



RFID: The Solution to Automating IT & Data Center Asset Management

| The importance of accurate inventory management

Top Concerns of IT Asset Managers:

Risk: financial reporting & Sarbanes-Oxley Compliance

Accuracy: location & loss reduction

Efficiency: improved asset utilization

Security: data & equipment (yours and your customers!)

Lifecycle Management: inventory, maintenance and replacement schedules

The importance of accurate inventory management

Now, more than ever, organizations need to increase the accuracy of their IT inventory. Whether it be for compliance, security or resource optimization - accuracy leads to efficiency. Unless IT assets can be accurately tracked, organizations place their service, security and legal obligations related to managing those assets at risk.

Many organizations are still conducting manual inventory counts to meet their compliance and service obligations. From the length of time it takes to conduct a manual inventory, to the people and cost associated with the lack of accuracy in the final output – taking a manual inventory is not ideal for most organizations.

With the increased usage in both consumer and industrial mobile devices along with the insatiable appetite for data by consumers and businesses alike, data centers and end user organizations are becoming larger, more complex and widely distributed across multiple sites and geographic locations. With this growth, the level of difficulty and expense of tracking and managing IT assets also increases dramatically.

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With the extensive number of IT assets in use, a proper inventory count, conducted manually, could take organizations months to complete. This results in IT staff being pulled from business-critical projects in order to count IT assets, search for missing assets and reconcile assets that can't be found. This cycle of frustration for both management and employees alike begs the question: "How can we automate this process without making an enormous investment in new technology and avoid disrupting our operations?"

According to
Omni-ID
estimates, at least
60% of data
centers are still
conducting
manual inventory

From the length of time it takes to conduct a manual inventory Taking a manual inventory is not ideal for most organizations.

Enter the internet of things

The challenge for IT departments is to identify a solution that can automate inventory management, cost effectively, without disrupting operations and current systems. The good news for IT Asset Managers is that there are several IoT (Internet of Things) based options available for automating inventory counts and creating business efficiencies through greater (and more frequent!) asset tracking.

RFID is one of the most reliable and lowest cost of the IoT solutions, enabling a network of connected machines, devices, objects and applications. This connected network provides you with the data and analytics that help you to make critical business decisions – faster.

A connected environment provides IT Asset Managers with the real-time visibility that they need across a facility or supply chain to accurately plan and report. Not only are assets now easily traceable at all times, they are relaying information that workers can use to improve enterprise asset management:

- **Monitor and Manage** asset lifecycles & inventory across locations
- **Automatically update systems** when assets move or inventories change
- **Receive alerts** when unauthorized movement occurs or maintenance is required
- **Report on usage** to provide accurate billing to your customers

The most common methods for tracking IT assets include:

- Barcode labels
- Passive RFID (tags or labels)
- Active RFID (tags)

When reviewing these three options there are several initial factors to consider including your budget, the location of the assets you are tracking and what type/size of asset.

	Unit Cost	Read Range	Line of Sight of Asset Needed	Inventory Speed	Life of Product	Tag Size
Barcode Label	\$0.01	< .5 m	Y	Slow	Months	Small
Passive RFID Label	\$0.10	1-6 m	N	Fast	1–3 yrs	Small
Passive RFID Tag	\$0.75	1-6 m	N	Fast	3-10 yrs	Small – Med (thicker)
Active RFID Tag	\$15.00	90+ m	N	Constant	5+ yr	Med - Large

*Unit cost based on industry averages

In this comparison, barcodes may appear attractive due to their very low cost, but the trade-off is a very labor-intensive physical inventory process that is both inefficient and prone to errors and omissions. Active RFID tags, which are powered by an internal battery, provide the greatest read range and enable constant inventory counts. However, their expensive price point and larger size (due to battery) do not make them a feasible option to tag every asset. Instead active tags are best used as a complement to passive tags for tagging racks rather than individual items, or for monitoring environmental aspects such as temperature. Thus, when all factors are examined, passive RFID emerges as the most cost effective and efficient IT asset management solution.

The decision to implement a RFID-based asset management solution is an easy one to make. Unlike barcodes, RFID does not require direct line of sight to conduct the location and identification of assets. This enables an organization to automate their inventorying process to save time and reduce operating expenses while achieving greater accuracy. As the example below dramatically shows, RFID asset tracking delivers ROI that is impossible to achieve with manual or barcode methods, and in some cases, even the modest labor cost associated with an RFID item count audit can be replaced by an inexpensive robot or drone sweeping the room.

Inventory Method	Racks	Audit Hours	Techs	Cost / Tech / Hour	Audits	Total Cost
Manual	500	192	2	\$50	3	\$57,600
Passive RFID	500	32	1	\$50	3	\$4,800

*Results reflect averages based on a number of installations



Active vs. Passive

Having established the value of RFID versus manual tracking, the question becomes: ‘Should I choose Active or Passive RFID?’ In addition to the vast difference in unit cost noted earlier and exemplified further below, passive tags and labels have a much smaller profile which lends them perfectly to use on everything from racks and servers to laptops and mobile phones. As noted earlier active tags are best used in conjunction with passive for specific tasks such as monitoring environmental measures. For tagging a large amount of IT assets, passive offers many more benefits:

- **Functionality** – passive RFID offers the choice of hard tags or labels that are non-intrusive to asset use enabling them to be used in a greater variety of applications
- **Standardized** – passive RFID is a universal standards-based technology which allows for interoperability across equipment manufacturers so there are more options in terms of tags and readers; Active RFID systems are proprietary eliminating the ability to choose among manufacturers
- **Low maintenance** – unlike active, passive tags don’t need batteries and are very durable – maintenance and/or replacement is very minimal
- **Scalable** – the low cost & ease of deployment allow passive to scale with your business
- **Flexibility** – passive tags & labels offer flexibility on curved or flat surfaces, plastic or metal assets
- **Readability** – labels lend themselves to printing via thermal printers – a great benefit to OEMs for source tagging of products

To further demonstrate the cost difference between Passive and Active systems, the following example shows the initial cost for implementing each of the systems based on the same number of rooms and assets.

Passive RFID:

- Many assets (cost effective), small placement space (small tags), periodic inventories (fast), and reliable tracking (secure & reporting)
- Example: 5 large rooms with 10,000 total assets
 - Tags @ \$0.15 - \$0.75 (x10000) = \$1,500-\$7,500
 - 5 Doorway (portal readers) @ \$4,000 = \$20,000
 - 3 handheld readers @ \$4
 - **\$26,000 - \$39,500***

Active RFID:

- Moderate number of assets (expensive tags), larger placement space (larger tags), continuous inventories (fast) and/or sensing (i.e. temperature)
- Example: 5 large rooms with 10,000 total assets
 - Tags @ \$15.00 (x10000) = \$150,000
 - 5 Gateways/readers = 5@ \$1,000 = \$5,000
 - 3 handheld readers @ \$4,000 = \$12,000 OR Smart Device w/ Reader @\$1,500 = \$4,500
 - **\$159,500 - \$167,000***

*Numbers based on industry averages

Integrated software completes the solution

To complete the asset management solution and truly create a connected environment the RFID tags need to communicate back into the organization's systems. Together with some of our partners, Omni-ID can provide an asset tracking software with simple, scalable architecture so that it can be used as a standalone solution or overlay your existing ERP. From the moment an asset enters the facility to the moment it is retired, you have a precise trail of the condition, location and current value of each asset within the entire IT environment. This provides insurmountable digital proof for compliance purposes and allows you to focus on delivering operational and financial efficiencies.

Asset tracking software provides an organization with vital analytics that provide the level of granularity necessary to improve process efficiencies. The software allows the company to track down assets to business units and sort by business unit owner. Additionally, they can now locate where the assets are by location – right down to the building >room > segment > rack.

Customizable reports help an organization not only track and locate IT assets, but manage their lifecycles and future planning to create both business process and financial efficiencies. With a passive RFID-based inventory management solution, ROI can be expected with 12 – 18 months making it the most cost-effective and financially beneficial solution for managing IT and data center assets.

Success stories

Data Center Asset Tracking

Requirements:

With widely distributed large data centers they sought to improve asset visibility to optimize usage and improve future planning. Their business goals were to:

- Automate the tracking and accounting for inventory of data
- Chart the location of assets
- Enable smarter overall capacity planning

Results:

- The automation of inventorying, using a combination of tags and labels, reduced counts from 2 people working 2 weeks to 2 people working 4 hours!
- Accuracy improved from 46% to 99.8%!
- Expanded program to cover more product lines

“From a business perspective, the project has been a success, because we now have the ability to find and locate assets a lot faster than ever before. By site, we've cut our cycle-count time down from a few weeks to a few hours. Our employees like it because they can get access to devices quickly for, say, a data-center deployment.”

Mary Anne Flynn, Director of Operations, Cisco

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Success stories

IT/Laboratory Asset Tracking

Requirements:

The NASA team recognized that the physical, bar code based inventories they were conducting were costly, time consuming and often highly inaccurate. In addition, the bar code labels being utilized for tracking were not readily visible or often even readable, contributing to the inaccuracies. NASA's organizational goals were to:

- Accurately track critical laboratory assets that travel to and from multiple field locations on a more real-time basis
- Scalable solution to track across 12 sites including space centers and research centers
- Easily deployed solution - one site alone had over 50,000 items

Results:

- Improved time to conduct inventories by approximately 80% using passive tags, readers and customized software
- Over 250,000 items accurately inventoried
- ROI: less than 18 months!

"We have seen a significant improvement in our Directorate's ability to conduct fast and efficient inventories by approximately 80% using RFID and now have an accurate record of key testing and technical equipment being to and from field deployments."

Steve Mercier, Senior Systems Engineer, NASA

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Mary Anne Flynn,
Director of Operations, Cisco

IT Asset Management Tags and Applications Track Your Property and Equipment

Data Center Application Considerations —

Each application has its own unique requirements.

- Handheld readers easily pick up inventory by a wave of the reader. Choose a tag with a read range of < 3 ½ meters for these close up reads. To avoid any cross reads or interference, no more than 2 meters may be required.
- Carts and robots are ideal for perpetual inventory reading moving through an aisle. A read range of > 3 ½ meters is ideal.
- Portals and double doors welcome forklifts, carts, and racks using fixed readers for tags with read ranges > 4 ½ meters to capture data with added speed and distance.

In addition to read range requirements, keep in mind the size of the tag may be dependent on the available surface area for mounting. Is the tag attached to metal, non-metal or in free air as a tether? We can help. Contact us: sales@omni-id.com.



IQ 150



IQ 350



IQ 600



PROX 400P



FLEX 600

Tags	IQ 150	IQ 350	IQ 600	FLEX 600	FIT 220	FIT 400	FIT 210	PROX 400P	IQ 400P	IQ 800P
Data center applications										
Handheld, smart shelf	✓	✓			✓	✓	✓	✓	✓	
Cart, robot, single door	✓	✓	✓	✓		✓		✓	✓	
Dock door, double doors		✓	✓	✓		✓				
Equipment application										
IT / Lab Equipmentsshelf	✓	✓	✓	✓				✓	✓	✓
Office Equipmentdoor	✓	✓	✓	✓					✓	✓
Office Furnituredoors	✓	✓	✓	✓				✓	✓	✓
Carts / Containers	✓	✓	✓					✓	✓	✓
Specifications										
Frequency	US or EU	Global	Global	Global						
Material compatible	On-Metal	Non-Metal	Non-Metal	Non-Metal						
Thermal printer compatible	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Read Range (m)	1.5	3.5	6	6	2.2	4	2.1	4	4	8
Attachment	P	P	P	P	P	P	P	T,P	P	P
T = tether, P = peel & stick										



Intelligent Tracking & Monitoring Devices

Omni-ID is the leading supplier of passive, low-profile UHF RFID solutions. Through our patented technology, Omni-ID “cracked the code” to overcome the problems traditionally associated with RFID, enabling a broad range of new applications that improve accuracy and efficiency in asset tracking, supply chain management and work-in-process.

Our family of versatile RFID tags works reliably in the harshest environments, including on, off, and near metal and liquids and excels in solving tracking and identification challenges with unprecedented accuracy.

With offices in the USA, UK, Asia and India backed up by a purpose-built manufacturing facility in China, our mission is to drive the widespread adoption of RFID and wider IoT technologies as the optimal tracking and identification devices.

Omni-ID's global presence:

USA Office:

333 West Commercial Street
Suite 333-1500
East Rochester
New York 14445

Tel: +1 585 299 5990

UK Office:

The Enterprise Centre
Coxbridge Business Park
Alton Road
Farnham, Surrey
GU10 5EH United Kingdom

Tel: +44 (0)1252 748 020

Asia Office:

Omni-ID Technology Trading
(ShangHai) Co. LTD
1308 Room Unit B
Sunyoung Center 28 XuanHua Rd
ShangHai 205002

Tel: +86 21 5240 0359

India Office:

Omni-ID India Private Limited
#211, 2nd Floor
V-Times Square
Plot no-3 Sector-15 CBD Belapur
Navi Mumbai 400614

Tel: +91 8655 657 969

Visit www.omni-id.com to learn more or email sales@omni-id.com for all product or technology inquiries and we will be pleased to get in touch.

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