

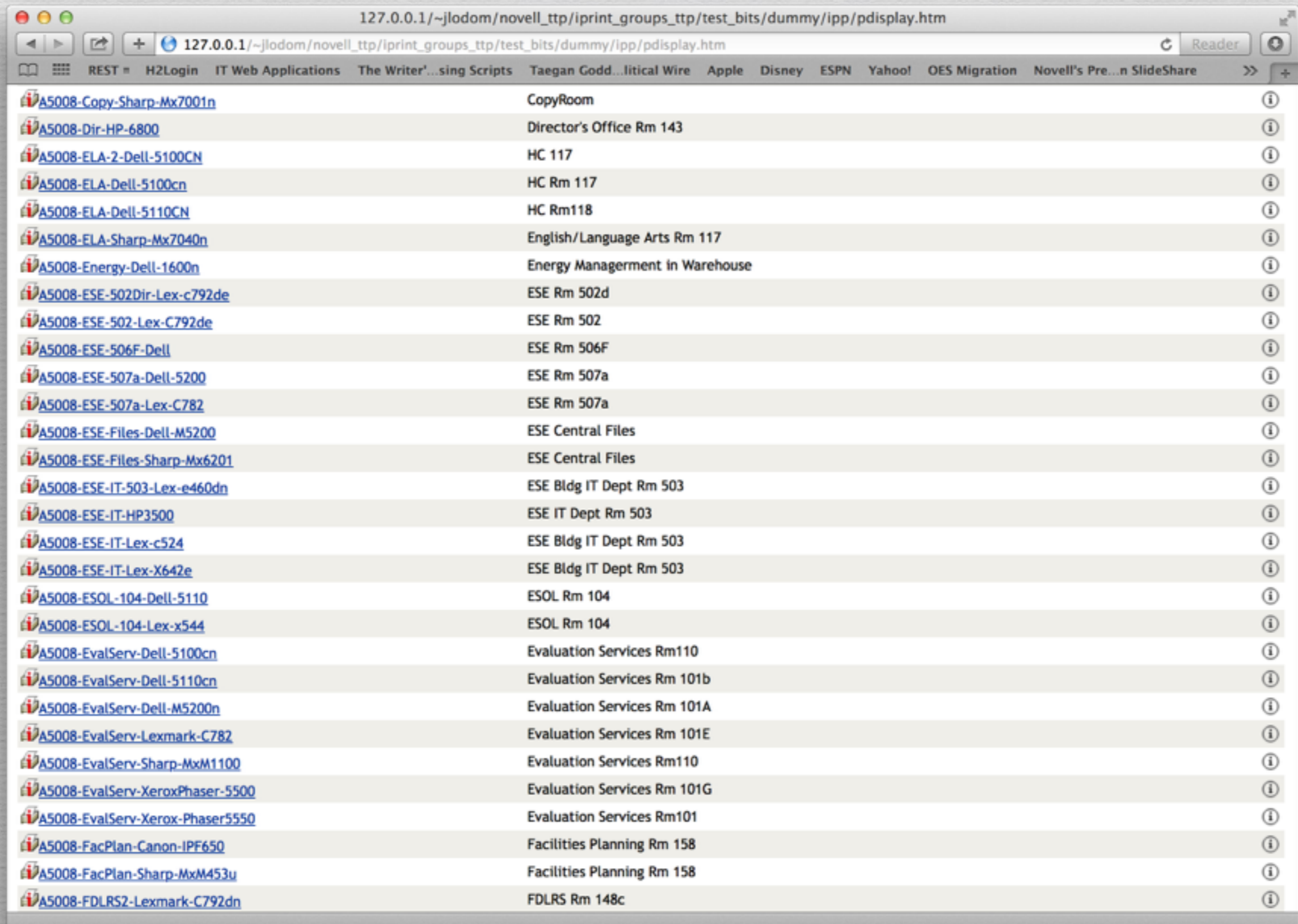
OES iPrint Printer Lists

Developed by Johnnie Odom
For the Technology Transfer Partners (TTP)
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A Situation

- You have an OES server located at every site.
- Each server runs a local iPrint Print Manager.
- Servers get more powerful, bandwidth increases, and virtualization becomes ubiquitous.
- You decide to consolidate OES servers.
- Multiple Print Managers become one Print Manager.

This Happens



The screenshot shows a web browser window with the address bar containing the URL: 127.0.0.1/~jlodom/novell_ttp/iprint_groups_ttp/test_bits/dummy/ipp/pdisplay.htm. The browser's address bar also shows the page title: 127.0.0.1/~jlodom/novell_ttp/iprint_groups_ttp/test_bits/dummy/ipp/pdisplay.htm. The browser's tab bar shows several tabs, including REST, H2Login, IT Web Applications, The Writer's...sing Scripts, Taegan Godd...litical Wire, Apple, Disney, ESPN, Yahoo!, OES Migration, and Novell's Pre...n SlideShare. The main content area displays a list of printer models and their locations, with each row starting with a small icon of a printer and an information icon (i) on the right.

A5008-Copy-Sharp-Mx7001n	CopyRoom	(i)
A5008-Dir-HP-6800	Director's Office Rm 143	(i)
A5008-ELA-2-Dell-5100CN	HC 117	(i)
A5008-ELA-Dell-5100cn	HC Rm 117	(i)
A5008-ELA-Dell-5110CN	HC Rm118	(i)
A5008-ELA-Sharp-Mx7040n	English/Language Arts Rm 117	(i)
A5008-Energy-Dell-1600n	Energy Management in Warehouse	(i)
A5008-ESE-502Dir-Lex-c792de	ESE Rm 502d	(i)
A5008-ESE-502-Lex-C792de	ESE Rm 502	(i)
A5008-ESE-506F-Dell	ESE Rm 506F	(i)
A5008-ESE-507a-Dell-5200	ESE Rm 507a	(i)
A5008-ESE-507a-Lex-C782	ESE Rm 507a	(i)
A5008-ESE-Files-Dell-M5200	ESE Central Files	(i)
A5008-ESE-Files-Sharp-Mx6201	ESE Central Files	(i)
A5008-ESE-IT-503-Lex-e460dn	ESE Bldg IT Dept Rm 503	(i)
A5008-ESE-IT-HP3500	ESE IT Dept Rm 503	(i)
A5008-ESE-IT-Lex-c524	ESE Bldg IT Dept Rm 503	(i)
A5008-ESE-IT-Lex-X642e	ESE Bldg IT Dept Rm 503	(i)
A5008-ESOL-104-Dell-5110	ESOL Rm 104	(i)
A5008-ESOL-104-Lex-x544	ESOL Rm 104	(i)
A5008-EvalServ-Dell-5100cn	Evaluation Services Rm110	(i)
A5008-EvalServ-Dell-5110cn	Evaluation Services Rm 101b	(i)
A5008-EvalServ-Dell-M5200n	Evaluation Services Rm 101A	(i)
A5008-EvalServ-Lexmark-C782	Evaluation Services Rm 101E	(i)
A5008-EvalServ-Sharp-MxM1100	Evaluation Services Rm110	(i)
A5008-EvalServ-XeroxPhaser-5500	Evaluation Services Rm 101G	(i)
A5008-EvalServ-Xerox-Phaser5550	Evaluation Services Rm101	(i)
A5008-FacPlan-Canon-IPF650	Facilities Planning Rm 158	(i)
A5008-FacPlan-Sharp-MxM453u	Facilities Planning Rm 158	(i)
A5008-FDLRS2-Lexmark-C792dn	FDLRS Rm 148c	(i)

What is the problem?

- Users cannot find their printers in such a long list — convenience is gone.
- User error or bad naming from IT can cause users to pick the wrong printer.
 - Now print jobs are being submitted from across town.
- Why not use an iPrint printer map?
 - In our experience, many users are unable to find their offices on a map of the building.
 - Grim implications for fire evacuations.
- Why not push printers by iCM or ZENworks policy?
 - iPrint is a self-service product.
 - Users know what they need, not admins. (Within Reason)
- Ideally we want users to get a list of printers relevant to them while maintaining consolidation.
- But we cannot read directly from the iPrint PSM database as it is not documented.
 - Don't even suggest parsing the textual backup files. Are you mad?
 - But we can use any printers that have objects in eDirectory.

Introducing iPrint Printer Lists

- Generates a list of printers similar to that found on the “/ipp” page, with links for installation and information.
- Can be customized for users, groups, and containers.
- Simple to set up.

Step 1: Extend eDirectory Schema

- KISS: (Keep It Simple, Stupid)
 - Stupid = Me, Not You
- Schema extensions contained in LDIF file “ttdprint.ldif”
- Extend using your favorite method — I will use ICE engine from CLI, but other methods will also work.
- One new attribute - ttdPrintMemberPrinter
 - A multi-attribute list of iPrint printer DNs.
- One new object - ttdPrintPrinterList
 - Uses new “ttdPrintMemberPrinter
 - Uses pre-existing “member” attribute to know which users, groups, and containers should see it.
 - Uses pre-existing “title” and “description” attributes to provide more information to users.
- Members and Printers are not double-linked to keep implementation simple.
 - A Novell version should double-link (a la “member” and “groupMembership”)
- “ttd” prefix so that anything Novell might add does not conflict with this project.
 - Also a reason for simplicity: Any complex implementation should have Novell’s engineering backing.
- Cheats a bit on OIDs — uses Novell OIDs that would previously have been given to 3rd parties.
 - Every effort has been made to pick values that will never be used.
 - Novell no longer provides or supports providing space in its OID set for 3rd Parties.
 - I don’t have money for my own OID space. Hence the cheat.

Step 2: Install iManager Plugins

- Plugins built with Plugin Studio from iManager.
 - Don't make me write Java, please.
- Import the files into iManager (Provided you have rights):
 - Configure->Plugin Installation->Available Novell Plug-in Modules->Add
 - Choose the file "ttp_iprint_lists_imanager_plugins_v1.npm"
 - The plugins import, but we are not finished.
- Some effort required to make iManager happy with the arrangement.
 - After importing plugins, restart Novell Tomcat (for iManager)
 - Create a new iManager module with name: TTP iPrint Lists
 - Then create a new role
 - With Name "TTP Printer List"
 - Assigned Task "TTP iPrint"
 - Assign Category "Printing"
 - Then create a new property book:
 - With Name "Manage TTP iPrint Printer Lists"
 - Assign object type "ttpiPrintPrinterList"
 - Assign the Other page
 - Assign to role TTP Printer List
- After all of this, restart Novell Tomcat again.

Notes on iManager Plugins

- The convoluted install is because Plugin Studio exports the plugins with a variety of assumptions about the environment they were developed in.
- Sometimes you may have to do a little more fiddling with creating roles and property books before everything is happy. Feel free to write Johnnie for help.
- Every now and then, the selector button will go away for selecting members and printers to add. I have yet to reliably reproduce this behavior for a bug report.
- Once you have installed the plugins in one instance of iManager, see TID 3447396 for instructions to install on other instances in the same tree.
 - If these instructions do not work, just copy the files from one server to another:
`/var/opt/novell/iManager/nps/portal/modules/custom`
- The plugins can create printer lists and manage which members and printers belong to them.
- You can always skip iManager and use another eDirectory or LDAP tool to create and edit raw `tspiPrintPrinterList`

Step 3: Use iManager Plugins to Create Printer Lists

- Admins will have to be configured with the correct iManager role (like anything else in iManager).
 - Here we assume you have Collection Owner Access.
- Under “Roles and Tasks” find “
- **TTP iPrint Printer List Create**
 - Object Name
 - Context
 - Title
 - Description
- **Manage TTP iPrint Printer Lists**
 - Add and remove members (users, groups, containers preferably but many other types of objects allowed)
 - Add and remove printers
 - In the Description pane, “title” and “description” can only be viewed. To modify, either:
 - Choose the “General->Other” pane and edit raw.
 - Go to “Directory Administration” Role and choose “Modify Object”.
- To delete printer lists, use “

Step 4: Install PHP Web Page

- Requires PHP with LDAP extensions.
- Configuration of LDAP SSL with PHP is a separate topic.
 - Not covered in this presentation
 - We will use Clear LDAP via port 389.
- Best if run on the same server as the iPrint Manager
 - Can run on another server if Javascript and the iPrint client do not complain.
 - Leverages lots of existing resources / code provided with iPrint (see KISS above)
 - Assumes iprint web files are in their standard path on the Print Manager server.
- Only files required are the iprint_lists.php file for code and iprint.css for style.
 - iprint_lists.php can be renamed and multiple instances run on the same server.
 - iprint.css can be tweaked or replaced per your preference.
- Some functionality may require the creation of simple web forms.
 - Covered later.
- Installation is as simple as copying the php and css files to an apache content directory, but some parameters will need to be entered within the file by editing it with a text editor.

PHP Parameters

- `$eDirectoryProxyUser`
- `$eDirectoryProxyPassword`
- `$eDirectoryServer`
- `$managerServer` - DNS name or IP address of web page. Can be the same as the server holding the PHP file and / or the eDirectory LDAP server.
- `$eDirectoryLdapSSL` - Boolean (“true” or “false”) stating whether SSL will be used with LDAP.
- `$managerServerSSL` - Boolean (“true” or “false”) stating whether SSL will be used for Printer Manager server web addresses (`http://` or `https://`) when links or images are used. Does not affect whether the URL to the printer list page uses SSL.
- `$eDirectoryLdapPort` -
- `$eDirectoryTimeout` -
- `$eDirectorySearchRoot`
- `$operationMode` - How to look for printer lists. Values are “userauth” , “objectstatic” , “objectdynamic” , and “printerlist
- `$followInheritance` - Boolean (“true” or “false”) stating whether inheritance of an object will be considered when looking for printer lists to which it belongs.
- `$debugLevel`
value should be 1 (user-friendly errors) and in troubleshooting or testing 2 or 3 should be used. At present, 3 is used to provide more sensitive information for the errors listed in 2.

Operation Modes

- **printerlist**
\$printerlistOptionArray
When the PHP page is loaded, it will display all of the printers that belong to these printer lists.
- **objectstatic**
\$objectOptionDN
printer lists. The PHP code will search for printer lists that this object belongs to and will then display them using logic similar to the “printerlist” mode above. If the inheritance value in the PHP page is set to true, it will also search for printer lists containing any groups and contexts (and the full context lists of those contexts) that the object belongs to.
- **objectdynamic**
variable, the DN of the object should be sent to the PHP page via a standard web form. The form “method” should be “post” and “action” should be the iprint_lists.php page (or whatever it is named at the time). The “name” of the form value sent should be “edirobject
- **userauth**
by authenticating a username and password sent by web form post. The values sent should be named “username” and “password” with the obvious contents. Upon receiving these values, the PHP code will attempt to find the user’s DN and authenticate via LDAP. If authentication is successful, the PHP code will then use the user’s DN as an “objectstatic” to find printer lists.
- **NOTE:** DNs must be in LDAP format (“cn=user,ou=thiscontainer,o=organization”) and allowable characters for DNs in this code are letters, numbers, periods, spaces, and underscores.

Additions for 1.1

- `iprint_lists_container.php`
New PHP page that displays all of the iPrint printers in a particular container. Does not actually use printer lists, but does use a lot of the same logic.
- `printerlistinstall`
CLI tool to install all the printers in a printer list directly to a workstation. Good as a ZEN bundle.

ReadMe for Printelistinstall

Printer List Install Tool version 1.1
by Johnnie Odom (jodom@escambia.k12.fl.us)

This is a very simple tool that will automatically install all the printers in a given TTP iPrint Printer List to a workstation. It works on Windows, Macintosh OS X, and Linux workstations and is suitable for use in ZENworks Bundles.

REQUIREMENTS:

1. The workstation must have .NET (Windows) or Mono (OS X, Linux installed).
2. The iPrint client (with command line tool -- installed by default) must be on the workstation.
3. There must be an iPrint printer list in eDirectory.
4. There must be an iPrint printer list Web Service (PHP page) installed on a web server that the workstation can reach.
5. Every printer in the printer list must have an installed driver for the workstation platform.
6. Both the printerlistinstall.exe and printerlistinstall.mdb files must be on the workstation in the same directory.

USAGE (from the executable directory):

Windows:

```
printerlistinstall.exe "http://servername.com/printer-lists/webservice.php" "cn=printerlist,ou=printerlistcontainer,o=myorg"
```

Mac / Linux

```
printerlistinstall.exe "http://servername.com/printer-lists/webservice.php" "cn=printerlist,ou=printerlistcontainer,o=myorg"
```

Where "http://servername.com/printer-lists/webservice.php" is the URL to the web service PHP file

AND

Where "cn=printerlist,ou=printerlistcontainer,o=myorg" is the full LDAP DN of the printer list you would like to use.

CAVEATS:

All this executable does is run iprntcmd after retrieving a delimited list of iPrint printers from the printer list web service. If there is a problem with the printer (no driver, etc.) then it will fail to load a specific printer. Moreover, it has basically no exception handling -- this is very much sysadmin-ware.

LICENSE:

Free Without Warranty

Demo

- My command for extending schema:
ice -S LDIF -v -f ttpiprint.ldif -D LDAP -v -s 192.168.87.3 -p 389 -d
cn=patkins,o=ttp -w pudding
See ICE (eDirectory) documentation for interpretation of the values.
- We will create some lists via iManager.
- Then we will try generating the lists using each of the methods, editing the code along the way.
- Life is too short for me to use LDAP SSL during this demo.
- “objectdynamicform.html” and “userauthform.html”
production, they are to demonstrate functionality

Conclusion

- Hopefully a simple, flexible solution to a real problem.
 - With any luck Novell will solve it in an official capacity.
 - The method described here is meant for OES, but could be extended to the iPrint appliance if you are willing to tinker in an unauthorized manner. Nothing is non-standard.
- You should get everything you need in the zip file that comes with these slides.
- Room for Improvement
 - Direct link to client?
 - Better CSS?
 - Other operation modes?
- Questions and Suggestions Welcome
- E-mail me at _____
- Thank You