

Cool Stuff and ARD

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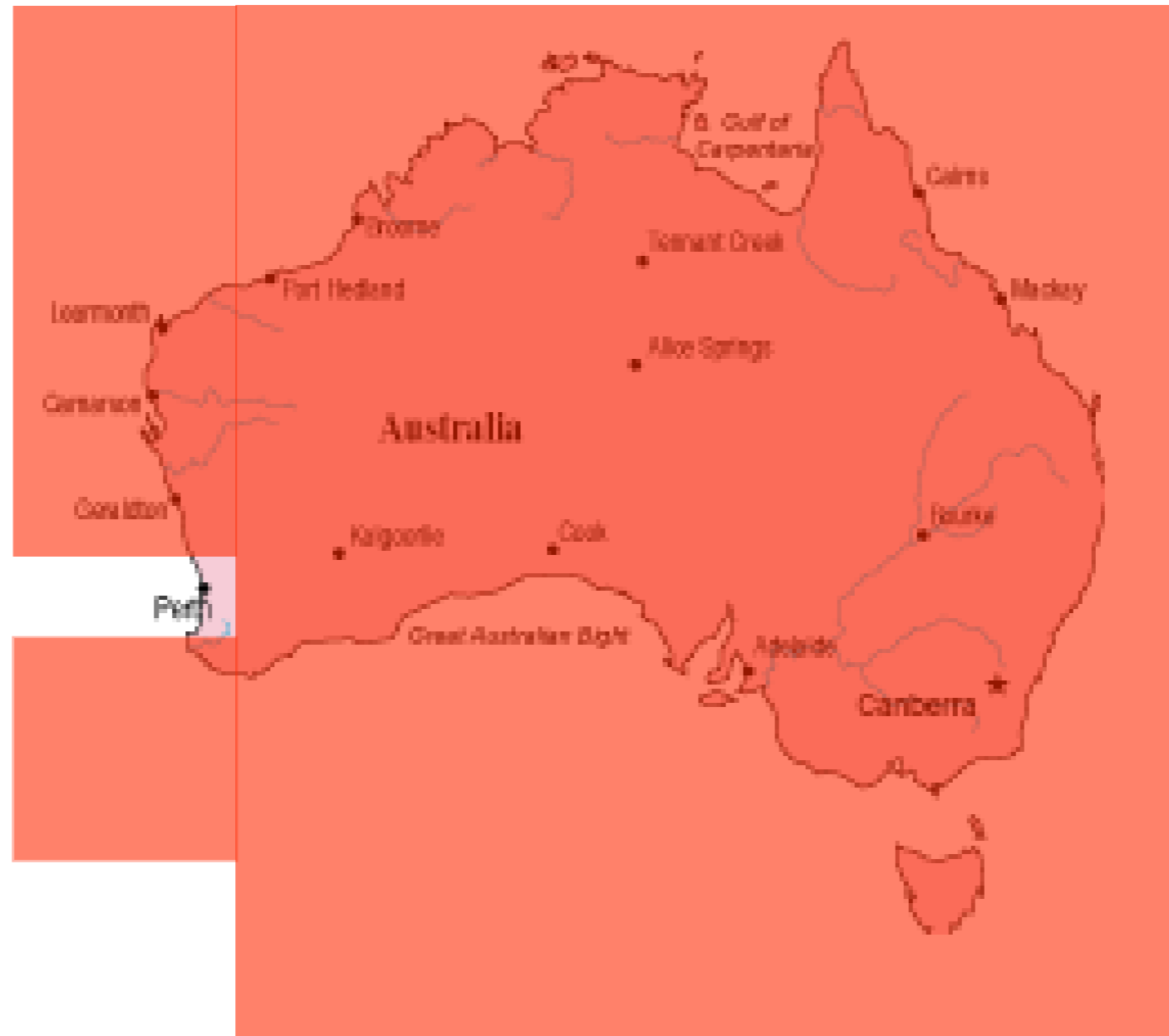
Background Slides

- Firstly.
- Where is Perth? :)

Perth



Perth



About CCI

- School of Communications and Multimedia
- Largest in Australia, over 500 students do a common foundation year as a first year
- disparate streams offered
- supporting minors from SOCA or compSci

Streams

<i>Advertising</i>	<i>PR</i>	<i>Textile</i>	<i>Lighting Design</i>
<i>MultiMedia</i>	<i>Digital Media</i>	<i>Print Graphics</i>	<i>Radio Broadcast</i>
<i>Film & Video</i>	<i>Hat Making</i>	<i>Packaging Design</i>	<i>Television Broadcast</i>
<i>Journalism</i>	<i>Pro Audio</i>	<i>Set Design</i>	<i>Final Cut Editing</i>
<i>Mass Comms</i>	<i>Pro Tools</i>	<i>CAD</i>	<i>Digital PhotoMedia</i>
<i>Media Studies</i>	<i>Logic</i>	<i>Costume Design</i>	
<i>PhotoMedia</i>	<i>Midi</i>	<i>Musical Scoring</i>	



CCI Resources

- 14 labs
- All Mac
- Full time Support staff of 3
- (do all staff support as well, 80+ staff)

Challenges

- Fall into three main categories
 - machines
 - people
 - management

Machines

- How to image them
- How to maintain them imaged
- How to monitor them
- How to asset track them
- How to track their usage

User Management

- Transient student population
- 24/7 isn't enough
- license challenges
- powerbooks
- peecee's

3 separate yet connected areas

- All IT management related
 - lab isn't a lab anymore
 - a workstation isn't one person's or in one place!
- If its a computer it ends up with us
- Impossible to manage/control/forecast/plan

Help Desk System

- we wrote a help desk
- open sourced
- php/mysql/shell
- leverages heavily on ARD 2



Why?

- Didn't like any of the off-the shelf ones
 - why?
 - their shelf is expensive
 - didn't meet our needs
 - scalability issues

How?

Spent the last 3 months writing and testing based on our specific needs

Not aimed at just a higher ed. organization

Hopefully people will write modules too :)

Why?

- We were constantly entering the same data
- purchasing system
- login system
- management system
- But Still loosing track of information
- machines would go “missing”
- new machines would magically appear

Feature Summary

- MySQL
- PHP
- needs documentation :)
- module based
- scaleable
- designed for low end users (aka helper monkeys)
- today i'm just going to talk about the ARD stuff

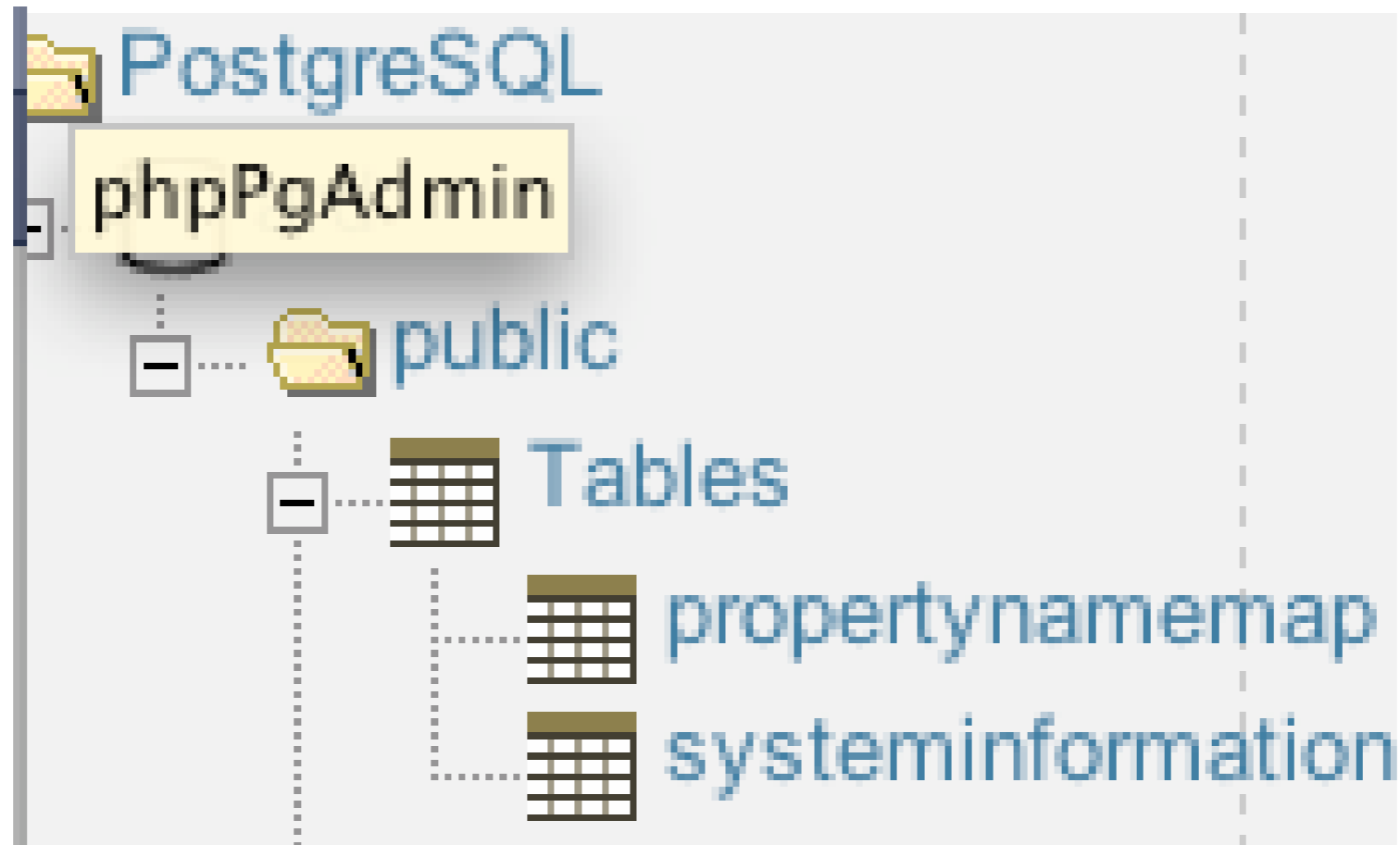
Highlight Summary

- ARD Features
- Powerful hardware searches
- Lab Organization/Imaging Options
- WorkGroup Manager
- Machine on network status
- Imaging
- Packaging making



ARD 2

- client / server model
- comes with a data collection model
- stores data in centralised server
- in a postgres database



ard: propertynamemap

Field	Type	Not Null	Default	Actions		Comment
objectname	character varying(128)	NOT NULL		Alter	Drop	
propertyname	character varying(128)	NOT NULL		Alter	Drop	
propertymapid	integer			Alter	Drop	



ard: systeminformation

Field	Type	Not Null	Default	Actions		Comment
computerid	character(17)	NOT NULL		Alter	Drop	
objectname	character varying(128)	NOT NULL		Alter	Drop	
propertyname	character varying(128)	NOT NULL		Alter	Drop	
itemseq	integer			Alter	Drop	
value	character varying(512)			Alter	Drop	
lastupdated	timestamp with time zone			Alter	Drop	



Mac_SystemInfoElement	WirelessCardIsActive	0
Mac_SystemInfoElement	WirelessCardFirmwareVersion	1
Mac_SystemInfoElement	WirelessCardHardwareAddress	2
Mac_SystemInfoElement	WirelessCardLocale	3
Mac_SystemInfoElement	WirelessCardType	4
Mac_SystemInfoElement	WirelessCardInstalled	5
Mac_SystemInfoElement	WirelessChannelNumber	6
Mac_SystemInfoElement	WirelessNetworkAvailable	7
Mac_SystemInfoElement	WirelessIsComputerToComputer	8
Mac_SystemInfoElement	WirelessNetworkName	9
Mac_SystemInfoElement	AppleTalkIsActive	10
Mac_SystemInfoElement	AppleTalkNetworkNumber	11
Mac_SystemInfoElement	AppleTalkNodeNumber	12
Mac_SystemInfoElement	AppleTalkZone	13
Mac_SystemInfoElement	ActiveProcessorCount	14
Mac_SystemInfoElement	UserMemorySize	15
Mac_SystemInfoElement	BootROMVersion	16
Mac_SystemInfoElement	BusSpeedString	17
Mac_SystemInfoElement	BusSpeed	18
Mac_SystemInfoElement	BusDataSize	19
Mac_SystemInfoElement	ProcessorSpeedString	20
Mac_SystemInfoElement	ProcessorSpeed	21
Mac_SystemInfoElement	MachineSerialNumber	22



computerid	objectname	propertyname	itemseq	value	lastupdated
00:0d:93:9b:ac:06	Mac_FireWireDeviceElement	DataDate	0	2004-08-23T02:07:53Z	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_FireWireDeviceElement	DeviceSpeed	0	400mbit_speed	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	DataDate	0	2004-08-23T02:07:53Z	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	CreationDate	0	2004-05-20T05:12:38Z	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	FileSystemType	0	18475	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	FreeSpace	0	75132600	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	GroupName	0	admin	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	IsBootVolume	0	true	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	IsCasePreserving	0	true	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	IsCaseSensitive	0	false	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	IsWritable	0	true	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	JournalingIsActive	0	true	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	LastBackupDate	0	2004-05-20T05:12:38Z	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	LastConsistencyCheckDate	0	2004-08-23T02:07:53Z	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	LastModificationDate	0	2004-08-23T02:07:53Z	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	OwnerName	0	root	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	PermissionModes	0	17405	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	PermissionsAreEnabled	0	true	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	RemovableMedia	0	false	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	SupportsJournaling	0	true	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	TotalFileCount	0	106759	2004-08-23 02:07:53+08
00:0d:93:9b:ac:06	Mac_HardDriveElement	TotalFolderCount	0	25249	2004-08-23 02:07:53+08



Should administrators using OpenWBEM tools be permitted to request system data directly from clients?

Set OpenWBEM access:

Not allowed

Allowed



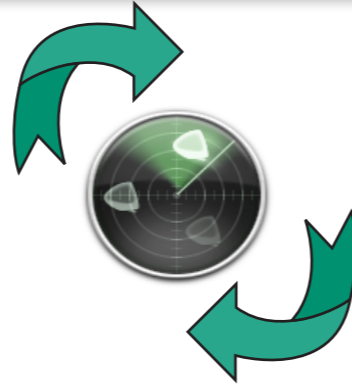
MacEnterprise.org

Mac OS X enterprise deployment project

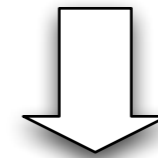
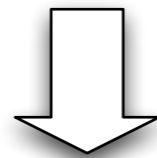
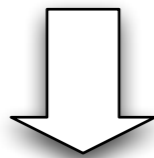
Help Desk Workflow model

- incredible leverage opportunities from ARD's thorough database capabilities
- powerful integration options with our own mysql database
- goal for one stop management console for admins and nominated admins
- i want it powerful for the powerful, but simple enough to delegate

Machines on CCI subnets



Machines in ARD Postgres Database



Machines in MySQL HelpDesk Database



Mysql Layout Screenshots

- non destructive data operations
- We summarise the pertinent ARD PG data into a flexible mysql system
- Its portable if you'd prefer to keep PG across the system
- It'll scale to MSSQL

Mysql Layout Screenshots

id	hardware_address	computer_name	uuid
3849		Green16	06BD2060-D9EC-11D8-B89E-000D93C10582
3848		Green03	06E5F83F-D9EC-11D8-B89E-000D93C10582
3847		vpn	0ECB30BB-D39F-11D8-BE1F-000D93C10582
3846		Green04	06E2DEBF-D9EC-11D8-B89E-000D93C10582
3845		Pink02	0637D90F-D9EC-11D8-B89E-000D93C10582
3844		usersone	3955EA20-D918-11D8-AB2D-000D93C10582
3843		userssix	6F54C746-D52A-11D8-AC49-000D93C10582
3842		userstwo	6F4713FC-D52A-11D8-AC49-000D93C10582
3841		cluster1	39575EDF-D918-11D8-AB2D-000D93C10582
3840		Green09	06CF59D0-D9EC-11D8-B89E-000D93C10582
3838		install	9861304C-D6E5-11D8-8CA8-000D93C10582
3839		Green11	06C756D8-D9EC-11D8-B89E-000D93C10582
3837		SLAVE	507BB71A-D2DD-11D8-9ACE-000D93C10582
3836		Green02	07105E09-D9EC-11D8-B89E-000D93C10582
3835		Green17	06D9235A-D9EC-11D8-B89E-000D93C10582
3833		usersfour	6F4D60E8-D52A-11D8-AC49-000D93C10582
3834		clone1	395664EC-D918-11D8-AB2D-000D93C10582
3832		raider	395651BE-D918-11D8-AB2D-000D93C10582
3831		xserve	6EA1432C-D52A-11D8-AC49-000D93C10582
3829		panther	154ADAA4-D92F-11D8-AB89-000D93C10582



Work Flow

- The data that we manipulate on a regular basis lives in local mysql database
- Regular scans of ARD database to update mysql (user defined)

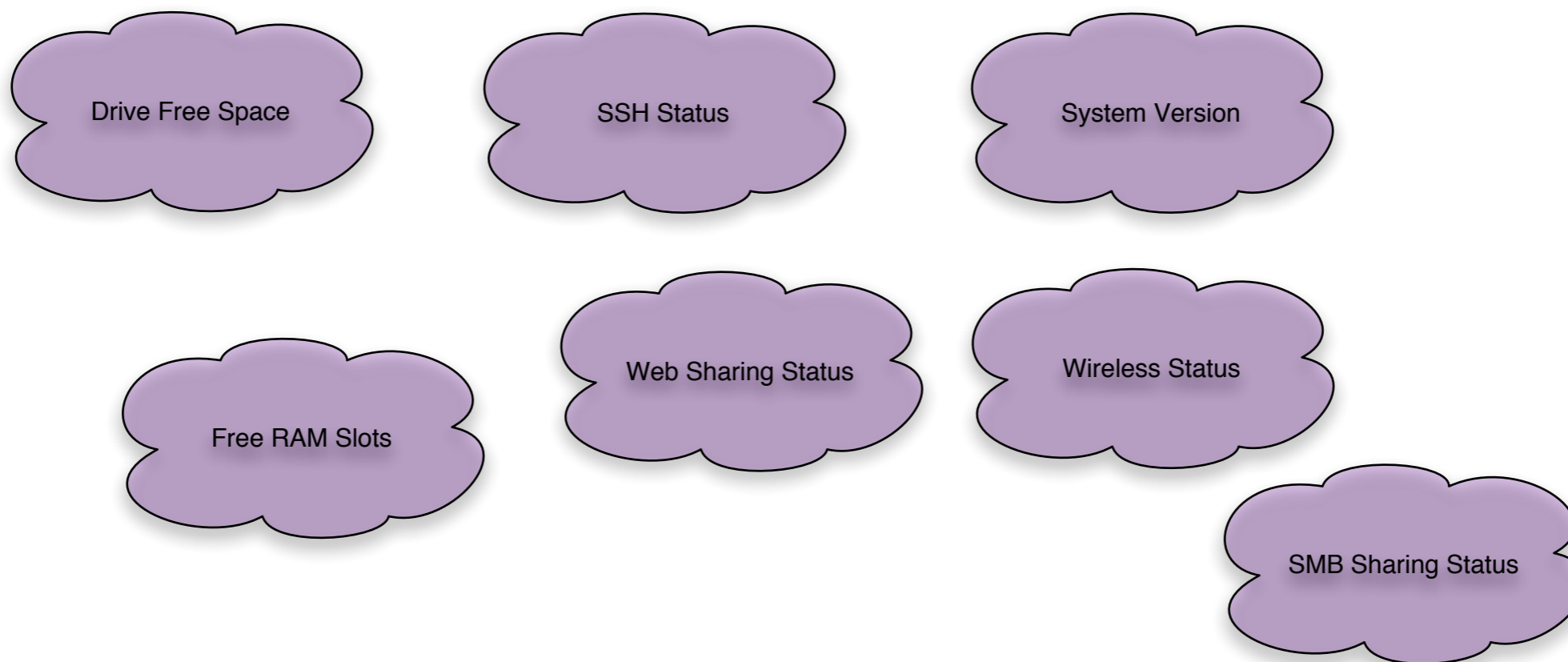
Machine Search

- So once we have the machines in our mysql database it makes it very easy to do complex machine searches
- We use it extensively to find emerging problems on machines, such as machines low in drive space
- example of search types :

Machines in ARD Postgres Database



Machines in MySQL HelpDesk Database



Machine additions to system

Labs

This page allows you to define labs that are associated with each school.

Define New Lab:

Lab Name:	<input type="text"/>
School:	<input type="text"/>
Lab Software Image:	<input type="text"/>
Room:	<input type="text"/>
Number Of Machines:	<input type="text"/>
Access:	<input type="text"/>
Hardware:	<input type="text"/>
Software:	<input type="text"/>
Operating System:	<input type="text"/>



wait...there's more!

- Once the lab is defined in the help desk system you can run the ARD scans then allocate the machines there
- So a new lab can be quickly created by either defining the machines in the help desk system itself, or installing the machines, running ARD scans then allocating them to lab groups

....

- We use it to allocate a lab's software image. So machines can be setup or re-imaged from here
- We also use it to set imaging protocol and server settings to allow pseudo load balancing.
 - afp/http
 - different servers
 - round robin dns :)

Double Entry?

- We do a lot of work with WorkGroup Manager (WGM) to handle client management
- We do most of our stuff at the computer list level
- WGM has no facility for easily adding multiple computers
- The help desk system allows you to generate a text list suitable for importing directly into WGM



WGM

- Scan the list with ARD
- Import into Help Desk
- Export into WGM
- 30 seconds :)



Machine Tracking

- searches the ard generated list (set ard scheduled task for X minutes)
- searches the mysql databases
- looks for missing or extra ones..alerts the admin user

Automated Actions

- Emails nominated admin about missing (or found) machine
- Logs in a database the event
 - why?
 - student laptops / staff laptops
 - if you use etherpeek (or similar) this gives u a good record if anything goes “rogue”

Machine Monitoring

- Running a large environment its best to be proactive rather than reactive
- The system can be configured to 'watch' for change states between scans on the machines, and then alert people of the change in states
- Why?
 - projector disconnects
 - student altering machine settings
 - theft/damage
 - "this mouse has never worked"

Machines in ARD Postgres Database

ARD SCAN every 6 hours

Machines in MySQL HelpDesk Database

Watch for changes in selected criteria

ALERT!





Email on call
tech



send .ics
event

RSS



Machine Monitoring

- Alerts are:
 - iCal events for on task person
 - logged jobs
 - emails
 - (or a combination)
 - managers love it...staff not so much :)
 - [yes it can do SMS s well but they begged me to not implement it]

Sample Alerts

Drive Free Space (user specified range alteration)

SSH Status (on/off)

System Version (changed?)

Free RAM Slots (changed or defined)

Web sharing status (on/off)

Windows sharing status (on/off)

Wireless status (on/off)

Mouse / Keyboard connection (on/off)

Desktop Maintenance

- one problem is that ARD allows for package pushing, but package making remains a task for the power users
- we needed away of delegating packaging making to sub-sys admins
- for example if we wanted to change the desktop pattern of a group of machines

Automated Packaging

- Create a sample volume adjust package
- Create a login package
- Change a Desktop pattern
- Change a set of permissions
- Scope for ANY TYPE package

Desktop Maintenance

- handles simple tasks such as setting machine volume levels on start up (we needed this as there was an exam on next door when we wanted to reboot 50 machine lab)
- handles examples for more complex tasks such as repurposing OD access
- This is where I hope there is some knowledge sharing in the community



Webbrowser access
to help desk page

Specify variables,
package destination etc.



Use command line
packagemaker tool



Generate .pkg for
ARD distribution



User Management

- system ships with a login hook that can be deployed to desktop
 - so we eat our own dog food and push it out with a package we make within the system
- on login/logout username/time & mac address of the machine is logged
- drops into a SQL database so we can process information



use web browser
to set location of login
hook(s)

1. path to file
2. name of file
3. login/logout ?



package is built with
alteration to /etc/ttys
to call login hook



Generate .pkg for
ARD distribution



user stats

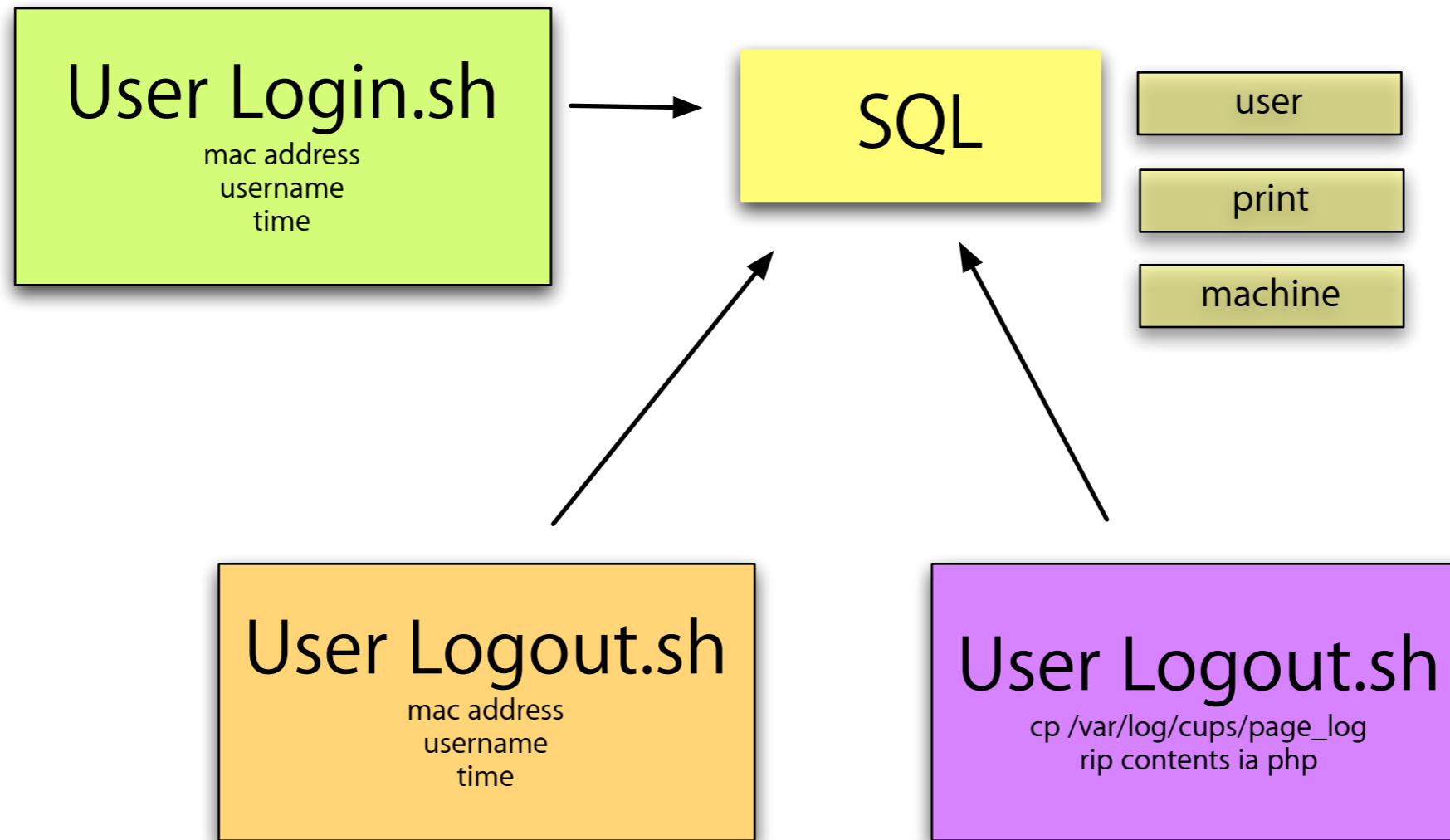
hours logged in
average log in time
hours used
peak usage time

machine stats

hours used
user stats
network traffic*
apps launched*
machine usage



Login/Logout hook pushed via ARD



Full Automation



Machine Delivered



barcode scanned

Data entered into HelpDesk system

Destination selected

Machine Net Boots and installs Image

Logs its imaging time

Record user interactions



What I Didn't Talk About

- Integrates into an asset management system
- HelpDesk system fully customisable

Thanks

- HelpDesk Code - David Polinelli, Andrew Dunbar
- ARD Code - Michael Bartosh, Mike Lopp
- Apple Australia (<http://apple.com.au>) - esp. the ed team, they always help me get to such events and spread the word :)
- Apple University Consortium - Stephen Young, Rob Osborn, Andrew Jeffery (<http://www.auc.edu.au>)
- IM diversions: Thomas Easmie, Peter Varitimidis, Joel Rennich
- "Hi" - Kate Barrett
- General all round PITA's - Brett Greay, Justin Krisko, Patima Tantiprasut, Mike Young (Go the Villa), Angelyne Wolfe, Ryan "Table Milk" Beaton.

Resources

- online demo
- <http://www.thepublicitymachine.com/helpdesk>
 - (apple/apple)
 - The ARD stuff will be up soon..needs a little more testing
 - (it needs a gui!!)
- download code -
 - email me stevendoyle@mac.com
 - available for d/l once documentation is done :(
 - but you can grab a .tar from me

Contact

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