

RFID – Best Practices

The purpose of this document is to provide guidance to public Libraries which may choose to implement RFID or transition from a previous RFID provider.

As of June, 2017, TLN maintains a pricing agreement with Bibliotheca, TechLogic and EnvisionWare. As such, this document will be geared towards the specifics for the preferred RFID providers. Some of the information may not be applicable towards other RFID providers, but the basics should apply to all.

Tag Format

Tag Specification

To ensure long term consistency, standardization and reliability for future RFID implementations, The Library Network RFID committee recommended that all new RFID installations within the TLN cooperative follow the ISO/IEC 15693 and ISO/IEC 18000-3 Mode 1 standard with the NISO standard ISO-28560-2 tag data format. These tag formats (physical and data) will provide for optimal standardization while supporting legacy libraries and will not impact each library's ability to choose a preferred vendor.

Tag Data Format

Tag specifications deal with chip communication. Data format is how the information is stored on the tag. It is of utmost importance that the ISO-28560-2 tag data format be used in order to ensure compatibility with other libraries. Be sure to advise your vendor that you want all of your RFID tags to work with this tag data format. Other standards do exist, but ISO-28560-2 is the agreed upon NISO (worldwide) standard for RFID tag data format for all Library use.

In all cases, TLN recommends that all libraries test tags with several other RFID sites (library reads your tags / you read library tags) prior to deployment.

Older formats (ITG, 3M, etc) should be replaced with the ISO-28560-2 tag data format for maximum compatibility. These formats are no longer standard. Bibliotheca can continue to support the 3M Data standard, but other vendors will not be able to. No one supports the ITG16 standard now.

Types of Equipment

RFID Reader

RFID Readers are used in order to program or read RFID tags. They may have different product names according to different providers, but that all do the same thing:

- Reading a tag - While reading a tag, the RFID Reader will either enable or disable the security bit on the tag. RFID Readers can be setup to work with the ILS in order to enable

or disable the security bit based on what mode (ex: check-out or check-in) the user is in. RFID Readers work in conjunction with security gates which reads to see if a security tag is on or off.

- Programming a tag - Programming a tag is done while processing an item. During this time the item id (barcode) is written to the tag. Some vendors provide pre-programmed tags that allow this step to be skipped.

Barcode Printer

RFID does not eliminate the need for barcodes on items. Barcodes are necessary for interlibrary loan to libraries not equipped with compatible RFID systems. Depending on how you procure item IDs, you may require a barcode printer or standard printed Barcode sheets. Using preprogrammed, preprinted RFID tags or programming tags by using sheets of preprinted barcodes could eliminate the need for a barcode printer.

Security Gates

Security gates read an RFID tag to see if it has been checked out. It does this by checking to see if the security bit has been disabled; a function that happens during check-out. Software is available from the recommended RFID vendors which checks the actual status of the item via SIP or SIP2. This allows staff to quickly tell if an alarm is set off in error.

Mobile Inventory Wands

Inventory wands allow lists to be uploaded to the device in order to search for items on reports created (ex: missing items, items on hold, etc). Devices may have built-in features like searching for items with security bit turned off. The device may assist with weeding and maintaining the library collection.

Self-Check

Self-Check provides a self-serve option for library patrons. It communicates with a library's ILS (Sirsi, CARL, Polaris, Innovative, etc.) via SIP and contains a built-in tag pad reader that deactivates the security bit on RFID tags. A Self-Check may also be set up to take cash or credit card payments.

Self-Check - Types

Self-Check units have a number of configurations available: stand-up kiosk, table top and built-in. Some vendors will allow you to provide the computer and monitor. The user interface and look differs between model and vendor. Space requirements and overall height of the unit should be considered before purchase.

Self-Check - Payment Options

Payment options currently available from vendors include cash, credit/debit or none. When opting to allow credit and debit cards, you'll need to ensure PCI compliance of the self-check

and within your network. For more information on PCI compliance, go to:

<https://www.pcisecuritystandards.org/>

Self-Check - Placement

When considering placement of a Self-check unit, remember that errors can arise and it is helpful for the unit to be in the proximity of staff that can assist with error messages (ex: book that needs an override because it's on hold, patron has to renew card, etc).

Self-Check - Media Security Cases and Unlocks

If you want to use security cases for media such as CD, DVD and BluRay, there are 2 options. You can use standard cases, like Kwik Case or One Case, that are removed when the item is checked out, or you can choose cases that circulate with the item that have a built-in lock. In either case you will need a way for staff to unlock items when checked out, and optionally an unlocker attached to a self-check station for patrons to unlock items when checked out. Different solutions are offered by different vendors.

Automated Material Handlers (AMH) or Sorting Systems

Sorting systems, or AMH can be retrofitted into existing library item return areas or planned into a design for a new or remodeled library building. These systems are designed to connect to the ILS and check-in items that can be automatically sorted by different categories (ex: book, DVD, fiction, non-fiction, etc.) The systems can be very expensive. We recommend visiting a Library with an AMH installed to witness the operations, and ask questions of the staff there. We also recommend talking to every vendor before making an AMH decision.

INSTALLATION OF EQUIPMENT

When preparing for equipment installation, a discussion on electrical and network cabling should be included for products such as security gates, self-checks or AMH.

If moving from a pure barcode based system with no security or just tattletape, there is a lot of flexibility.

Moving from a non-compatible RFID system requires careful planning for a smooth cut-over but it is not unusual to have non-operating security gates and self-checks for a few weeks.

RFID Security Considerations

RFID provides item security, but considerations must be made of the inherent weakness of RFID as a security solution. RFID is susceptible to metallic interference.

1. Place security gates away from metal partitions, building materials, wastebaskets, etc.
2. Items with metallic covers (books, DVD's, etc.) may not be securable via RFID.

3. RFID Hub Tags (small or large. ex: Sting-Ray tags) are not recommended for security purposes. They do not provide a high level of security when applied to CD, DVD, Blu-Ray and other metallic surfaces. Locking cases provide a much more secure method of preventing the theft of CDs, DVDs, Blu-Ray, and other metallic discs. Hub Tags can provide improved monitoring of the inclusion of items in multi-disc packages. However, do not use more than 3 RFID tags per item checkout, and avoid multi tags in a situation where the tags would be lying on top of each other, or completely obscured by an accompanying disc.

4. *Advisory to staff: be aware that patrons can smuggle RFID marked items out in a tin foil lined bag (or between 2 thin sheets of aluminum or other metallic items.)*

5. BLANK/SLASH tags on items that are discarded.

It is important to understand that RFID is not a comprehensive security solution. It provides some security, but the security provided by RFID can be easily defeated. None of the recommended RFID vendors will say that RFID provides comprehensive security coverage.

SPEED OF TAGGING

All of the recommended RFID vendors report that a trained volunteer or staff member can tag more than 1,000 items per day and a 150,000 count collection could be tagged by a team in 30 days or less. (See Planning – by example section below for suggestions on tagging timelines)

TAG LOCATIONS

All tag locations assume the SPINE is the FRONT of the printed item.

All recommended RFID vendors provide a basic model of 3 suggested locations for PRINT materials. They suggest tagging either at the *top*, *middle* or *bottom* of all print items, with the tag placed near the *Front*. They also suggest ensuring that the location each tag is *shuffled* to ensure readability by mobile RFID reading devices.

The same basic locations are considered for other items except for metallic discs (CD, DVD, Blu-Ray).

For discs, consider locating tags as far away from the disc as possible, which means the *top* or *bottom* corner of the disc case, but *never* the middle of the case.

Some emerging media cannot be directly tagged (example: Nintendo Switch cartridges). You will need to tag the case and lock it if possible.

PLANNING – By Example

Why? What? When? How? Who?

WHY - (Example)

Standard Demonstration Library (SDL) decided to switch to RFID to increase efficiency. They had been dealing with increasing circulation for years, which resulted in long lines at the circulation desk. Many patrons were waiting in line for up to 6 to 8 minutes and expressing frustration.

RFID is a perfect solution for this because it is intended to streamline work processes and make the entire process from processing to check out simpler and smoother for staff and patrons alike.

WHAT (Example)

SDL has a robust collection with over 125,000 items. They have two entrances to cover, which means they'll need two sets of security gates. They also have a large media collection which is experiencing some theft issues, so they would like to lock all of the cases. This means they'll need unlockers for their circulation desk. In order to save some money, only one of the self-check outs they install will have an unlocker. To meet a self-imposed deadline, they will also request 2 conversion carts from their RFID vendor and use volunteers and pay staff extra to engage in the RFID tagging effort.

WHEN - (Example)

SDL spent a few years planning to switch to RFID and waiting for the funding to afford the process. SDL allowed the TLN RFID Sub-Committee to make a decision on which RFID vendor(s) would be recommended by TLN before making a purchase, thus ensuring they would use an RFID system that was equally compatible with their neighboring libraries.

HOW - (Example)

SDL chose one of the recommended RFID vendors. They contacted the RFID vendor directly, and began the planning process. They placed a 6 month timeline on conversion, using 2 rented Conversion stations which could be wheeled into the aisles. Tags and equipment are delivered, and they begin the RFID tagging process to no fanfare, and little/no disruption of daily routine.

WHO - (Example)

SDL provided extra paid hours to staff (Pages and Clerks) to undertake the actual conversion process at a rate of 4 to 6 hrs/day at each workstation. Each shift (2 to 3 hours) completed approximately 300 to 500 items each and up to 1,500 or more per day total.

The process was "relaxed", but could have been sped up if needed. Their goal was to complete the conversion of over 140,000 items before undertaking a departmental renovation project which included closing the library for several days. This provided SDL with the ability to install security gates, self-check and other labor intensive items without competing for time/space with patrons during the time closed for renovations.

They went live after construction completed with all RFID assets in place and tested. Staff were trained before the re-opening.

SDL found upon re-opening, even with excited patrons visiting to see the new departmental changes made to the Library, the wait time for patrons had been reduced from 6 to 8 minutes down to no more than 2 minutes each. As a result, their circulation increased up to 15% the first 3 months.

Final Recommendations

We recommend that you talk to libraries that have RFID installed and your current vendor or prospective vendor for the most current advantages, issues and best practices of the RFID system.

During your tagging (or retagging) process, it is highly recommended that you share your newly tagged materials with TLN libraries to ensure compatibility. This will allow you to troubleshoot issues with tagging before you're too far in the process.

If you are in the process of testing RFID tag compatibility with other libraries or wish to acquire feedback on an RFID vendor, TLN can provide a list of current vendor installations (Bibliotheca, Envisionware, Tech Logic, etc.) within the cooperative upon request.

To ensure that your library receives the advantages of consortia pricing through all of the recommended vendors, please be sure to let the vendor representative know that you would like TLN Consortia discounted pricing for the quote.