your software investment, but to retain, when desirable, existing I/O subsystems.

Standard legacy peripherals (disk drives, magnetic tape, printers) are easily replaced with compact,

modern COTS devices that under-cost, outperform and outlast their legacy counterparts. And again, they appear functionally identical to your legacy application.

LCRS Compared to Legacy Systems

LCRS delivers a dramatic built-in performance boost. LCRS automatically eliminates compute headroom limitations, offering room to grow and smooth operation. The LCRS performance benchmark table below tells the story:

Legacy System	Relative Performance
RSX	210.50%
32/97 (MACC, Shadow)	265.32%
32/97 (MACC, 64KB Cache)	323.39%
32/97 (MACC, 128KB Cache)	265.89%
32/97 (no MACC, 128KB Cache)	344.61%
32/67 (single board, FPA)	1025.58%
32/67 (3-board, FPA)	1096.90%
32/77 (no SA)	2213.14%

Notes:

1. LCRS configuration includes AMD™ 3.4GHz Phenom™ II X6.
2. Only one CPU core is used for LCRS CPU tasks running as vrsx.
3. LCRS relative performance is an average of several typical real time simulation tasks and Whetstone benchmarks compared to the same tasks run on legacy configurations. All tests are compute-only (no I/O).
4. Actual performance will vary based upon specific LCRS configuration and I/O activity.



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