INFOhio Barcode Standards

As established by the INFOhio Advisory Committee in 1993, INFOhio requires all libraries using the INFOhio Library Automation software to comply with the defined barcode standards and structure that have been established for participation in the INFOhio network.

Rationale

Every INFOhio item and patron should be uniquely identified (no duplication) within our state network. This meets current and future requirements for resource sharing within districts, regions and the state. INFOhio values the sharing of information and materials whenever possible so that resources for Ohio students are used efficiently. It also provides a unique entry for patron authentication to INFOhio resources should we decide to use that in the future.

A consistent and uniform barcode format helps simplify support needs at all levels. This includes INFOhio developed procedures for processing and loading MARC data, including the generation of dumb/smart item/patron barcode labels. It also helps ITC staff and school libraries with holdings specifications when dealing with book vendors, testing and setting up of equipment, test scans of barcode labels, etc.

Barcode standards allow us take advantage of advanced features of the software which enhance functionality for library staff. Examples include:

- Barcode validation which helps maintain the integrity of the database (ensures patrons coded as patrons and items coded as items)
- Barcode shortcuts (abbreviating a 14-digit barcode to its significant digits plus an X for the check digit. Example: 15000177X instead of 32414150001779)
- Auto-id assignment (when adding items or patrons, the system can auto-assign a unique and proper 14-digit INFOhio barcode for your library.

Since 1993, INFOhio has used Integrated Library System (ILS) software from three companies, but no INFOhio-automated school has been required to re-barcode since the entering the program. If INFOhio adopts a different ILS, the requirement that any INFOhio-automated school will have to re-barcode is unlikely. If INFOhio adopts a different ILS or database structure, our current protocols should improve the ability to export and migrate each districts transaction data from our current ILS since barcodes are unique.

Barcode Policy

To be fully compatible with the INFOhio network and to take full advantage of software features, both current and future, INFOhio requires participating libraries to use 14-digit Code 39 barcodes with a Modulus 10, Type1 check digit. CODABAR 14-digit barcodes with Modulus 10, Type 1 check digit are also acceptable, however Code 39 is the preferred scheme. For additional details please review the specifications for *Barcode Structure*.

INFOhio, along with the Ohio Department of Education and the ITCs, established unique 4-digit institution codes to be assigned to each public, private, state and special school institution that might participate in the INFOhio network. All buildings within a district must use the assigned institution code within their barcodes as specified. By using a 4-digit code for each district, all item and patron barcodes in the INFOhio system are uniquely identified.

If your library is interested in automating with INFOhio, please contact central@infohio.org or your local ITC Provider to confirm your assigned institution code and existing barcode compatibility.

Libraries automating with INFOhio will need to have INFOhio compliant barcodes attached to library materials *before circulating* ***or*** *at maximum within one (1) year* of *the date data having been loaded* into the INFOhio automation system. Upon the 1-year anniversary of the data load, the barcode validation feature will be fully activated by the ITC/INFOhio and non-compliant barcodes will no longer function.

The ability for a library to load barcodes from another automation system into INFOhio and to use them for a maximum of one (1) year requires that no duplication exists within the old system's barcodes.

Libraries that elect to load their old barcodes into the INFOhio system for an interim period of one year while they complete their re-barcoding project will need to file a *Barcode Compliance Agreement* (PDF 1 pg). This form is to be filed with the ITC and INFOhio and states the district/library agrees to comply within one year to terms and conditions specified by INFOhio for barcode compliance within the software.

Barcode Structure - Overview

The first digit of the barcode denotes the type: patron barcodes begin with a ***2***, and item barcodes begin with a ***3***. Barcode positions *2* through *5* must contain a unique 4-digit institution code assigned by either the ITC or INFOhio. Positions *6* through *13* must contain a unique, non-duplicate number assigned to each patron/item. Digit *14* is a calculated numeric check digit based on the Mod 10 algorithm.

Barcode Structure and Algorithm for Check Digit Calculation

INFOhio's barcode structure represents a 14-digit number, having the following structure:

Digits: 1	2 3 4 5	6 7 8 9 10 11 12 13	14
Barcode Type	Institution Number	Item or Patron ID No.	Check Digit

DIGIT 1: Type - Item or Patron
Use "3" for items; "2" for patrons
(3 X X X X X X X X X X X X X) library item
(2 X X X X X X X X X X X X X) library patron

DIGITS 2-5: The assigned Institution Code. If you are ready to barcode, contact your ITC to receive your district's 4-digit institution code.

DIGITS 6-13: Unique Item or Patron Identification Number
Digits 6-13 (8 digits) will be a unique (usually sequential number) assigned to Items (or patrons) ex: 00000001 to 99999999. As this number needs to be unique, it may not be duplicated among buildings in the district.

If your library is interested in automating with INFOhio, please contact central@infohio.org or your local ITC Provider to confirm your assigned institution code and for an evaluation of existing barcodes to determine whether or not there is an overlap of assigned barcodes between buildings in the district.

DIGIT 14, CHECK DIGIT
The check digit will be computed by the barcode vendor, but following is additional information that can be provided to barcode vendors.

The check digit is modulus-10, type-1, calculated as follows, using the values of digits 1-13:

a. Multiply the value in each odd-numbered position by 2;
b. If the product is a 2-digit number, add the two digits together. In any case, add the result to a running total;
c. Add the value in each even-numbered position to the running total;
d. Divide the final total by 10;
e. Subtract the remainder from 10;
f. Divide the result by 10;
g. The remainder (not divided) is the check digit.

For example:

Position: 1 2 3 4 5 6 7 8 9 10 11 12 13
Value: 3 0 2 3 4 0 0 0 5 1 7 8 6
Step a: 3*2, 2*2, 4*2, 0*2, 5*2, 7*2, 6*2
Step b: 6 + 4 + 8 + 0 + 1 + 5 + 3 = 27
Step c: 27 + 0; 27 + 3; 30 + 0; 30 + 0; 30 + 1; 31 + 8 = 39
Step d: 39/10 = 3 with remainder 9
Step e: 10 - 9 = 1
Step f: 1/10 = 0 with remainder 1
Step g: Complete the barcoded number by adding the check digit (1) in the 14th position:

Position: 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Number: 3 0 2 3 4 0 0 0 5 1 7 8 6 1

Barcoding strategies

The strategies below have proven to be successful at various INFOhio-automated schools. The strategy you employ depends on several factors, such as the amount of time and help available and the deadline to complete your migration project. INFOhio recommends you maintain close contact with your ITC provider, someone who has helped many schools accomplish re-barcoding.

Re-barcode and be done with it strategies

- Use student library assistants, parents or other groups to re-barcode. Consider the adage, *With pizza all things are possible.*
- Investigate senior citizen groups in your community to help. Many are looking for service projects that directly benefit students.
- Use district library staff to re-barcode each library in turn. The group effort will speed the effort, and each library will get easier as the team's expertise grows. Like the pioneers' quilting and husking bees, make it a *Barcoding Bee*!

The gradual approach to re-barcoding strategies

- Ignore the drive for perfection! Every item doesn't have to be re-barcoded before the new system is operational. Focus on the most circulated sections of your library and have them ready on your go-live day. Barcode other items as they circulate and as time permits. Your ITC provider can help you by using a utility program to mass-change old barcode ids in the system to new INFOhio barcodes and can print out new smart barcode labels for you to apply to the changed items allowing you to work on a section at a time.
- Add re-barcoding to other routine tasks, such as section weeding and regular inventories.
- Re-barcode at check-out. ITC Providers print smart barcodes (those with call numbers, authors, titles, as well as barcode numbers) in shelflist order; as an item circulates, flip to the right barcode, peel and stick.
- Re-barcode at check-in. Before items are re-shelved, make sure each has its proper barcode for the new system. This focuses efforts on the popular materials.

Other suggestions

- Involve your ITC provider in your re-barcoding project. He/She may be able to be on site, another set of hands to make the job go faster, and can provide on-site technical help, if needed.
- Early on, ask your ITC provider if the *old* barcode number can be incorporated into the *new* 14-digit number. Along with the item's title, this procedure helps to ensure that the exact barcode is applied to the exact item.