RFID – Best Practices

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

TLN maintains a contract with Bibliotheca and 3M as the recommended RFID providers for TLN Libraries. As such, this document will be geared towards the specifics for both 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 ISO 28560-2 data model. This tag format will provide for optimal standardization while supporting legacy 3M data model libraries and will not impact each library's ability to choose a preferred vendor.

Tag Data Model

Tag specifications deal with chip communication. Data model refers to how the information is stored on the tag. It is of upmost importance that the ISO 28560-2 data model be used for new RFID installations in order to ensure compatibility with other libraries. Existing libraries, with the 3M data model, may continue with their current setup and begin tagging new materials with the ISO 28560-2 data model if deemed necessary on an individual basis. Below are recommendations depending on vendor selection:

- 3M - 3M installations may need to be configured to read RFID tags that do not have a 04 identifier and should write to RFID tags using the ISO 28560-2 data model.

- Bibliotheca and other vendors - should write to RFID tags using the ISO 28560-2 data model.

Be aware that while both ISO 28560-2 and the 3M data model utilize the same field for storing a barcode and security bit; however, the security bit uses a different code to distinguish un-locked and locked. For this reason it is advised that all incoming ILL items be scanned with an RFID scanner to ensure security is activated.

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.

Types of Equipment

Tag Pads

Tag pads are used in order to program or read RFID tags:

- Reading a tag - While reading a tag, the tag pad will either enable or disable the security bit on the tag. Tag pads 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. Tag pads 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.

In order to allow full compatibility with tags that may not meet ISO 28560-2 specifications, it is advised that tag pads be capable of handling multiple data models.

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. 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 3M and Bibliotheca which checks the actual status of the item via SIP. This allows staff to quickly tell if an alarm is set off in error.

In order to allow full compatibility with tags that may not meet ISO 28560-2 specifications, it is advised that security gates be capable of handling multiple data models.

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 the library collection.

Self-Check

Self-Check provides a self-serve option for library patrons. It communicates with a library's ILS (Sirsi, 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.

In order to allow full compatibility with tags that may not meet ISO 28560-2 specifications, it is advised that self-checks be capable of handling multiple data models.

Self-Check - Types

Self-Check units have a number of configurations available: kiosk, table top and built-in. 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 Unlockers

If you want to use security cases for media such as CD and DVD, there are 2 options. You can use standard cases, like Kwik 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.

Sorting Systems

Sorting systems can be retrofitted into existing library item return areas. The system is designed to connect to the ILS and check-in items that can be sorted by different categories (ex: book, DVD, fiction, non-fiction, etc.).

In order to allow full compatibility with tags that may not meet ISO 28560-2 specifications, it is advised that sorting systems be capable of handling multiple data models.

Deploying RFID

Installation of Equipment

When preparing for equipment installation, be sure there's a discussion on electrical and network cabling that may be required for security gates and self-checks.

If moving from a pure barcode based system with no security, 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: 3M 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.

Speed of Tagging

3M reports that a trained volunteer or staff members 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. Bibliotheca is similar to 3M in this regard. (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.

3M and Bibliotheca 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 remote 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.

Planning – By Example

Why - (Example)

Northville District Library switched to RFID because of steep usage increases. Circulation was increasing by 10 to 15% per year between 2000 and 2008. Without RFID, the Library would not have been able to continue with the current staffing levels. We definitely would not have survived the Novi Library shut down in 2010 without RFID. RFID is intended to streamline work processes and make the entire process from processing to check out simpler and smooth for staff and patrons alike.

When - (Example)

Northville spent 5 years saving funds to convert from barcode to RFID. We 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 we would use an RFID system that was equally compatible with our fellow cooperative libraries.

How - (Example)

Northville chose 3M for RFID. We placed a 6 month time line on conversion, using 2 rented Conversion stations which could be wheeled into the aisles. We ultimately did not wheel the conversion stations into the aisle and used them in our staff workrooms (upstairs and downstairs) as workstations for conversions.

Who - (Example)
Northville provided extra paid hours to staff (Computer Pages, Circulation Clerks) to undertake the actual conversion process at a rate of 4 to 6 hours/day at each workstation. Each shift (2 to 3 hours) completed approximately 100 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. Our goal was to complete conversion so the full roll out of RFID would coincide with a construction shutdown at the Library as we re-did our Youth area. This provided us the ability to install security gates, self-check and other labor intensive items without competing for time/space with patrons.

We went live after construction completed with all RFID assets in place, except the self-check, which was fully installed a few weeks after.

Novi closed a matter of weeks later between April and July. Northville dealt with a massive influx of Novi patrons (which ultimately caused a 25 to 30% circulation/usage increase at Northville for the period). Without RFID in place, it is doubtful we could have handled the increases as smoothly as we did... even with on-the-job training and unfamiliarity with the system. The influx may have been advantageous because it forced staff to learn the system as quickly as possible.

Recommendations

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

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 (3M, Bibliotheca, Tech Logic, etc.) within the cooperative upon request.

For consortia pricing for both vendors, please contact TLN.