Simplifying IT Management and Data Security with RFID

IT Asset Management is a fundamental discipline to contribute to the growth and sustainability of the enterprise. CIOs have to be strategic, cost-conscious, and improve procurement to establish IT credibility throughout the enterprise. Effective asset management is an integral part of those expectations.

Companies are turning to RFID, radio frequency identification, to manage their IT hardware inventory. RFID can enable real-time tracking of servers, tape media, hard drives, laptops and other IT assets without any human intervention — regardless of whether they are on the move, installed in racks or stored in cabinets and on shelves. RFID based solutions provide data security, as thousands of laptops are audited as they enter and leave facilities. Standards are established and RFID has proven to:

- Increase visibility and operational efficiency by automatic management of IT data center assets
- Improve IT staff productivity and overall utilization of IT assets
- Enable proactive protection against the loss of IT assets, the data resident on those assets
- Enable cost-effective compliance with government and industry regulations
- Improve accountability for IT asset management
- Reduce capital equipment purchases

This white paper will describe the standards set by the Financial Service Technology Consortium for IT Asset management and examine a faster, less expensive, lower risk way to make IT asset management a reality. Xerafy has removed the barriers to RFID adoption with their PicoX II Plus, Data Trak, and Global Trak tags that achieve 100% visibility of all IT assets at lower costs than barcoding or active RFID technology with faster and easier implementation methods.

RFID Considerations for IT Asset Tagging

RFID provides instantaneous identification, the biggest benefit is not requiring line of sight reading, of which is required to read a barcode or human-readable text. This reduces the amount of time spent reading each asset and allows the RFID reader to identify more than one asset in a given instance versus "one at a time" with barcodes. RFID has emerged as a cutting-edge, cost effective technology that has benefitted many industries but the data center environment provides some unique challenges.

One challenge is that standard RFID labels created for the logistics market cannot perform in the highly metallic nature of datacenters. Smart paper labels will not work when attached to assets with high metal content. That is why Xerafy has created specialty RFID tags designed to only work on metallic surfaces called RFID-on-metal (ROM) or mount-on-metal (MOM) tags.

Figure 1: Server Rack with 16 cards

The size of the identification tag must be very small in fit on the spine of the server or laptop. In many cases, the tag will replace the existing barcode label. The tradeoff with size is readability or "read range" of the tag. Active "battery-powered" tags are too bulky for typical server rack formations and limited by short battery life and cost.

The real world challenge for RFID tags is to last the life of the asset. For telecommunication cards, the tag must function for more than 20 years. Battery-powered RFID or WI-FI tags typically last between 1-5 years. However, the lifetime on passive RFID or battery-less RFID tags are +10 years depending on frequency of use. In addition, IT Asset tracking requires durable adhesives to insure the tag does not fall off during rough handling and sliding into racks. It there is a need for theft prevention than the RFID tag needs to be non-removable.

There is a wide discrepancy between barcodes vs. passive RFID vs. active RFID. The barcode tag is a few cents where a specialty ROM, RFID-on-metal, passive tags are typically $1-$3 and the active RFID tags range from $10 to $50 depending on volume and functionality. However, the ROI for Ðreduced manpower costs since RFID audits are 10x faster than barcode audits paybacks are within 1-3 years. The process improvements for smarter processes with faster and more frequent inventory audits and reduced time searching for assets means up to 25% less spares required and better utilization of assets.

Xerafy's Tags for IT Assets

Xerafy has worked with the IT industry to develop an IT tag portfolio to provide the optimal tag form factor and features for the variety of IT assets. Xerafy products are some of the world's smallest EPC UHF RFID-on-metal tags, able to last the lifetime of the asset under extreme conditions, harsh environments and high temperatures while still maintaining high performance. Xerafy is first tag manufacturer to develop a UHF RFID tag that can be embedded into metal.

The PicoX II Plus tag is smallest RFID-on-metal tag that meets the 10 feet read performance specifications set by the FSTC, financial services technology consortium. For blade servers or assets where space to affix tags is limited, the PicoX II Plus tag can fit within a 2D barcode label.

Figure 2 Pico^{X} II Plus

Compared to other ROM tags, the PicoX II Plus is half the size but exceeds the performance of other tag providers smallest tag models. The performance to size ratio on Xerafy tags have not been met by competitors. Applications that require longer read ranges can turn to Xerafy's Nano X II, which has a read range of up to 20 feet. With a form factor of 1.25 x 0.51 x 0.19 inches, the Nano XII has one of the best performance to size rations in the industry.

For IT assets that have a plastic casing or require a hanging tag attachment, Xerafy offers the Trak Family. The Data Trak II with its 1.5" form-factor, fits nicely on a crowded server faceplate and chassis or can be attached as a hanging tag. The Data Trak II features 14.8 feet (4.5 Meters) of read range respectively on metal and off-metal surfaces.

Figure 3: Data Trak II

In addition, Xerafy offers –iN series of tags including the PicoX Plus-iN,, that may be embedded into server faceplates that overcome the immediate proximity of metal. The Pico Plus-in offers a completely transparent product offering at the OEM product level versus post-production external tag application.

The Xerafy tags are designed and built with open standards to easily integrate with data capture devices/technologies, in fixed, mobile and handheld form factors, all managed by a rules-based data management engine that connects to critical IT systems. Integrating with partners such as Motorola, RFID Global Solution, ODIN, Fluensee, and more give organizations an on-going advantage to accommodate dynamic changes and give real or near time operational visibility to all appropriate personnel from ground operators to executives.

Tag Model	Tag Manufacturer	Tag Size (inches)	Read Range (Feet) On-Metal Asset	Read Range (Feet) Off-Metal Asset
Pico^{X} II Plus	Xerafy	0.70 x 0.43 x 0.19	10	Na
Data Trak	Xerafy	1.45 x 0.51 x 0.12	13	6.6
Global Trak	Xerafy	1.50 x 0.51 x 0.15	8	6
SteelBIT	Confidex	1.5x0.5x0.13	9.8	5
Prox	Omni ID	1.3x0.39x0.18	10	Na

Financial Services Technology Consortium

The Financial Services Technology Consortium (FSTC), the technical solutions division of The Financial Services Roundtable, sponsors non-competitive, collaborative development of technical and implementation standards for issues affecting the financial services industry. The FSTC launched the RFID IT Asset Tracking Phase I Project in 2009. The Phase I project team created the FSTC 96 Bit Standard, an identification scheme for use in the financial industry, developed a common process for RFID IT asset management, and established IT Asset Supplier Guidelines. Since the release of these guidelines in January 2009, four major IT asset manufacturers now pre-tag IT assets, reducing time required to complete inventories and improving inventory accuracy.

Performance Requirements

Read Range Requirements are for Individual IT Asset:

- Handheld Reader – 3 feet +/- 25% under optimal conditions.
- Fixed Reader – 6 feet +/- 25% under optimal conditions

FSTC 96 Bit Standard

The FSTC numbering scheme is compatible with the global identification standards managed by GS1 and encoded in RFID tags as documented in the EPCglobal Tag Data Standard Version 1.5 published August 18, 2010. There are two primary identifiers that can be used to identify IT assets (either one is acceptable) and one to identify palletized shipments of IT assets (not described here).

Company Prefix

The "Company Prefix" is a unique number assigned by GS1/EPCglobal to the managing entity, in this case, the IT asset OEM. Each asset vendor must register with GS1/ EPCglobal to obtain the Company Prefix.

Individual Asset Reference

The "Individual Asset Reference" is a unique number assigned by the managing entity to a specific asset. The managing entity is the asset manufacturer, who is responsible to ensure the uniqueness of the number and that no leading zeros are included.

FSTC Item Numbering Scheme #1 (GS1/EPCglobal GIAI)					
	Header	Filter	Partition	Company Prefix	Individual Asset Reference
Bits	8	3	3	20 – 40*	62- 42*
Value	00110100	000	See Figure 1	999,999 – 999,999,999,999 (Max. decimal range*)	4,611,686,018,427,387,903 – 4,398,046,511,103 (Max. decimal range*)

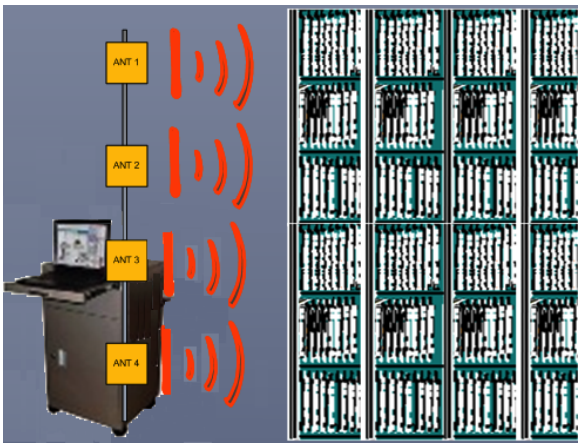
RFID for IT Data Center Asset Management

Consider a scenario for the IT department of a major telecommunications service provider. Using barcode inventory management will take 5 years to audit 100M assets and therefore inventory is always 5 years out–of-date. The ROI for RFID is quickly realized with the ability to update inventory database and ability to reconcile discrepancies on a real-time basis. UHF RFID tags are capable of scanning multiple assets quickly at over 100 per second. Portal type RFID reader allows automated near real-time inventory updates for check-in and check-out at a minimal cost versus battery powered, active, RFID reader systems. The determining factor for cost of the system is the level of detail necessary to locate individual assets by their unique tag serial number.

The time to account for 10,000 assets in an average center includes:

- 50 Hours: Physical reading of each asset
- 16 Hours: Scan of each asset barcode
- 4 Hours: Scan of each asset RFID tag
- Overall inventory time saved with RFID: 6 Days

In addition, server disk hard drives when decommissioned are assigned a RFID tag for identification throughout the process providing real time visibility to ensure drives have gone through all processes of decommissioning and do not pose a threat of accidentally leaving the facility causing a security breach. Also, IT assets such as laptop computers, network routers and other capital equipment are utilizing Xerafy RFID tags for improved inventory and accountability.



Data Security

RFID provides a simply way to comply with Sarbanes-Oxley and other regulations designed to account for corporate assets by having up-to-date, accurate inventory data. The RFID system also offers a better method for tracking the shipping and receiving of the IT assets it purchases. This higher level of visibility will lead to faster payment and order discrepancy resolution with vendors and will also expand the asset visibility throughout the data center. In terms of risk mitigation, knowing the location of servers and other hardware holding customer data is a business critical.

With the addition of RFID-enabled employee badges, RFID readers at check points can automatically capture the identity of the IT asset and the employee who is carrying it. The result is a major improvement in accountability and security — as well as a major deterrent to theft.

Conclusion

With the use of Xerafy IT Tag portfolio, data centers can easily justify the costs of deploying an automated RFID IT management system and experience the multitude of benefits that has proven to provide a strong return on investment in:

Increased visibility and operational efficiency by automatic management of IT data center assets
RFID provides real-time visibility to manage inventory, reduce occurrence of un-accounted assets, and allow employees to focus on more strategic tasks.

Improved IT staff productivity and overall utilization of IT assets:
Overall, data centers have seen approximately 15 times increase in inventory productivity and have reduced the labor as well as reducing time from entire inventory process by 80% to 90% by automating with RFID.

Proactive protection against the loss of IT assets, the data resident on those assets
McAfee and Datamonitor pegged the value of a lost notebook computer, in terms of confidential consumer information and company data, at almost $9 million. In fact, a recent study has projected that when confidential personal information is lost or stolen; the average cost to a company is $197 per record.

Cost-effective compliance with government and industry regulations
RFID enables companies with IT asset tracking-related regulations with virtually no human resources.

Improved accountability for IT asset management and reduced capital equipment purchases

Since assets are always visible and easy to locate the need to repurchase lost or redundant equipment are also eliminated. RFID systems deployed in the supply chain also offer a better method for tracking and receiving of the IT assets purchased.