

Duplicate Barcodes within MALC Libraries:

A Report of the Aleph Working Group to the MALC Library Directors

Aleph Working Group

Pascal Calarco, Chair

Phil Andrzejewski

Aaron Bales

Kevin Blowers

Tom Hanstra

Mandy Havert

Sarah Kolda

Katherine Marschall

Mary McKeown

Tracey Morton

Lisa Stienbarger

January 16, 2008

Summary

The Michiana Academic Library Consortium (MALC), comprising the libraries of Bethel College, Holy Cross College, Saint Mary's College, and the University of Notre Dame, has significant barcode duplication across the four institutions. This is due to the legacy architecture of the shared system, which dates back to the use of NOTIS LMS as the initial shared system for the consortium, and which has carried over into the current Integrated Library System (ILS), Aleph 500. When the NOTIS system was originally set up, no one thought it might be a problem that each of the four institutions started with the same number range (ie. 0 0000 000 000 001), and that this might be a future problem. So this is akin to the Y2K problem a few years back – it hasn't been a problem until it is a problem.

In 2007, the MALC Directors tasked the Aleph Working Group (AWG) to examine how the consortium could better leverage the Aleph system to 1) increase resource sharing, and 2) provide enhanced access to the union holdings of the consortium. The AWG formed a smaller group of members interested in analyzing the potential for increasing resource sharing amongst the consortium, and found that much of the physical item barcodes held within the four libraries is duplicated with one another. Within the current setup of the Aleph shared system, this only presents minor problems, but it does pose significant future opportunity cost problems when trying to utilize the newer features and functionality of Aleph and future systems which the MALC member institutions may utilize. Here are the immediate known problems we know that this duplicate barcode issue presents:

1) Discharging of materials from other member libraries:

It has been a small but ongoing problem that materials from other MALC libraries that are accidentally returned to another library and subsequently discharged, this has a chance of discharging materials that are currently on loan from the other institution, and because we purge circulation history, we will actually lose track of these materials. For example, a patron from Saint Mary's returns some books that she had checked out from Notre Dame to the desk at Hesburgh Library, and accidentally also includes a volume that actually belongs to the Cushman-Leighton Library. If the student or staff member discharging the items at Hesburgh does not notice that the item is from Saint Mary's College instead of Notre Dame prior to discharging the volume, and the item has an older-style barcode that is a duplicate of an item in the Notre Dame collection, then there is a distinct chance that the Notre Dame-owned item on loan could be discharged and, if not returned, Notre Dame would have no way of tracking down the patron who had last checked out the item, and it would be considered missing/lost. This scenario is likely a contributor to the missing/lost items, but we have no data as to the extent to which it contributes to the volume of lost/missing titles. For the period of September – December 2007, a total of 570 volumes were flagged as lost/missing. Trudie Mullins estimates that Notre Dame collection selectors have decisioned several thousand lost/missing volumes since this project began in 2005. Even if 10% of this total is contributed by duplicate barcodes and non-return of these items, this represents several tens of thousands of collection dollars spent to replace items or non-replaced lost collection items.

2) Patron Direct Queue:

Up until the present, we have not come across any new functionality within Aleph that we have not been able to implement due to duplicated barcodes. With this latest update in July 2007 from version 16.02 to 18.01, we have encountered our first. New to version 17, Patron Direct Queue (PDQ) allows libraries in a consortia to leverage their collections to a greater extent by

providing a 'round robin' method of providing access to books and other physical materials held in one or more collections in a consortium. For example: a patron at Bethel College wishes to check out J.D. Salinger's *The Catcher In the Rye*, but finds that it is checked out at Bethel. The old way would have been for the patron to place a recall on the item and wait up to two weeks for the book to be returned, and they get access to the copy at Bethel. What PDQ provides is for the request to also check for appropriate copy within the rest of a consortium. So in our example, Aleph would check the other libraries to see if they owned the item, and then automatically place a hold and issue a shelf pull for the item held at one of the other libraries. If the copy at the University of Notre Dame were also checked out, but the copy at Saint Mary's College were on the shelf and available, Aleph would update the status for this item to be pulled by staff at Saint Mary's, and transferred to the patron at Bethel College.

PDQ has a requirement that all items within a consortium have unique item barcodes within the shared system, thus we cannot take advantage of this service.

It would be also nice to offer a service to route materials back to the home library. We suspect that this routing is part of PDQ, so would be an incidental benefit to enabling PDQ within MALC. We are awaiting confirmation from Ex Libris on this. When materials are returned to other libraries now, the materials are returned to the home library with the WHEELS service. Offering this as a promoted service would be nice for users.

If users acknowledge that they are dropping off books to, for example, Hesburgh Library that are from Saint Mary's, this would also be a additional protection against discharge of foreign items to a library within MALC.

2) Consortial/shared system models:

We inquired with Ex Libris to see if there are any current consortial models that we would not be able to implement because of duplicate barcodes within the consortium. Right now, the only one we cannot implement is that one where the consortium would share administrative and financial transactions within a single database, something MALC will likely never do given the administrative independence of each of our organizations. However, there may be future developments that present themselves which do have this requirement, and thus, it may present a future problem.

3) Unified Resource Discovery:

We checked with Ex Libris to see if implementation of Primo or other unified search interface would be problematic with duplicate item barcodes. For Primo, there is no problem, as item data is not exported from Aleph to Primo. We cannot think of another circumstance where one would want to export item metadata into a 'next generation' search interface, and where duplicate barcodes would cause a problem, but again, this is conjecture when looking towards the future, and there may be future developments where this is a problem.

4) Poor system design:

Having duplicate values for something that are meant to serve as unique values within an information system is poor system design. Thus from a technical perspective, we think this is an issue that should be corrected, even if the above aren't compelling enough reasons to do so.

At some point in the future, this will probably present significant problems, and if not dealt with now, may well need to be dealt with later.

Extent of the problem:

The barcodes that start with more than one leading zero are candidates for duplicates across the consortium.

MALC Libraries duplication with Notre Dame:

<i>Institution</i>	<i>Total Items</i>	<i>Items barcoded 00</i>	<i>Overlap w ND</i>
Saint Mary's	242,428	200,326	161,186
Bethel	120,247	60,157	53,084
Holy Cross	16,737	12,173	9,336

So, each institution has a reasonable percentage of records which have 00 type barcodes but don't overlap with Notre Dame.

Saint Mary's College, Bethel College and Holy Cross College duplication:

We next examined records between other institutions. For Saint Mary's duplication with the other Colleges, we found the following:

Overlap between Saint Mary's and Bethel: 62,364

Overlap between Saint Mary's and Bethel not accounted for in the ND/SMC overlap: 12,774

Overlap between Saint Mary's and Holy Cross: 11,489

Overlap between Saint Mary's and Holy Cross not accounted for in ND/SMC overlap or BCI/SMC overlap: 725

So, if we were only re-barcoding overlapping records instead of everything, we'd need to re-barcode:

$$161,816 + 12,774 + 725 = 174,685$$

items, which is about 86% of the total 00's. In terms of efficiency in examining every item on the shelf, it would probably be worth re-barcoding the entire collection not using the newer barcodes.

Holy Cross College and Bethel College:

Overlap between Holy Cross and Bethel: 8449

Overlap between Holy Cross and Bethel not accounted for by any other re-barcoding efforts: 62

So, again, with Holy Cross, just re-barcoding duplicates would hit

$$9336 + 725 + 62 = 10,123/12,349 = 82\% \text{ of the 00 barcodes}$$

and Bethel comes out with a whopping:

$$53084 + 12774 + 62 = 65920/65954 = 99.9\% \text{ of the 00 barcodes which are overlapping with someone}$$

anyway.

So here again we'd be far ahead by just re-barcoding everything with older barcodes in the College libraries.

Total items requiring re-barcoding:

Saint Mary's:	202,148
Bethel College:	65,954
Holy Cross College:	12,349

Total:	280,451
---------------	----------------

Notre Dame Law Library:

Joe Thomas at the Notre Dame Law Library estimates that there are approximately 30,000-40,000 items that have University Libraries barcodes on them. Some years ago, they also switched to a newer barcode that features a yellow stripe across the top, and begins with a "52" series of numbers. Thus, the majority of their collection is unique. The pre-existing 30,000-40,000 items will be unique as far as the Hesburgh Libraries are concerned, but will also be duplicates with the other MALC College libraries.

Analysis of Items with 00 barcodes circulating at least once:

An option to reduce the number of items to re-barcode might be to only re-barcode those items with old barcodes that have circulated at least once. After some queries against the database, here are what those numbers look like:

Bethel College:

Bethel College staff have been working on systematically going through the stacks and replacing older barcodes, and also checking items as they are returned at the circulation desk. The estimates are that approximately two carts worth of books (80-100 books per cart) can be processed every hour.

Number of items with old barcodes starting with 00:	60,157
Number of items with new barcodes starting with 08:	60,030
Number of BCI general items:	28,108
Number of BCI reference items:	26
Number of BCI ERC/Juvenile items	3,303
Number of BCI ERC/Juvenile Ref items:	1
Number of BCI ERC/Instruction items:	228

Number of BCI ERC/Teacher items:	1
Number of BCI ERC/AV items:	18
Number of BCI audio-visual items:	552
Number of BCI reserve items:	6
Number of BCI storage items:	27

Holy Cross College:

Total number of items with old barcodes starting with 00:	12,173
Total number of items with new barcode starting with 06:	4,401

Number of HCC fiction items	217
Number of HCC general items:	5,183
Number of HCC reserve items:	16
Number of HCC oversize items:	69
Number of HCC ERC items :	1

Saint Mary's College:

Total number of items with barcode starting with 00:	200,326
Total number of items with barcode starting with 07:	26,125

Number of SMC general items:	62,687
Number of SMC reference items:	675
Number of SMC oversize items:	1,366 (music or general)
Number of SMC folio items:	31
Number of SMC children's items:	579
Number of SMC media items:	605

Number of SMC reserve items:	97
Number of SMC periodical items:	2,250 (music or general)
Number of SMC LL periodical items:	113
Number of SMC workroom items:	2 (music or general)
Number of SMC index items:	3 (music or general)
Number of SMC atlas items:	7
Number of SMC music items:	1,955
Number of SMC music AV items:	869
Number of SMC music reserve items:	6 (music or CRSMC)
Number of SMC music reference items:	16

Discussion:

While only re-barcoding items that have ever circulated may be an option, we feel this has problems.

The workflow will not be as efficient, as the person will have to consult a shelflist, for example to see which item is the next s/he should re-barcode. Additional time will be required for re-shelving, picking items off shelf, etc.

Also, if an item hasn't circulated, it still could circulate in the future.

We can do more extensive workflow studies to try to document the difference in efficiency between completing all items on the shelf versus working against a list of circulated items

Cost analysis:

There are two components to the cost of re-barcoding, the barcodes and computing equipment, and the labor required to re-barcode the collections.

1) Barcodes and computer setup:

I contacted Joan Morgan at Watson Label Products, and she provided a quotation for the following:

Saint Mary's College:	220,000
Bethel College:	80,000
Holy Cross College (new):	20,000
Total:	\$6,809.60

For Holy Cross, they would be a new order to add a maroon stripe. They currently receive labels from Wilson, but they are plain white, without a stripe. Saint Mary's and Bethel are existing clients.

A laptop with wireless and a USB barcode scanner on a book truck would also be required for maximum efficiency for the staff member(s) working on this project. Estimates for these costs:

- laptop: \$1,100
- scanner: \$650
- book truck: \$250

Note: we need to confirm whether Holy Cross has wireless inside the Library.

Total: \$2,000 (per concurrent staff member)

2) Labor:

There are several ways one could go about resourcing this project. Staff versus professionals, full-time versus part-time, one person versus multiple. The MALC Directors can come to some agreement as to how they would like to resource this effort. Standardized training will need to be provided for all individuals working on the project.

Workflow for items on shelf:

We would suggest the following workflow to complete this project:

Proceed systematically through the stacks with a Windows laptop equipped with a wireless network connection, Aleph client, and USB barcode scanner. Take each volume off the shelf:

- 1) check to see if it has a new (colored) or old (plain white) barcode
- 2) if it has an old barcode, scan the item in to bring up the record in Aleph
- 3) affix the new barcode on the item
- 4) scan in the new barcode to update the item in Aleph
- 5) remove the old barcode from the volume

Proceeding through the stacks in a systematic way will take care of the items that are on the shelf.

Workflow for items currently on loan, or otherwise not on shelf:

For items not on the shelf, at some point these items will need to be either recalled or flagged for re-barcoding at a later date. We would suggest having circulation desk staff and students set aside volumes that have old barcodes on a separate book truck or area, and then the staff work on re-barcoding could periodically work through these volumes to re-barcode those volumes prior to reshelving. Barcodes can be affixed directly over the old barcodes. The Working Group still has questions regarding what would be the best procedure in terms of preservation, and will ask Julie Arnott in Preservation at Notre Dame. Some older barcodes will leave a bit of adhesive when they are removed, which may adhere pages to one another.

At some date, the remaining volumes could be recalled for re-barcoding, or you could just wait until all of the items are returned. Recalling the items would be most disruptive to patrons, but most efficient in

terms of workflow; re-barcoding items as they are returned would have no impact on patrons but take longer for the items to be re-barcoded.

Re-barcoding complete collection versus circulating items:

A partial solution to address the collection potential loss issues might be to barcode only those items that have circulated at least once. This would not solve the problem completely, so that PDQ could still not be implemented at MALC, however, and some volumes that haven't circulated yet might indeed circulate in the future, so this is a partial solution at best.

Holy Cross issues:

Since Holy Cross started acquiring and applying 06 sequence barcodes in 1996, there is an additional decision point as to re-barcoding the collection with new maroon stripe barcodes, or just applying a marker to the barcodes with a 06 sequence.

Barcode Examples:

The following are visual examples of the older and newer barcodes from both Bethel and Saint Mary's Colleges. We should also have examples of barcodes from the Notre Dame Law Library and Hesburgh Libraries shortly.

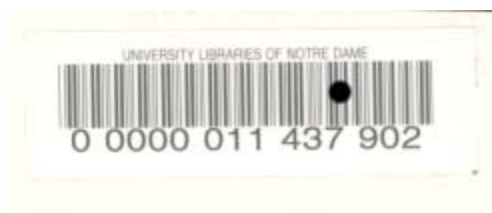
Older duplicated barcodes from Saint Mary's. Note that both of these begin with leading zeros:



Older duplicated barcodes from Bethel College, also with leading zeros:



Existing "University Libraries" barcode used in both Hesburgh and Notre Dame Law Libraries:



New color-coded barcode from Saint Mary's College and Bethel College:



New color-coded barcode from Notre Dame Law Library:



The addition of a color element is beneficial in a consortial environment, as this provides a more obvious visual clue beyond the text on the barcode as to the ownership of the volume. Thus, items returned to the wrong library can more easily be spotted and re-directed.

Summary:

We feel that correcting the duplication of barcodes within the MALC libraries is a worthwhile project to consider. Having duplicated barcodes is likely to cause barriers for enabling new functionality either in the current Aleph system, or other future systems. It also likely contributes to some small amount to collections loss within the Hesburgh Libraries.

We invite any follow-up questions the MALC Directors might have. Thank you for considering this proposal.

