

LockWorks LLC  
PO Box 249  
Kiowa, CO 80117



303-646-8674  
<http://www.locktrack.com>

# Lock&Track Corrections<sup>SM</sup> Information System

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## Lock&Track Overview

The **Lock&Track<sup>SM</sup> Corrections Information System** is a jail, prison and correctional management system<sup>1</sup> developed and supported by LockWorks LLC. **Lock&Track** is a complete information management system designed for use by corrections staff who manage jails, prisons, work centers, boot camps, juvenile detention and other correctional facilities.

**Lock&Track** provides instant access to inmate and offender information, fully supporting booking (intake), incarceration, release and post-release activities and records. The application screens, reports and data processing rules have been developed in close cooperation with corrections professionals and has been continually refined by actual field use since 1987.

This means that the application package is intimately in-tune with the practical needs and requirements of staff and professionals. This product **will do the job**, not get in the way or disappoint users.

## Adopting Lock&Track

There are two ways to adopt **Lock&Track**.

**On-premise systems product:** This traditional Jail Management System (JMS) purchase plan includes all application server hardware, offender relational database, all **L&T** applications software, GUI client software, foundation and support software, client-server reporting components, plus full customization and support services.

The customer organization ultimately undertakes the ownership, operation and maintenance of this in-house data system although the vendor typically provides supplemental system support on a contracted basis. Customization of the database, interface, or reports is virtually unlimited, but upgrades must be purchased separately.

**Online service:** Client organizations pay a monthly fee, calculated on their facility's size (bed count), to access a professionally managed, mission-critical **L&T** system, including all hardware, software and infrastructure, owned and maintained by LockWorks LLC.

Advantages include regular software upgrades, 24-365 support, limited customization, integration with a rich pool of existing customers (to share mugshots for line-up generation, for example), user group meetings, and other benefits of joining an existing team of users.

Although originally conceived as a business strategy to deliver **Lock&Track** to small counties which do not have the budget or resources to own and operate a JMS of their own, the **L&TO** quickly became a popular approach to deploying **Lock&Track** for corrections organizations of *any size*, especially since it moves the problem of JMS acquisition from that of a capital equipment expenditure to one of services procurement. In other words, your entire JMS application infrastructure is *outsourced* — all your staff has to do is use it!

## Product Organization

**Lock&Track** is a suite of application components called *desktops*, each of which focuses on a particular aspect or functional requirement regarding the flow of information within the correctional facility. These desktops are the primary means by which users access information about the inmate and offender populations, maintained as data records in the **Lock&Track Offender Database**.

**Lock&Force<sup>SM</sup> Sheriff's Information System** is oriented to the needs of law enforcement officers on patrol and in case or incident management, tracking and reporting. **Lock&Force** focuses on case

records, and yet is fully integrated with **Lock&Track**, providing a comprehensive data resource for the entire sheriff's or corrections department. With the combination of **Lock&Track** and **Lock&Force**, the department can have a fully coordinated view of operations and incidents from case inception through incarceration and ultimately release.

### ***Brief Overview of Functionality***

A desktop contains *menus* and *screens* for data entry and review, task-specific functions and processes tailored for a post, duty or job responsibility, plus a collection of production *reports*. Each desktop is focused on that data which best meets its functional and operational needs. More simply put, there are desktops available for:

- Booking, Intake, Transfer & Release
- Custody Management
- Inmate Case/Crime Records, including Sentences and Time Served
- Housing Management
- Disciplinary Reporting and Processing
- Lineups
- Checkpoints and Movement Tracking
- Inmate Services, including Medical/Dental
- Inmate Scheduling
- Inmate Education Programs
- Inmate Trust Accounts
- Cashier
- Inter-agency Billing
- Commissary and Storefront Management
- Property Management
- Mailroom
- Visiting and Visitor Registration/Management
- Internal Investigations
- Transportation
- Facilities Management
- Food Services
- Inventory
- Work Center Management
- Work Assignments (crews, employment, programs, *etc.*)
- Day Reporting Center
- Supervision and Community Corrections

- Lookups (read-only data access for the DA's office, courts, *etc.*)
- Reporting & Statistics (including population and SSA reporting, *etc.*)
  - Staff Management
- Records Management and Maintenance (offender merge/delete, *etc.*)
  - Case and Incident Reporting, Tracking and Management
- Evidence Management, including storage, tracking and disposition
- Vehicles and Property
- Searches on Persons, Property, Vehicles, Businesses and Incidents
- Canine Involvement
- Incident Injuries and Fatalities
- Crime Analysis Information (sources UCR reporting)
- Case Status (workflow tracking)
- Interface Functions
- ...and many more (these are just examples)

## **Customization**

Existing desktops can be easily configured and tuned to meet specific requirements based on a user's experience level, job responsibilities, or other criteria. New desktops can be quickly designed and implemented to replace or augment those which are currently available. Among the kinds of desktop configuration and tuning which are possible:

- Adding or removing entire screens from the desktop.
- Adding or removing data elements (fields) from a screen.
- Extending or limiting the operations which are possible from a screen.
- Enabling or disabling specific function keys.
- Adding new or custom reports to existing report menus.
- Creation of new data processing steps within a screen.

In addition to the systems hardware and foundation software components described elsewhere, the **Lock&Track Corrections Information System** consists of:

- A fully configured **Lock&Track Offender Database**, built on powerful, modern *relational database technology*.
- A complete set of *computer system/data security management capabilities* to permit various levels of authorized access to offender data and to forbid all unauthorized access.
- **Lock&Track desktops** for all operational aspects of data entry, update and review. These application screens provide a sophisticated user interface, foreground and background data processing, and other **Lock&Track** functions.

Both GUI and traditional terminal user interfaces are supported.

- Integrated *photographic and document imaging*.

- *Standard production reports* which can be generated either periodically (daily, per shift, monthly, etc.) or on demand by the user.
- *Open database access* for *ad hoc* and user-defined queries and reports.
- *Full LAN integration* with PC workstations, including client-server and ODBC applications for point-and-click queries and reports. This provides a powerful means to extract information from the database for further processing by other PC-based applications, such as spreadsheets, statistical analysis programs and business graphics presentation tools.
- Comprehensive *system management* and *database administration tools*.

## **Screen Shots**

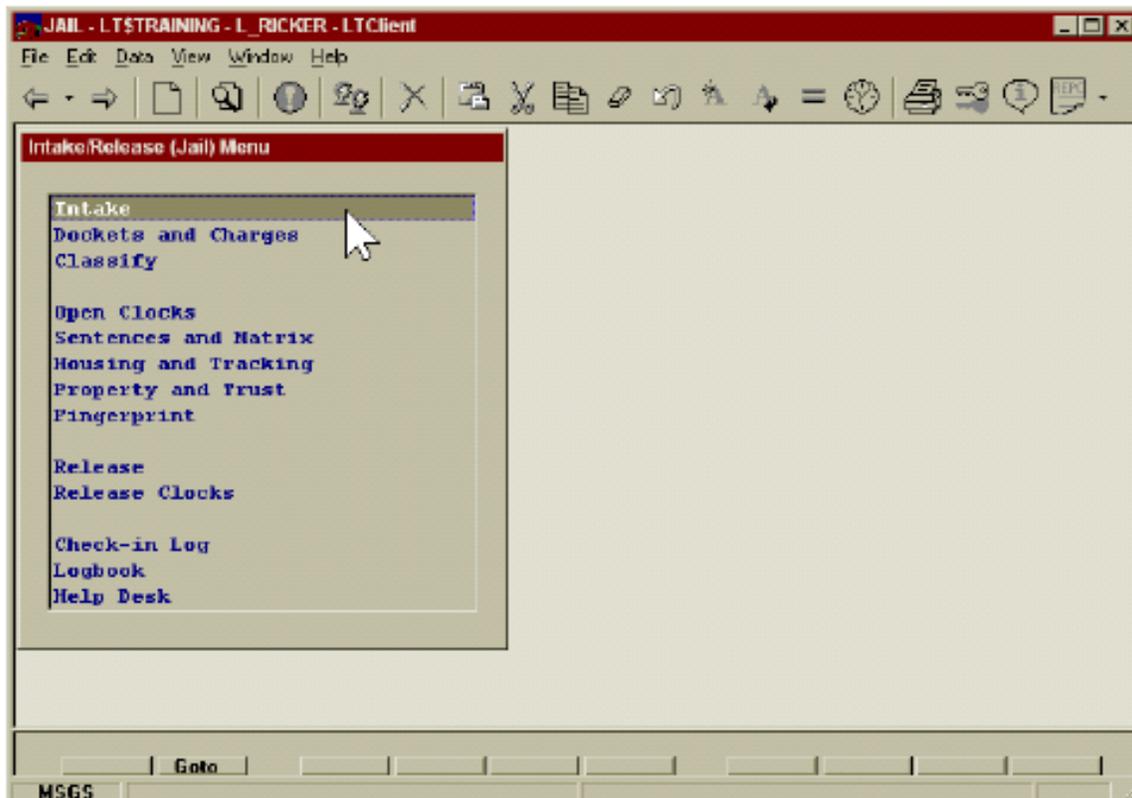
A Brief Look at the Application Screens Describing software in words is never as good as seeing the application itself. And although an exposition of the complete product is well beyond the scope of this document, a sampling of “screen shots” will help illuminate the fine points of **Lock&Track**.

What follows is a selection of screen shots from the **Jail** desktop, which is one of the most heavily used of the **Lock&Track** components.

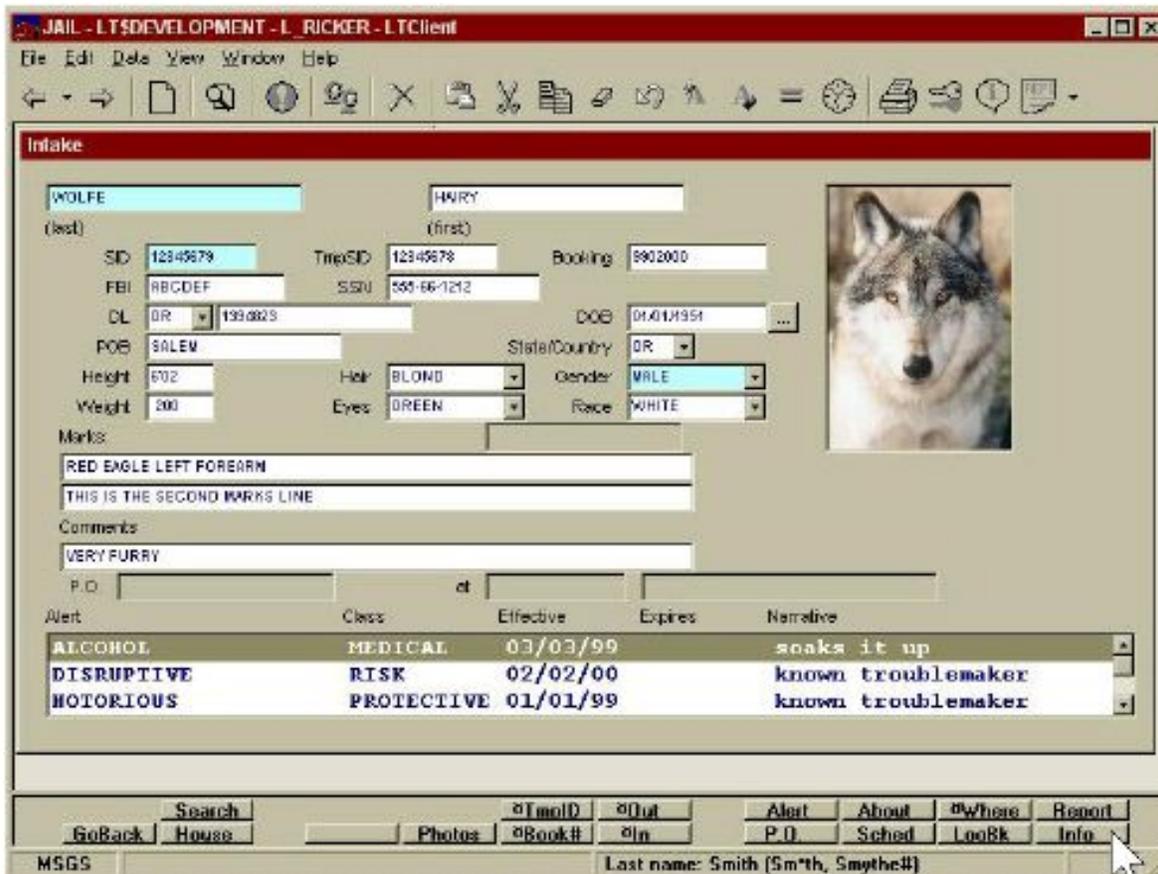




The **Lock&Track** login screen verifies the identity, through a username and password, of an authorized customer employee/user of the system. The **Desktop** field identifies which desktop the user wants to use.



The **Jail** desktop presents a main menu (other desktops might get right down to business with a data entry screen). This menu presents a group of logically ordered choices for the user — in this case, the user will double-click on the **Intake** item...



The main data entry/review screen. Here, the user can enter a name (last and part of the first, such as **WOLFE, HA\***, where the “\*” asterisk indicates a wildcard match/search. The user then clicks the **Find** button on the toolbar to retrieve the inmate’s records. Note that photo imaging is built-in — the offender’s most recent mug-shot (if available) is displayed. Obviously, our **Hairy Wolfe** is a “test” offender, and his photo is clearly not that of any real person. Also, searching and retrieving records by *any* other data element is possible, such as retrieval by an ID-number, by race, hair color, eye color, gender, *etc.*

Note the completeness and richness of the information displayed, including physicals to help confirm identities, and Alert or Caution information which helps the corrections staff respond intelligently to an inmate who may pose a disciplinary or other problem.

## General Conventions

**LTClient** applications follow common Windows conventions and standards: There are pull-down menus, a toolbar and title-bar buttons for all common Windows functions and data operations. This application window can be resized and/or positioned anywhere on the PC screen for convenience and user’s preference. The color scheme can even be altered to suit personal preferences.

Also note that there is an extra row of buttons along the bottom of the screen. These buttons change

depending upon which application screen is currently displayed “on top”, and they provide *navigation functions*, permitting the user to “go to” the next logical screen in an intake process.

Standard interface elements across all desktops and applications facilitate users becoming expert-level quickly. For example, right-clicking on an unused area of the data entry screen displays a pop-up menu, which provides a path to any previous screen.

## **Reports**

No information system would be worth much without *standard production reports* which answer specific operational and management concerns and questions about the data. **Lock&Track** provides built in reports, custom reports as needed for customers, and full accessibility for any sql compatible report tool, such as Crystal Reports.

## **The Lock&Track Offender Database**

The storage mechanism at the heart of any data management tool should be reliable, robust, and easily accessed. The industry standard relational database underlying **Lock&Track** and **Lock&Force** is available to any sql-capable tool, providing assurance that your data will be secure and readily available through any version of the **Lock&Track** software, and even without using **Lock&Track**. This gives you insurance not available in products that use proprietary data-access mechanisms, because, after all, your information belongs to you.

The **Lock&Track** relational database is a very mature and robust design, and incorporates numerous “business rules” (triggers, constraints and stored-SQL procedures) to complement various aspects of **Lock&Track** application processing. It supports multi-user access (very large numbers of users), and can grow and handle many, many gigabytes of data.

It is engineered for mission-critical, 24×365 duty, and can be backed-up while users are online and using the database, which means there is no downtime for backups. It supports numerous features for multi-user record access and negotiation, very high performance, data consistency and reliability. Interactive record retrievals are *routinely* fetched within **1 second or less**.

## **Technical details**

**Lock&Track** includes a library of application modules which serve as the application’s *business rules* for corrections management. **LockWorks** modules embody extensive professional experience and procedures, and can be reconfigured and augmented to meet special local requirements. Furthermore, **LockWorks** software is itself readily extended to implement custom functionality.

**LockWorks** modules are written in industry-standard SQL<sup>9</sup> and traditional 3GL programming languages,<sup>10</sup> so that they can be readily understood, and even modified and extended, by your own in-house technical support staff. The **LockWorks** library of software is available to all **Lock&Track** desktops, making customization available to each application components. The application desktops, written in **RAPT** (the Relational Application Programmer’s Toolkit, described later in this document), make explicit use of **LockWorks** modules to perform *callback* functions — this is how the powerful functionality and flexibility of **Lock&Track** is delivered to the end user. Users perceive **LockWorks** callback routines as data functions which are activated by toolbar buttons.

**Lock&Track** is designed as a *client-server* application. This means that most of the computational requirements occur on a dedicated computer known as a *server*, which users connect to with *clients*. These clients may be any computer with an internet connection in the case of Lock&Track Online,

while the server is the responsibility of LockWorks for Lock&Track Online. This is how you get the full functionality of commercial custom software for the price of off the shelf PC software.

## ***Lock&Track Imaging***

**Lock&Track** includes integration with image-capture software such as mugshot cameras and fingerprint hardware, along with built-in capacity for storing multiple images and graphic documents. For customers without existing graphics infrastructure, **Lock&Track Photo Capture Workstation** is available as an optional component from LockWorks. This NT-based workstation provides all necessary electronic photographic and computer hardware and software necessary to set up a complete image capture workstation for photographing inmate/offender mug-shots and other subjects, such as evidence, property, *etc.* **Lock&Track** supports all major image-file formats, including JPEG, GIF, TIFF, FAX Group III, bit-map, and many others.

## ***Server Configuration***

All **Lock&Track** configurations are based on an Hewlett-Packart **AlphaServer** computer system (the “application server”).

An on-premise **Lock&Track** system consists of:

- A “current model” **AlphaServer** application server, sized and specified with sufficient capacity to handle the expected workload.
- As many gigabytes of RAM memory as needed for high performance multi-user application execution under the expected workload.
- As many gigabytes of disk storage as required, configured as multiple RAID-drives for maximum **Offender Database** storage and availability.
- One or more 10/100 megabit Ethernet network cards *ready to connect* to an existing in-house network.
- Digital Linear Tape (DLT) technology for fast, easy, automated backups.
- 600 megabyte CDROM drive and standard 1.44 megabyte floppy disk drive for media interchange (software upgrades, *etc.*).
- Integrated SCSI and SVGA bus interfaces for optimum I/O performance.
- Monitor, mouse, keyboard, integral power supply and cables.
- OpenVMS operating system and full open systems support, including TCP/IP network support *ready to connect* to the customer’s in-house network.
- Oracle/Rdb runtime user licenses sufficient to cover all anticipated concurrent users.
- Uninterruptible power supply, cabling, alarms and auto-sense shutdown software.
- **Three-year Product Foundation Warranty** is included with each AlphaServer system at no extra cost. This provides hardware support in a M–F 8am–5pm call window, with a 4-hour response guarantee. Warranty support services are provided by the Services Division of the hardware manufacturer, HP/Compaq.
- **Extended Warranty** to uplift support to 24×365 with an accelerated response window is available for all hardware and foundation software components.

The **Lock&Track** Production Server is accessible to potentially *all* of your organization's PC workstations either via your existing local-area network (LAN) and/or through a wide-area network.

A single-node system configuration exhibits high availability and reliability, with minimal unanticipated down-time. However, for true 24×365 up-time operating characteristics, a dual-redundant server configuration may be required.

A redundant server configuration extends robustness with two (or more) servers (nodes) on the network, often including a shared disk configuration (RAID, SAN, *etc.*), plus *VMScluster* software to bind the application servers into a cluster configuration. This provides virtually unimpeachable data integrity.

These system configurations qualify as a highly reliability, high availability, production ready and mission-critical application server platforms, providing services 24×365 with no unscheduled downtime. Furthermore, a *VMScluster* system deployment is “bulletproof” against future system capacity overload (due to the application's success and growth) — if the original systems ever do become overloaded because of an increase in workload, *another AlphaServer node* can quickly be added to the cluster to take up that added workload. This provides *incremental system growth*, and insures your application system against premature obsolescence for years to come.

With these configurations, there is *no down-time required* for such operations as regular maintenance, database and system backups, archival creation or restoration — *i.e.*, complete database and system backups can be done “on-line” while users are using system resources and applications. Complete application server backup capabilities are included in the foundation operating system and storage subsystem. Backup and restoration facilities are supported by automatic scripting and ease-of-use features for the system administrator.

Furthermore, for mission-critical, very high availability installations, this basic configuration can be readily augmented and expanded with *VMScluster technology*, permitting the incremental addition of one or more *AlphaServers* to the original Production Server, not only to provide operational redundancy, but to add system capacity with organization and application growth over the life-cycle of the JMS.

## ***Network Components***

All **Lock&Track** installations are designed and intended for full compatibility with common off-the-shelf network components (hubs, bridges, routers, *etc.*). **Lock&Track** is intended to blend in and fit well with the customer's existing network infrastructure.

## ***PC Workstations***

A **Lock&Track Production Server** is supported on Windows 2000 or newer, and is still successfully run on some older operating systems. Since the **Lock&Track** Client application (GUI) is based on “thin-client” technology, the installation and in-use demands placed on a PC by this application component are very modest.

**Lock&Track** works well with all contemporary industry-standard PC configurations.

## ***User Interfaces***

**Lock&Track** supports a traditional terminal data entry interface (or TUI, also called a character-cell

interface) and an easily accessible graphical user interface (GUI).

**Lock&Track's** GUI provides a simple interface with context-sensitive help, buttons, and other visual cues to enable new and occasional users to examine and enter data easily. Conventions across screens and desktop facilitate users reaching expert level facility quickly and make program behavior predictable. Validation and context-sensitive menus help users enter correct codes and values, while data caching enables screens to re-display data quickly after navigation. Sub-menus are presented as appropriate, and on-screen cues inform the user of available selections. In short, where some software looks flashy, provides animation and fancy graphics, and literally includes bells and whistles, we have focused on the aspects of modern GUI design that actually improve user experience.

**Lock&Track** also provides a traditional terminal user interface (TUI). This may be unfamiliar to users with no enterprise-level software experience, but multiple studies have demonstrated that TUI interfaces allow expert users to navigate and enter data significantly faster than GUIs do. Experienced **Lock&Track** users (and particularly those with repetitive tasks) routinely develop very high proficiencies with this user interface, and are typically capable of “heads-down” data operations — that is, they can perform normal data entry, editing and review operations as fast as the cursor can move across the screen, and without need for the mouse, in a manner similar to an experienced typist.

The traditional interface works equally well on ordinary, inexpensive data terminals and on PC workstations with appropriate terminal emulation software.

### ***The Secret of Lock&Track's low price and high performance***

You may wonder how we facilitate keeping two interfaces up-to-date and synchronized without the costs of dual-development. The secret is in proprietary software developed by our founders. The ***Relational Application Programmer's Toolkit (RAPT)*** is a toolkit-oriented support package which permits complete solutions to agency-specific problems and needs.

**RAPT** is used to implement *all Lock&Track* desktops for *both GUI and TUI* — that is, the *same source code files* are used to develop and build each and every desktop, regardless of user interface. This single source-code pool relieves LockWorks (and its customers and development partners) of the costs and problems traditionally associated with maintaining multiple interfaces.

**RAPT** is also the reason Lock&Track is so easily customized. RAPT was developed specifically to meet this need, with report and interface edits possible within days. That means that, while other software is locked into a develop, test, release cycle that absolutely prohibits small incremental changes, we can respond to some customer requests literally within days. Some clients with stand-alone installations even learn how to make minor changes or develop new reports themselves, and we're happy to teach those who would like this capability.

**RAPT** does this with industry-standard SQL commands for all back-end database access. This means there is nothing proprietary about your data storage – you can access it with any SQL compatible tool.

### ***Operating System: OpenVMS***

***OpenVMS*** is the operating system for the servers running **Lock&Track**.

In our experience, OpenVMS is the best commercially available operating system which is robust and reliable enough to support a mission-critical, 24×365 operations needed for corrections facilities. Company branded alternatives are expensive and may require proprietary add-ons. In addition they are surprisingly unreliable, counting on a captive user-base to promote acceptance of regular restarts, patches, and other administrative tasks.

OpenVMS is an Open Systems compliant operating system with XPG3/XPG4 certification by national and international standards organizations. Unix systems would be the most familiar such operating system, however OpenVMS enjoys a world-wide reputation as one of the most reliable, easily managed and open operating system environments in common use today., and has been developed for applications just like this one: mission critical, no-downtime environments with high data-integrity requirements.

## **Relational Database: Oracle/Rdb**

**Oracle/Rdb** is the relational database foundation for the **Lock&Track Offender Database** and applications. Rdb is completely SQL compliant for industry-standard database queries, updates and management. Rdb provides the means to access data from a wide variety of sources, including ODBC for client-server access — it meets all requirements for open systems and controlled/authorized access to data.

Rdb provides a database environment which supports high reliability, data integrity, open systems accessibility, optimal throughput and high performance. Features such as afterimage and recovery-unit journaling, together with the ability to perform on-line database verifications and backups, work together to guarantee data reliability. Internal features such as primary/foreign keys and relational constraints support data integrity.

Open systems access is provided by network features, cross-platform integration products and reliance on industry-standard SQL for query and update access. Multi-area and multi-file physical organization, hashed and sorted data indexes, data compression, physical and logical data placement controls all support highly optimized performance and throughput.

Rdb makes it possible to create reports and inquiries which are based on any field or value in the database. This means that *ad hoc* and custom reports and queries can be easily developed by staff using a wide variety of PC-based, point-and-click database query and report-writer tools. Both operational and management staff will benefit as never before by having easy access to information, not just piles of undifferentiated data.

In compliance with industry-standard client-server application architectural principles, all **Lock&Track** business rules are coded in *stored-SQL modules*, which in turn are incorporated into the **Offender Database** itself. This design enhances **Lock&Track**'s modularity, making it straightforward and manageable to make deployment-specific customizations and enhancements to the product.

## **System Connectivity and Interfaces**

Key personnel at LockWorks LCC have been involved in system interconnectivity issues using HP/Compaq/Digital's and other vendor's products and solutions for many years.

We have implemented numerous practical and successful inter-agency, inter-system network solutions involving both HP/Compaq/Digital and IBM platforms, primarily to enhance the sharing of correctional information between departments and agencies.

We have significant technical expertise in all contemporary methods of system interfacing, with sufficient practical experience to apply to any area in which CIS application users need to share information with other city, county or state agencies and departments. In large project contexts, the prime contractor/system integrator's own expertise in developing system interfaces is routinely augmented by that of LockWorks.

## ***End-User and Ad hoc Reporting***

LockWorks recommends a variety of industry-standard, ODBC-compliant products for skilled users who have a need to perform *ad hoc* report generation. These products include:

- Microsoft's Office Suite, including **Excel**, **Access** and **Word**, for many reporting, data extraction and analysis tasks. By extension, any of the other competing office productivity products which are ODBC compliant and capable, will work just as well.
- **Discoverer**, from Oracle Corp., for point-and-click reporting, data mining and "whatif" analysis.
- **Crystal Reports** (Professional Edition), from Seagate Technologies, Inc., for point and click report generation, especially where presentation-quality is important.
- **RAPT**, where desired. (Experienced technical staff can generally be trained in 1-2 days for initial proficiency, and LockWorks staff will remain available for query support..)

In the typical **Lock&Track** environment, *ad hoc* or special-purpose reports are often developed by the IS staff or by experienced and proficient users. In addition, reports which are of wider interest are often shared among customers in the Lock&Track Online environment, or spawn new ideas during user group meetings.

## **System Security**

***We take system security issues very seriously.*** Based on our long experience and expertise with security issues, and predicated on the superior strengths of OpenVMS and Oracle/Rdb in the security domain, your organization's data, and your long-term investment in it, will be much safer in a **Lock&Track** installation than with any other product or system, commercial or in-house developed. Please refer to our white paper, "**Lock&Track Online AIRS: Availability, Integrity, Reliability & Security — A Layered Approach**," for supplemental and supporting discussion of this critical topic. This paper discusses the way that *we* LockWorks LLC have designed **Lock&Track** on the most secure operating system and relational database platform commercially available today.

*All user access is mediated by mandatory username and password access control:* this means that every user has a controlled and managed user access profile, and every data access is mediated, controlled and potentially reportable to the customer's system and database administration staff.

All programs and data objects are protected by Access Control Lists (ACLs); this scheme complies with the C-2 computer systems security rating specified by the DoD "Orange Book." *No elevated or special access permissions or privileges are required by any user for normal use of the system.*

Users' access can be carefully controlled and restricted to precisely the kind of access (read-only, read-&-update, full access, etc.) needed by the individual for their specific job and appropriate to their level of training and trust. Password expirations and management policies can be specified and controlled by administrative staff according to the customer's approved policies & procedures.

All security features are the result of "trusted kernel" implementation (again, as required by DoD standards), and are not "grafted on" by after-market or application software provisions. This approach gives the customer the highest degree of assurance in the robustness and reliability of the security technology and implementation. It also gives the customer the maximum degree of control and flexibility in implementing their own policy and procedures regarding computer systems security.

Network (*i.e.*, SQL and ODBC access on behalf of client-server programs on PCs) are also mediated by username and password, and data objects are fully protected by the same mechanisms as described

above. In general, the majority of such network access to the Offender Database is limited to reporting activities only, and as such can be restricted to read-only views of the database. However, more sophisticated protection schemes are available for other, more demanding client-server access as well.

Physical network security is compatible with current firewall technologies. For example, LockWorks' own corporate network, including the **Lock&Track Online** application server, is protected by a **Raptor** firewall. LockWorks staff has extensive training and experience in firewall and protocol-oriented network security issues and technology.

LockWorks has extensive expertise in the realm of computer systems security; we have conducted numerous systems security training and seminars, and have provided computer security consulting services for the Oregon Department of Corrections, among others.

Training in all aspects of system security can be provided for system and database administrators and for end-user trainers.

## ***System Management and Operations***

LockWorks equips the customer with the best tools available to ensure 24x365 JMS operation and availability. Furthermore, our warranty and support services are intended to supplement your staff in all aspects of system operation, and we can "backstop" them in all aspects ranging from routine, daily tasks to emergency disaster recovery.

Many of the tools provided are "native to" (or contained in) the base operating system software; others are extensions and enhancements of those tools provided by LockWorks as part of **Lock&Track** itself. Among these tools and utilities are:

- Full system, application and file-selective **on-line backups and restoration**. The backup utility provided is a native part of the operating system foundation. Time estimates to perform a full system backup will vary with the number and size of disk devices actually configured, but will be limited only by physical backup-tape device data transfer and streaming times; such backups will be automated to occur periodically (nightly) and "in the background" of normal system activities.

Comprehensive disk, file and data backup capabilities include: the ability to perform backups "on-line" (while users are logged in and using the system); automatic database, user directory and system files backups with scripts; scheduled backups (nightly, weekly, etc.); full disk, incremental, and file-selective backups; backup logging, recording and records maintenance; backup security and integrity features; full and incremental recovery and restore operations, for files, directories or entire disk volumes; high performance, high capacity tape drives.

Furthermore, we *test and verify* our data recovery and restoration capabilities — we *know that they work*.

- **On-line verification and backup of the Lock&Track Offender Database**. Typically, the total time to verify and backup an average-sized **Offender Database** is less than one-half hour, making nightly *full database backups* feasible and recommended, especially since *after-image journaling* makes recovery to last-committed transaction possible. Full backup of a very large database could take more than a couple of hours, but given the fact that *the database remains online during the backup operation*, so the database is in full use by the user community without loss of service.
- **Full transactional protection** for the database, including automatic transaction journaling, run-unit journaling and auto-recovery, and numerous other database integrity features. LockWorks configures the **Lock&Track Offender Database** to use Oracle/Rdb's *after-image journaling*, which protects the database to the point of full recovery right up to the last-committed transaction

prior to a failure.

- **Auto system restart and database recoveries** (recovery unit journaling) — the **Lock&Track Offender Database** is immediately available to the user community after a system reboot, without need for technical staff intervention. Due to numerous data and system integrity, availability and reliability features provided by OpenVMS, Oracle/Rdb and **Lock&Track**, unplanned system reboots are extremely rare occurrences
- it is not unusual for a **L&T** system to run for months or even years without a reboot.
- **User account management and control**, including a new-user authorization tool; full control over passwords and the site security policy; account break-in detection and automatic break-in avoidance; ability to rapidly disable user accounts (*e.g.*, when an employee is terminated); user profile control and tuning (for data access levels of permission); changing a username (*e.g.*, when a user gets married); control of account performance characteristics (resources); and user resource accounting.
- **System security management and control**, including security policy and password management; system break-in detection; automatic break-in avoidance and alarms; complete system auditing, tunable at various levels; access controls (permissions) for all resources and objects.
- **Resource and performance monitoring**, including real-time displays of all system parameters and operating characteristics; performance logging; user and system process monitoring; process termination; error logging and analysis; crash-dump capturing and automatic analysis; automatic system tuning; automatic system recovery from a crash or power-fail event; automatic system and application software upgrade procedures; software product licensing utility; disk mounting and dismounting; plus network management and control utilities.
- **Print and batch queue management**, including the ability to define and control any printer or batch execution queue; queued job control and management; and automatic re-queuing of selected jobs.
- All hardware systems and components provided with the **Lock&Track Corrections Information System** are designed and warranted by their manufacturers for maximum reliability, up-time, and lowest mean-time-to-repair. Extended warranty support for all computer system hardware and software components is available.

## ***Tools for Database Administration***

Our solution also provides a complete complement of tools and automated procedures to assist with JMS database administration. Our goal is to ensure 24×365 access to the **Lock&Track Offender Database** and applications. Furthermore, our warranty and support services are intended to supplement the customer's technical staff in all aspects of database maintenance and operation, and we can “backstop” them in activities ranging from routine tasks to emergency data recovery.

Many of the tools provided are “native to” (contained in) the foundation relational database software; others are extensions of those tools provided by LockWorks as part of **Lock&Track** itself. Among these tools and utilities are: LockWorks LLC page 29

- **RMU (Relational Management Utility)**, which provides all required database administrative, control, monitoring, backup, recovery and restoration facilities.
- **SQL (Structured Query Language)**, which provides the industry-standard data manipulation and query language to support all database schema maintenance operations.

- **DBM (Database Manager's Utility)**, a menu-oriented, script-based tool which provides the means to do routine daily database verifications and backups, index rebuilds, data security adjustments, user access controls, and much more.

## ***Advanced Technology Features***

**Lock&Track** provides unparalleled positive inmate identification capabilities. It provides for on-demand display of inmates' photo images, fully coordinated with any other aspect of inmate records and data from the **Lock&Track Offender Database**, not only at the booking workstation, but at *any authorized user location* (PC workstation).

**Lock&Track** can also integrate inmate identification by magnetic (mag-stripe), optical, bar coded, or other external encoded identification technologies where customers have had existing processes, as well as by physical characteristics, photographic or descriptive means.

Technologies under investigation and/or development include: ***Technology Area under investigation/development***

Secure web-based (Inter/intranet) Reports and other information delivery has facilitated public report generation as well as in-field access.

Palm-top computing devices Portable applications, including staff/officer's logbooks, inspection tours, *etc.*; probation and parole officers' chronos reports, contact logs, *etc.*; numerous other applications

E-mail Report delivery; **Lock&Track** is fully compatible with and uses industry-standard MAPI protocols, including Exchange Server Optical data storage Long-term archiving

## ***Technical Aspects and Requirements***

**Lock&Track** is maintained in compliance with numerous industry standards for maximum compatibility with existing and emerging customer IS environments. In part LockWorks LLC page 30

cular, **Lock&Track** is fully compatible with the following areas which are often identified as requirements:

- **Oracle database:** The **Lock&Track Offender Database** is an Oracle/Rdb relational database (currently at version 7), and, as such, is completely manageable by the customer's staff using existing Oracle tools and experience.
- **GUI front-end:** The **LTClient** GUI is a 100% Windows-compliant thin-client application, written in Visual Basic.
- **Client-server architecture:** **Lock&Track** has been designed *from the beginning* according to client-server architectural principles, and we are readily and actively extending that architecture to encompass web-based deployments as well. This fact, together with our strong Oracle heritage, means that the customer will be able to continue using its own in-house expertise to manage and enhance **L&T**.
- **Windows desktop client:** As noted, the **Ltclient** requires a 32-bit PC OS, which includes Windows NT, 2000 and XP, as well as Win 95, 98 and Me. **L&T** applications will run happily on any modern Windows desktops. Furthermore, the **Lock&Track Photo Capture Workstation** is itself built on Windows.
- **Operating system:** The **Lock&Track** application server is based upon the OpenVMS operating system, and our engineering and business reasons for this design decision are described elsewhere

in this document.

- **Intranet ready:** LockWorks is actively developing numerous intra/Internetbased features and capabilities, including web-based information delivery (via HTML reports), very-thin-client applications (*e.g.*, browser plug-ins), and others.

We are currently delivering this technology to the Oregon Statewide JMS and our other installed-base customers.

- **Ad hoc reports & queries:** **Lock&Track** is fully compatible with any off-the-shelf report, query or data extraction tool which uses the ODBC protocol for database connectivity.
- **Network:** **Lock&Track** is fully compatible with contemporary LAN and WAN network technologies, including Cisco router products, and relies itself upon TCP/IP protocols for various capabilities and implementations. LockWorks has certified expertise with Raptor firewalls (we use one to protect our own internal network, and routinely deploy them at our customer sites as needed), as well as experience with other mainstream firewall products.
- **E-mail:** **Lock&Track** is compatible with and utilizes industry-standard MAPI protocols for certain internal functions, *e.g.*, the delivery of reports via e-mail.

**Lock&Track** is compatible with Exchange Server — LockWorks uses Exchange Server internally as our own e-mail platform, and our own desktops use Outlook, Eudora and other standard mail clients.

- **System security:** As described elsewhere in this Response, **Lock&Track** can meet and exceed the customer's requirements for comprehensive security capabilities.

This is done primarily by implementing the security policies *which are inherent in OpenVMS and Oracle/Rdb*, and which are designed based upon DoD “trusted kernel” concepts.

## **Product Adaptability**

As detailed elsewhere in this document, **Lock&Track** has been engineered for adaptability, extensibility, customization and tailoring to the needs of specific end-user organizations (see, for example, the section Primary Application Programming Language: *RAPT*). In fact, any large-scale deployment of **Lock&Track** is primarily a *systems integration* project, since many facets of the customer's operation and business rules must be accounted for and incorporated into the JMS itself.

Although **Lock&Track** indeed is a commercial off-the-shelf (COTS) application system, LockWorks has known and accounted from the start for the fact that *no two corrections organizations in the U.S. Are enough alike in terms of their P&Ps and business rules to permit the installation of a “standard” product*. Therefore, **Lock&Track** has been designed from the start with extensibility and adaptability features *built-in* to the product.

This is achieved primarily through our choice and development of *foundation software products*, including the OpenVMS operating system, the Oracle/Rdb relational database, and our own **RAPT** development environment.

- **RAPT** was developed by LockWorks LLC (formerly Evans & Ricker, Inc.) expressly to meet the demanding needs of applications for the correctional marketplace, including features which support application design simplicity (the “KISS” principle), rapid application prototyping and development, close-fit to the relational database model, use of simple (even modest) development tools, easily debugged and tested, and extensible via programming 3GL callback routines.

In practice, **RAPT** has proven to be so simple to use as a development environment that many users at

existing **Lock&Track** customer sites have learned to use it to develop JMS enhancements with little or no recourse to LockWorks technical support.

And although in practice, LockWorks typically maintains a long-term supporting role with each customer regarding product evolution and support, *it is conceivable that a **Lock&Track** customer organization can become completely support self-sufficient*, if that is desirable. **RAPT** is the key to this self-sufficiency.

- Oracle/Rdb provides many features to support relational application development and enhancement (not to mention its numerous other beneficial features), including a complete implementation of the relational database model, readily defined and modifiable tables and fields, comprehensive data-types, support for data integrity and business modeling, fine-grained access control, open data access (via ODBC), and much more.
- OpenVMS provides a superior application development and deployment environment (not to mention its numerous other beneficial features), including its Common Procedure Calling Standard, powerful and numerous Runtime Libraries, industrial strength and feature-laden programming languages, Windows-oriented Debugger, and much more.

Among the many things which can be adapted or customized in **Lock&Track**: LockWorks LLC page 32

- Data elements (new fields) can be readily added to the *Offender Database*, and existing fields can be modified (*e.g.*, a text field can be made longer).
- Database constraints and/or triggers can be easily installed to implement data integrity rules.
- Data audit tables can be readily defined and installed.
- Data interfaces to other, external data systems can be developed.
- Business rule modifications, enhancements or changes can be easily made by updating specific stored-SQL routines which implement those rules.
- Screens can be quickly updated to change a data field label, position or other visual element.
- Data validation lists can be quickly and easily changed, and globally updated for all users.
- Context-sensitive help text can be quickly added or amended for a screen or field.
- On-screen data types, including data edit rules, formats and other presentation issues, can be easily changed.
- Screens can be equipped with 3GL callback routines (per-screen, per-field, prevent, *etc.*) to implement specific processing or to implement a business rule (*e.g.*, hook to a stored-SQL routine). Any 3GL or stored-SQL routine can be readily modified to accommodate changing requirements and evolving business needs.
- Any change to any application component, whether desktop, screen, report or business rule, can be quickly and easily made available to all users, on a global basis, with simple, server-based procedures. Note again that the client-end, the *Ltclient* (GUI), is *self-upgrading*, and will automatically notice and upload application changes on-the-fly!

These features conspire to make **Lock&Track** one of the *easiest and most straightforward JMS applications* to modify, enhance and maintain.

Furthermore, because of the enterprise-class hardware (AlphaServers), operating system (OpenVMS), and relational database (Oracle/Rdb) which forms the **Lock&Track** foundation, we are certain that

**Lock&Track** is the *most scalable product, including consideration of mission-criticality, high availability, high performance, and concurrency for a very large multi-user community, of any JMS available today.*

## **Support and Maintenance**

LockWorks LCC enjoys an excellent reputation for full services and support to its customers nationwide. In particular, LockWorks can commit to 24×365 applications and technical support to ensure uninterrupted and trouble-free operations of **Lock&Track** and its other products.

Standard **Lock&Track** Warranty Support is available on an 8am–5pm, Monday through Friday basis. 24×365 application support (help-desk) is also available for an additional annual services-uplift fee.

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Support is most often delivered by means of remote system management tools and procedures (which are a standard part of the **Lock&Track** product), by telephone hotline support within a guaranteed response window, and by as-needed on-site delivery of technical troubleshooting and consulting services.

LockWorks also provides consulting and development services, on either T&M or fixed-price basis, which focus on custom-developed **Lock&Track** application desktops, reports, and other enhancements to the product. Application product and technical training services are also available.

## **Corporate Information**

**LockWorks'** precursor company, Evans & Ricker, Inc. (E&R), was formed in January 1986 to provide computer systems and software services to corrections and law enforcement professionals.

We have provided automation system evaluations and consulting services to municipal and county governments and agencies. These services include evaluations of existing computer and network resources, overall applications and functional analyses by department and area, personnel needs assessments and interviews, technology projections and forecasts over a reasonable “next period of growth,” summarized in both formal and informal reports, discussions and presentations.

Our client agencies have included the City of Troutdale, Multnomah County Corrections, the City of Gresham, Marion County Human Resources, Marion County Public Works, Marion County Corrections, the City of Forest Grove Police Services, Oregon Department of Corrections, Oregon State Police, several Oregon State inter-agency councils, Cowlitz County (WA) Corrections, the City of Philadelphia Prison System, and the Suffolk County (Boston) Sheriff's Dept.

LockWorks is a supporter of and a regular presenter at various corrections and law enforcement professional meetings, where we conduct sessions on effective uses of automation in jail and correctional operations.