BETTER DATA CENTER
IT ASSET MANAGEMENT THROUGH
SMART RFID-ENABLED SOFTWARE

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IT ASSET MANAGERS AND FACILITIES MANAGERS FOR DATA CENTERS WORLDWIDE ARE BEING CHALLENGED to cut costs, increase regulatory compliance of their IT assets and improve their auditing procedures. In response to these growing demands, organizations increasingly are turning to RFID-enabled IT Asset Tracking and Management systems for innovative and effective ways to achieve these goals.

THE CHALLENGE: Data Center IT asset managers are challenged with managing extremely valuable “fixed” IT assets which are not fixed or static at all. In fact, these fixed assets move frequently, both within the data center and in and out of the data center. Industry estimates place the percentage of data center IT assets which move annually as high as 40%. For many data centers regulatory requirements, such as the Sarbanes Oxley act of 2002 which regulates data storage and management, require strict audit compliance.

Data Center industry trends include the opening and expansion of new data centers as well as the consolidation of older, less energy-efficient data centers into larger and more energy-efficient centers. These trends are being accelerated by the rapid growth of third party Cloud hosting of in-house applications. Therefore, many in-house data centers are re-organizing or consolidating with IT assets being re-assigned – and for the companies offering the Cloud applications hosting services - data centers are expanding and new ones are starting up. But even when data centers do not make major structural changes, sizeable blocks of assets often are moved due to changing electrical and cooling requirements.

IT asset managers often must track and manage the movements of large groups of IT assets when data centers start up, grow rapidly, consolidate, or restructure. This is a major asset tracking challenge.

Another challenge for data center asset managers is that physical assets within the data center often literally are owned by a leasing company, or virtually owned by a specific application, by a specific department, or even a specific external client, or (especially for third party hosting) multiple clients own different sets of assets. Therefore data center IT asset ownership can, and often does, change status (or in the case of leased assets, becomes due for return) within the useful life of the asset - often several times.

Our conversations with asset managers, IT managers and facilities managers of Data Centers confirm that they face serious challenges keeping up the location and specific ownership status on their Data Center IT assets. As an added obstacle, when these assets move or change owners, audits become even more challenging. However, there is a solution.

THE TECHNOLOGY: Fortunately, new technology exists that can greatly reduce – or even eliminate – an organization’s challenges of managing assets with out-of-date asset knowledge. In addition to reducing these challenges, it also enhances your organization’s ability to comply with auditing standards and regulations. But what is this new technology and how exactly does it work?

It’s called Radio Frequency Identification (RFID). It’s presently being used in numerous data centers by IT industry world leaders and by several organizations in private industry and government to track, count, audit and gain better control of their valuable IT assets. However, RFID itself is not new - it is a proven technology that has been in use for more than 20 years.

RFID technology enables popular toll-bridge and automated toll systems, such as FasTrak and EasyPass, to function. It also enables animal tracking (pets, cattle) and is used widely in industrial automation applications. Modern passive UHF band RFID transmission standards now allow for RFID tags to be read at useful distances from 3 to 50 feet or more without batteries in the tags - dependent upon tag size and reader type used. The widespread use of this industry-standard longer-range battery-less passive technology has led to significant hardware cost reductions through hardware vendor competition and through innovations in the techniques for reading the RFID tags.

Advantages of RFID Technology for Data Center Asset Tracking and Management:

- **NO LINE OF SIGHT REQUIRED:** RFID is an electronic radio technology, not an optical one. Unlike barcodes, no line of sight is required when reading RFID tags. RFID tags also can be read in any light level. Valuable assets with very small RFID tags attached can be “seen” by RFID readers in low-light situations, even when the cables behind data center racks block the view of an asset. This is especially valuable during asset auditing situations. No more eye-strain for auditors trying to read serial numbers of equipment in the backs of the racks. No more knee-pads required for auditors trying to read serial numbers or barcodes on assets at the bottom of racks, no more difficulties trying to find serial numbers or barcodes behind the rack cabling.
• IDENTIFIES HUNDREDS OF ITEMS IN SECONDS:
Several hundred – and even several thousand- tagged assets can be identified in just a few seconds with RFID. Mobile RFID readers allow operators to scan entire server racks or storage shelving for assets from useful read distances. Mobile RFID readers identify and audit all the items in an area very quickly, without the use of permanently mounted RFID equipment. This rapid multi-tag reading capability substantially speeds up physical audits and counts in data centers. In fact, the industry-standard passive RFID tags are now so small even the smallest data storage devices can be tagged and rapidly counted by RFID readers – including those in the racks, server blades, or other key assets with very little allocated rack space.

• FULLY AUTOMATED FIXED READERS:
Powerful Fixed RFID readers, which are permanently mounted in selected data center entrance and exit portals, or doorways, can identify all the assets and people that pass through them. The system provides a time-stamped validation of when the asset left or entered the room when it’s combined with Smart RFID system management software. As an added benefit, when an employee transporting an asset is wearing their RFID badge tag, the employee ID also is recorded. Fixed RFID readers also can be mounted on mobile carts and wheeled through offices or even rows of the data center to rapidly read large numbers of tagged assets. This allows for automated audits of multiple rows of a data center – in a fraction of the time it would traditionally take for hand counts or barcode-enabled counts.
The Benefits of Smart Software-enabled Business Solutions for IT Asset Management:

There are numerous additional benefits for managers of data center assets when complete software-enabled solutions are implemented in a data center:

- **BROWSER-BASED RFID-ENABLED SOFTWARE INCREASES DATA CENTER ASSET VISIBILITY AND CONTROL:** browser-based systems allow authorized managers, connected to an enterprise network, to view the most current asset status, Chain of Custody and history information at any time - with all the latest RFID-read asset location information updated in real-time. Data Center managers find that this complete and up-to-date information on asset status allows for better-informed decisions when deploying their IT assets most effectively, eliminates unnecessary duplication of expensive assets, and provides better overall asset control. The RFTrail product from FileTrail is the most popular example of browser-based RFID software for asset tracking.

- **ASSET OWNERSHIP VISIBILITY:** Smart software, such as the RFTrail asset management system, provides instant visibility regarding the current ownership status of selected assets as well as visibility to all assets owned by a party. As noted in the Challenges section, in many data centers physical portions of the data center are virtually “owned” by a specific application, or by a specific department, or (for third party hosting) a specific external client. Therefore data center asset ownership or responsibility can, and often does, change within the useful life of the asset. With smart software, asset ownership or responsibility easily can be reassigned as needed and on-the-fly, without any physical movements or auditing required. Re-assignment even can be performed automatically by fixed readers without any human intervention, if desired. Best of all, this improved asset visibility also enhances data center asset security and control.

- **SOFTWARE CAN BE CONFIGURED TO TRACK ALL TYPES AND CLASSES OF ASSETS:** the best and most widely used system software configures readily to the business rules, retention/asset retirement, naming conventions of the data center management, or of the individual departments or clients for whom the assets are deployed. If these rules and naming conventions vary for different types of Data Center IT assets, or different asset owners, the software easily can be configured to accommodate those differences - with no customization required. This configurable approach substantially reduces asset management costs, since the need for expensive software customization is either eliminated or greatly reduced.

- **SMARTMOBILE RFID READER AND GEIGER COUNTER MODE SPEEDS AUDITS:** an auditor or other authorized staff can find a specific set of assets which are reported as missing from previous audits or counts. The reader will ignore all other tags. This SmartMobile hand-held feature dramatically speeds audits and counts. Another popular SmartMobile reader feature is an audible Geiger counter mode that allows an auditor to use the varying sound level to hone in on a missing or misplaced tagged asset of interest until the missing asset is found. This feature further speeds data center audits and counts, including “spot audits” where a specific sub-set of assets must be found and verified in a hurry.

- **SMART ALARMS FOR ASSET CONTROL:** Optional “smart” alarms, which are linked to the software, can be deployed to trigger the automatic sending of management-targeted text messages or emails. Visual or audible alarms also can be triggered if certain conditions occur. The alarm type and business condition to trigger the text messages or emails is user-selectable. Typically, these alarms occur if and when an asset is moved without previously being assigned to the person performing the movement. These smart alarms substantially improve asset security and asset control.

- **COMPARTMENTING FEATURE CAPTURES IT SYSTEM INFORMATION ACCURATELY:** “Compartmenting” features, such as those contained in the RFTrail Asset Management product, enable the tracking and management of an entire data center system asset. This includes a multi-rack level enterprise switching system or server blade system as a whole, as well as the individual racked components of that entire system - such as the individual server blades or switcher line-cards and the relationship between the individual components and the complete functioning system. This feature greatly enhances asset tracking accuracy and provides valuable clarity for audits and regulatory compliance.
RFID asset tracking metrics - Managers Surveyed:

- Managers using industry-standard passive tag RFID-based asset tracking systems surveyed by RFTrail reported an average decrease in the time required to audit of 89% when using both SmartMobile readers and zoned fixed portal RFID readers. That means RFID enabled audit completion more than nine times faster, on average, when compared to using manual or barcoding counting methods. Some audit managers even reported improvements of more than ten times faster.

- Asset tracking managers report an average decrease in auditing time of 63% using a hand-held SmartMobile reader alone. This shows that substantial benefits can be derived from using low-profile portable RFID technology, although improvements will not be as dramatic as when compared to using both fixed and mobile readers.

- Data center asset managers report that capital expenditures for assets can be reduced by 10% to 12% due to the improved asset visibility RFID solutions offer as well as the reduction of unnecessary asset duplication that results.

Best Practices in RFID-enabled asset management systems:

Best practices established in RFID asset tracking systems dictate the need for an intelligent software system matched with hardware that:

- Configures readily to the business rules, retention/asset retirement, naming conventions of the enterprise over a few weeks in the project schedule-no customization required.
- Tracks multiple classes of enterprise assets and configures to different ownership or auditing rules without requiring customization.
- Quickly obtains positive and measurable results with low cost to implement, due to the fact customization is not needed.
- Provides management visibility to assets from anywhere on the network.
- Uses the most reliable and highest quality international standards-based RFID readers and tags available to ensure consistent results from site-to-site and year-to-year.

To date, only the RFTrail system for asset tracking from RFTrail has proven to meet all of these requirements in actual enterprise-level asset management implementations.
# A Comparison of IT Asset Counting and Auditing Methods

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<tr>
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<th>Traditional - check serial numbers or apply in-house-readable labels</th>
<th>Barcoded label scanning, combined with serial numbers</th>
<th>RFID tagging of IT Assets</th>
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<tr>
<td>Time to identify/count</td>
<td>Slowest. Identify one at a time.</td>
<td>Identifying one asset at a time, but a little faster when line of site is available</td>
<td>High speed. Simultaneous reads of large numbers of assets.</td>
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<td>Degree of automation/ Accuracy</td>
<td>Manual: Accuracy dependent upon auditor eyesight, skill and visibility of serial numbers.</td>
<td>Better: Many assets are blocked from line-of-sight. Accurate serial numbers recorded if barcode is visible and not dirty or torn. Automated reading not practical.</td>
<td>Full automation: accuracy approaches 100% on first pass or first audit, and portals can track asset movement automatically between audits.</td>
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<td>Ease of Deployment</td>
<td>Manual system: Knee-pads available for auditors?</td>
<td>Medium: Barcode printer, basic software installation required, still slow to audit.</td>
<td>Highly scalable and flexible. Suitable for a single server room or giant enterprise with large data centers.</td>
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<td>Suitability for Sarbanes Oxley and other regulatory compliance</td>
<td>Lowest: audits take a long time and are challenging to document.</td>
<td>Low to medium; audits take a long time, but accuracy does improve.</td>
<td>Highest: Audits up to 90% faster, documentation is accurate and comprehensive. Reconciliation is easy in-between audits.</td>
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<td>Cost</td>
<td>Highest auditing costs. Can be very high if regulatory compliance is not met.</td>
<td>High auditing costs. Modest outlay, labels are inexpensive. But does not insure against non-compliance costs.</td>
<td>Lowest auditing costs. Higher initial outlay. Regulatory compliance becomes easy and far less expensive.</td>
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<td>Other Management Features</td>
<td>Auditors get to spend more time counting assets in your business centers, like it or not. Spot audits of selected asset sub-sets are usually incomplete.</td>
<td>Better record keeping than manual counting, but not much faster</td>
<td>Spot audits of selected asset groups are now easy and quick. System creates relationship between parts and whole systems: Example: server blades can be tracked individually and as a component of whole blade server system.</td>
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**BENEFIT SUMMARY:** When the RFID technology benefits listed here are combined with industry-leading business application software solutions capable of handling and optimizing the automated identification of assets that RFID offers, the overall benefits experienced in actual IT data center and IT development lab situations are:

- Audits, spot audits and inventory counts achieve (or approach) 100% accuracy and completeness.
- Audits and inventory counts are completed 3 to 10 times faster than counts, and a complete record of Chain of Custody done with manual or barcode methods, thereby saving both valuable personnel hours and substantial auditing cost.
- Improved asset visibility and control: A visible trail of asset history, including asset movement between counts, leads to easier reconciliation and eases regulatory compliance. This improved visibility also leads to greater asset control and utilization and reduces capital expenditures.
- Asset ownership or responsibility is much easier to track and reconcile. This is an especially important benefit in cloud-hosting data centers, or in data centers that serve multiple departments or clients.
- Asset security is enhanced through greater asset visibility and through the use of smart alarms.
- Improved regulatory compliance with accurate and comprehensive documentation.

About RFTrail and the RFTrail Asset Tracking solution:

RFTrail, a division of FileTrail, provides customer-proven Enterprise RFID systems for tracking and managing physical assets. We have provided expert tangible asset visibility, control and security to our valued customers since 2002. Our Unified Asset Management (UAM) solution is highly efficient and saves time while providing you with a single tool for managing and controlling all your asset types and classes – including those assets in data centers, distributed throughout your office or manufacturing infrastructure or in you development labs – in one convenient place.

Best-in-class software and powerful industry-standard RFID technology combine to make RFTrail the leading RFID asset tracking solution – with more than 100 companies and organizations worldwide experiencing the benefits of our solution within their enterprise. A wide range of our customers, in a multitude of vertical markets worldwide, benefit by ensuring compliance, increasing the visibility of their assets, strengthening security and streamlining auditing processes.

For more details on our RFID solutions, go to [www.RFTrail.com](http://www.RFTrail.com), or email info@rftrail.com., or call (US) 800-310-0314.