

# LUCITY ADMIN

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Rob Kraft and Nicole Schmidt

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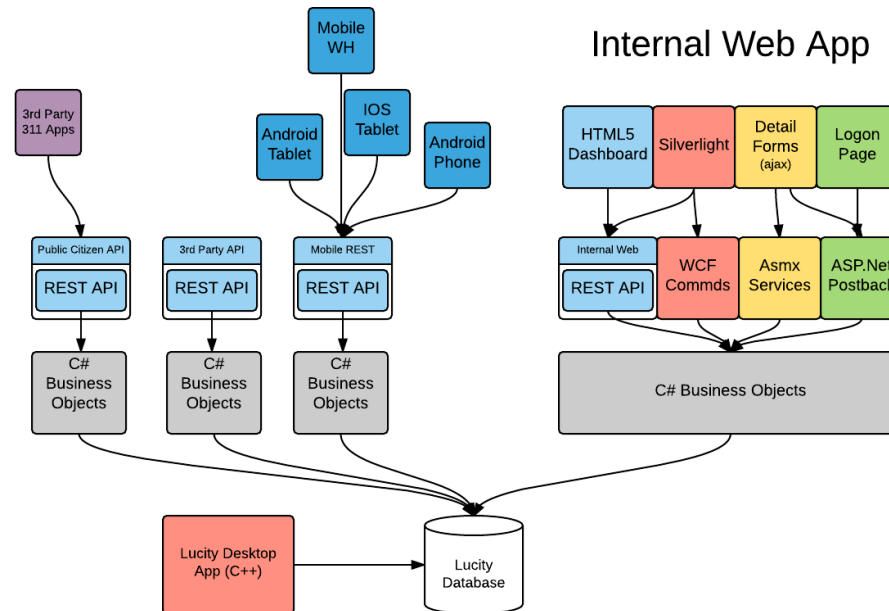
# AGENDA

- Identity Server – New in 2016
- Admin Portal – New in 2016R2
- Documents and Document Server
- Crystal Reports File Management
- Lucity Schedulers and Task Runners
- Everything Email Related
- Data Quality Services
- Data Lucity Collects from You
- User and Group Permission Management
- New HTML Dashboards
- Browser Support
- And more...

# IDENTITY SERVER

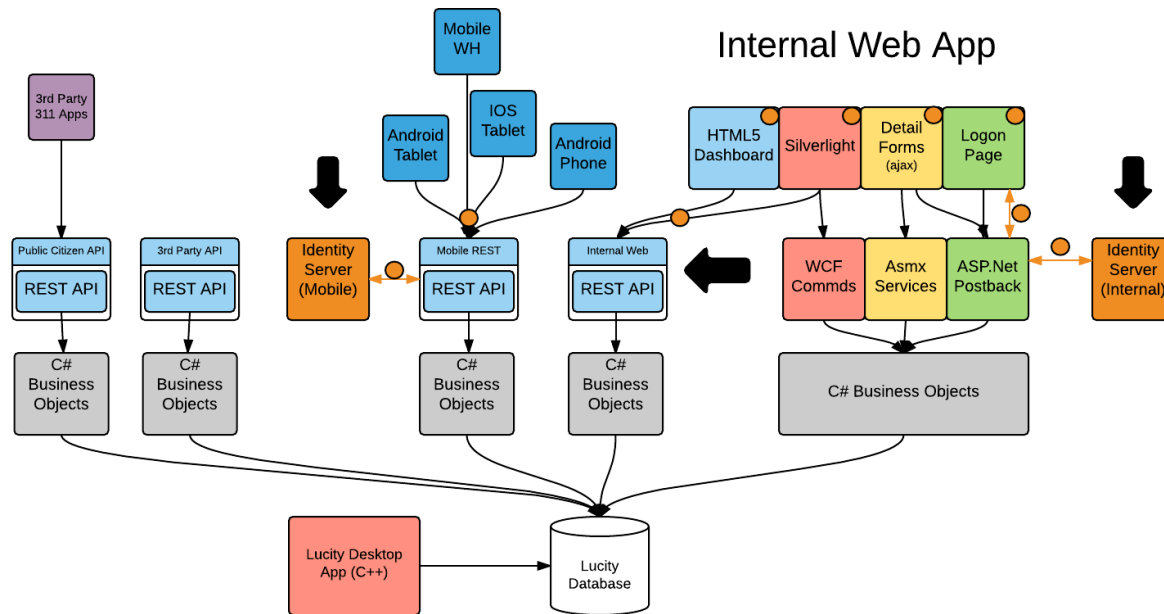
- Added in the Lucity 2016 release
- Installs as a Web App in IIS and is required
- Used to generate an “access token” that identifies users
- Why did we do this?
  - Same security model for all Lucity applications
  - Improve activations for mobile
  - Industry standard best practices – OAuth 2.0
  - Future
    - Single Sign On
    - More control over custom developed applications

## Lucity Application Architecture Release 2015R2



2015-12-28

## Lucity Application Architecture Release 2016



2015-12-28

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# WHY MIGRATE TO A REST API?

- Easier to adopt new user interfaces as technologies evolve
  - Web UI
  - Tablet UI
  - Voice Enabled
- Most common approach in the industry for interfacing with other applications
- Lucity can use a lot of the same code for mobile as internal web
- Stateless and thus more scalable

eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ii1xQWZWckg3Zno5VHliRGV3Mmw1Wj10WUtvNCIsImtpZCI6Ii1xQWZWckg3Zno5VHliRGV3Mmw1Wj10WUtvNCJ9.eyJjbGllbnRfaWQiOiJsdWNpdHlpbmRlcm5hbHd1YmFwcCI6InNjb3BlIjoibHVjaXR5Iiwic3ViIjoibmF1dGhfdGltZSI6MTQ1ODU2OTkwNiwiawRwIjoiaWRzcnYiLCJ0ZW1wb3JhcnlfYWxpYXMiOiJmZmE3YWIyM0wZGYxLTQ0ZmUtYmQxNy0xMjFmYU5Yjg4OTIiLCJpc3MiOiJodHRwOi8vbGN0LXcyMDA4c2JtMDEvTHVjaXR5SWRlbnRpdHlTZXJ2ZXIxN1IyL2NvcuUiLCJhdWQiOiJodHRwOi8vbGN0LXcyMDA4c2JtMDEvTHVjaXR5SWRlbnRpdHlTZXJ2ZXIxN1IyL2NvcuUvcuVzY2YyVzIiwiaXhwaWJ0eXNDU4NjA1OTA2LCJuYmYiOiJ0NTg1Njk5MDZ9.djDynJaokB\_1qwlPTs4\_v-MkrLV\_92MPx0iFEbCdM6fvPdP6iBZeiIinNT5UiUDSreJRl0FjgFau1U4sI6kxZKxmhqtX0v5KgUmQV3j5DNePaZWJqKvnE8-3y3dc9-QQWLZmXeZmZQQM0RG-lsUzo971BdIr7z9BcNEIF22PcXIWeDTWQZEpuqtY0pP5zIf4FjK4364YT5EdXA4otiHyWacBg1srVTiNMEyB3gBgBDPRWftfjhwhZrYfxxunDkS32SMVebYPQHZQyH2-UqKq0tp9eEMSGHX05thKby1QXt0nh4JBVbiz6ySYP721d-mRWn0BkXuqL0aVL0KARZjg

```
{
  "typ": "JWT",
  "alg": "RS256",
  "x5t": "-qAfVrH7fz9TybDew2l5Z9NYKo4",
  "kid": "-qAfVrH7fz9TybDew2l5Z9NYKo4"
}
```

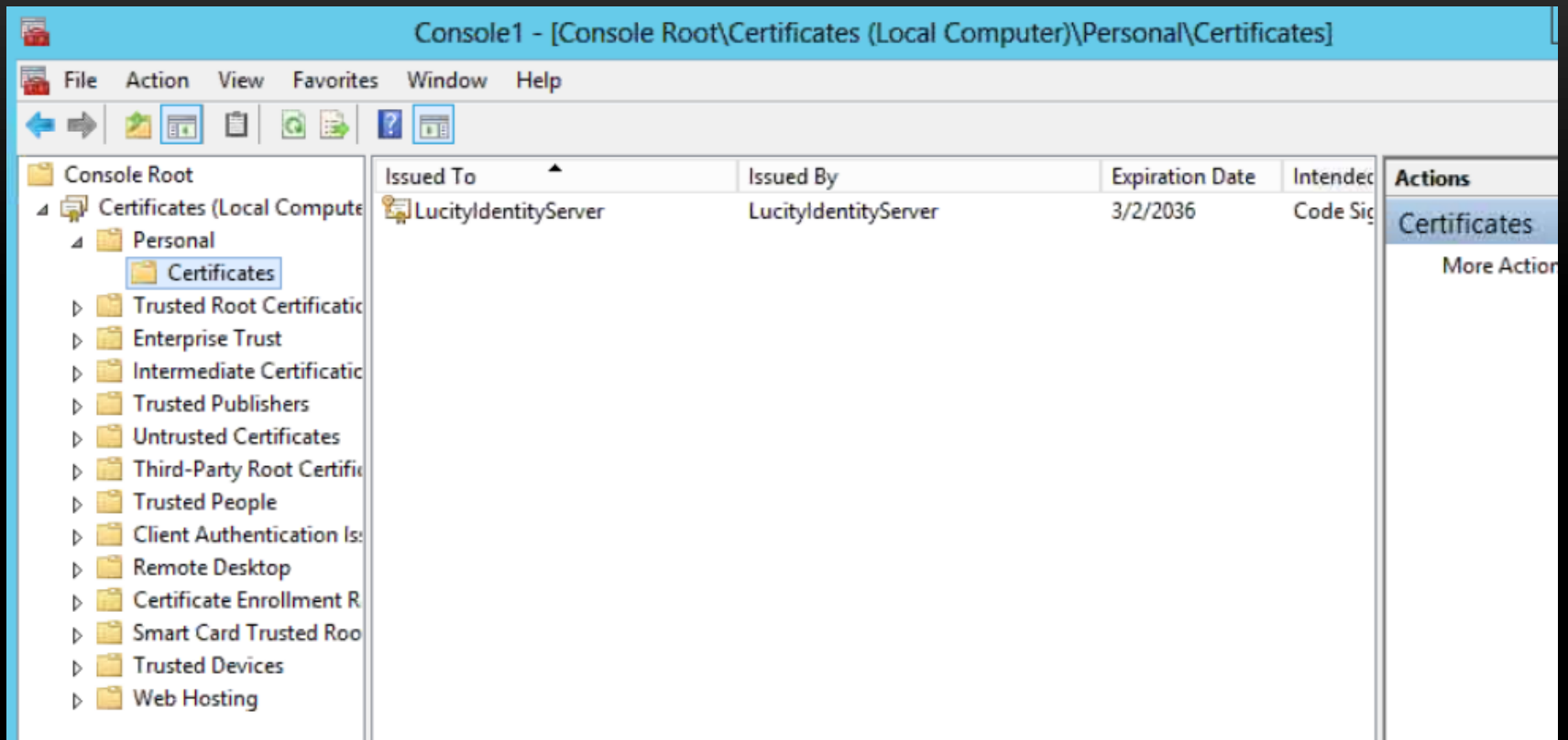
```
{
  "client_id": "lucidityinternalwebapp",
  "scope": "lucity",
  "sub": "307",
  "amr": [
    "password"
  ],
  "auth_time": 1458569906,
  "idp": "idsrv",
  "temporary_alias": "ffa7ab20-0df1-44fe-bd17-121fbe9b8892",
  "iss": "http://lct-w2008r2-
01/LucidityIdentityServer16R2/core",
  "aud": "http://lct-w2008r2-
01/LucidityIdentityServer16R2/core/resources",
  "exp": 1458605906,
  "nbf": 1458569906
}
```

```
RSASHA256(
    base64UrlEncode(header) + "." +
    base64UrlEncode(payload),
    Public Key or Certificate.
```

# TOKEN VALIDATION IN REST API

- First time the token is seen by the REST API:
  - Is this client\_id allowed to use this REST API?
  - Is this scope allowed to access this specific REST endpoint?
  - Is this token within its valid start and end times?
  - Is the temporary\_alias linked to this user valid and is the user valid?
  - Do the contents of this token match their original hashed value by the Identity Server that encrypted them?
  - Cache token for 15 minutes
- Subsequent
  - If token is in cache, accept it





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## System Settings

Mobile	REST API	SaaS	Security	Security - Passwords	Settings with custom interface	TimeSheet	Web Performance	Web Site
Appearance	Designer Automation	Documents	Email	General	GIS 3rd Party Integrations	GIS Desktop	GIS Edit Integration	GIS Routing

	Description	Value
	Number of Minutes before re-validating a token against Identity Server	15
	Number of Minutes until a token expires for Mobile Apps	600
	Number of Minutes until a token expires for the Internal Web App	600
	Secret value internal web apps need to authenticate users	100000
	Secret value mobile apps need to authenticate users	100000
▶	The name of the certificate used for signing tokens on the internal Identity Server	LucityIdentityServer
	The name of the certificate used for signing tokens on the mobile Identity Server	LucityIdentityServer
	URL to the Identity Server for the Internal Web App	http://lct-w2012-02/LucityIdentityServer
	URL to the Identity Server for the Mobile Apps	http://lct-w2012r2-01/LucityIdentityServer
	Use SSL for Internal Web App Security	FALSE
	Use SSL for Mobile App Security	FALSE

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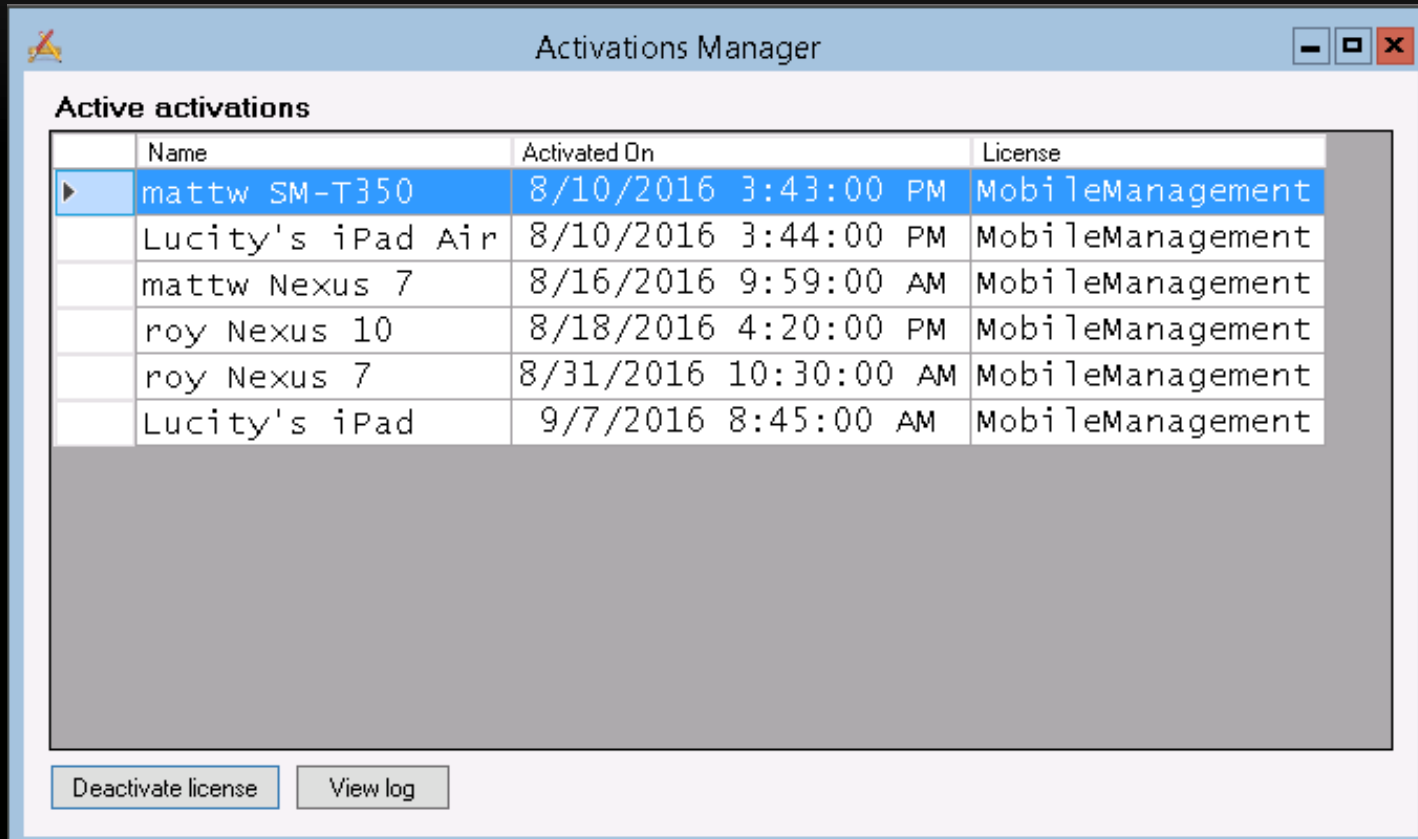
# REST APIS AND CLIENT APPS

- Four REST APIs
  - Mobile, Public (Citizen), REST API (3<sup>rd</sup> party), and Internal Web
- Client Apps (Clients of the REST APIs)
  - Lucity Internal Web
  - Lucity Citizen Web
  - Lucity Mobile Android
  - Lucity Mobile IOS
  - Lucity Warehouse App
  - Your custom apps (future)
- Client App Name is part of the JWT token

# MOBILE ACTIVATIONS 16+

- Activation Codes are no longer used
- If per device licensing is in use, activations are still tracked
- All activations were deleted with the 2016 upgrade
- New activations happen automatically and use a friendly device name
  - For Android this is the First user that logged in + the device model
  - For iOS this is the device label
- You can rename activations (this must be done from the device)
- Uninstalling the app will reset this rename

# MOBILE ACTIVATIONS 16+



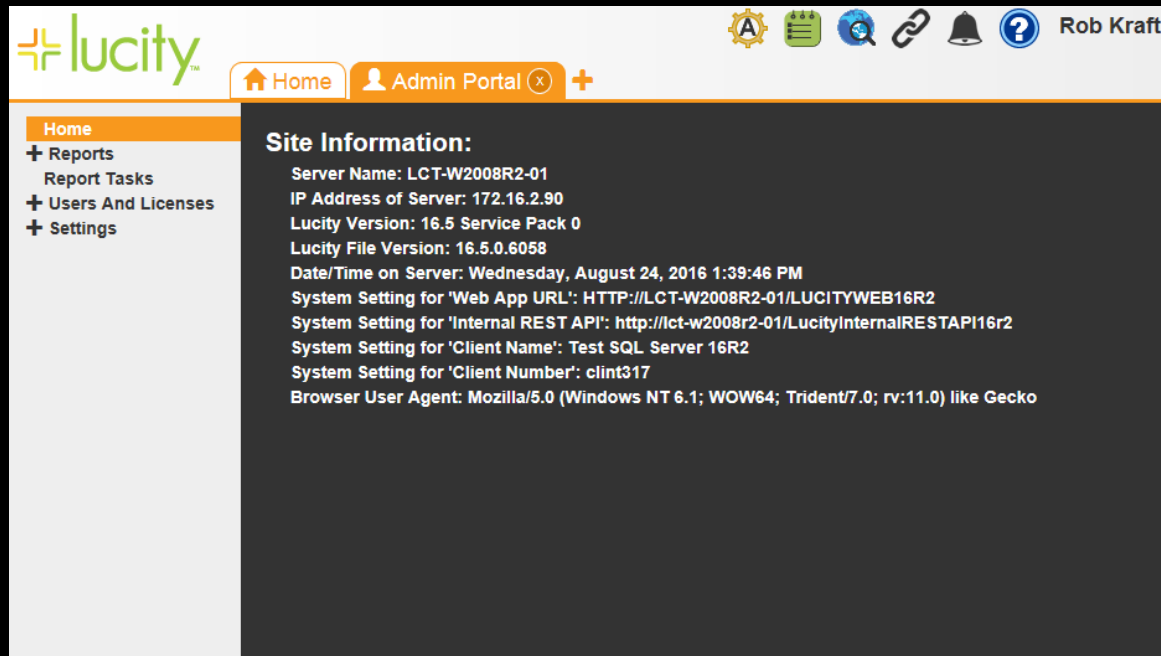
The screenshot shows a window titled "Activations Manager" with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there is a section labeled "Active activations" containing a table with three columns: "Name", "Activated On", and "License". The table lists six active devices, all with "MobileManagement" licenses. The first row, "mattw SM-T350", is highlighted in blue. Below the table, there are two buttons: "Deactivate license" and "View log".

Name	Activated On	License
mattw SM-T350	8/10/2016 3:43:00 PM	MobileManagement
Lucity's iPad Air	8/10/2016 3:44:00 PM	MobileManagement
mattw Nexus 7	8/16/2016 9:59:00 AM	MobileManagement
roy Nexus 10	8/18/2016 4:20:00 PM	MobileManagement
roy Nexus 7	8/31/2016 10:30:00 AM	MobileManagement
Lucity's iPad	9/7/2016 8:45:00 AM	MobileManagement

Deactivate license View log

# ADMIN PORTAL

- Added in the Lucy 2016r2 release



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# ADMIN PORTAL DEMO

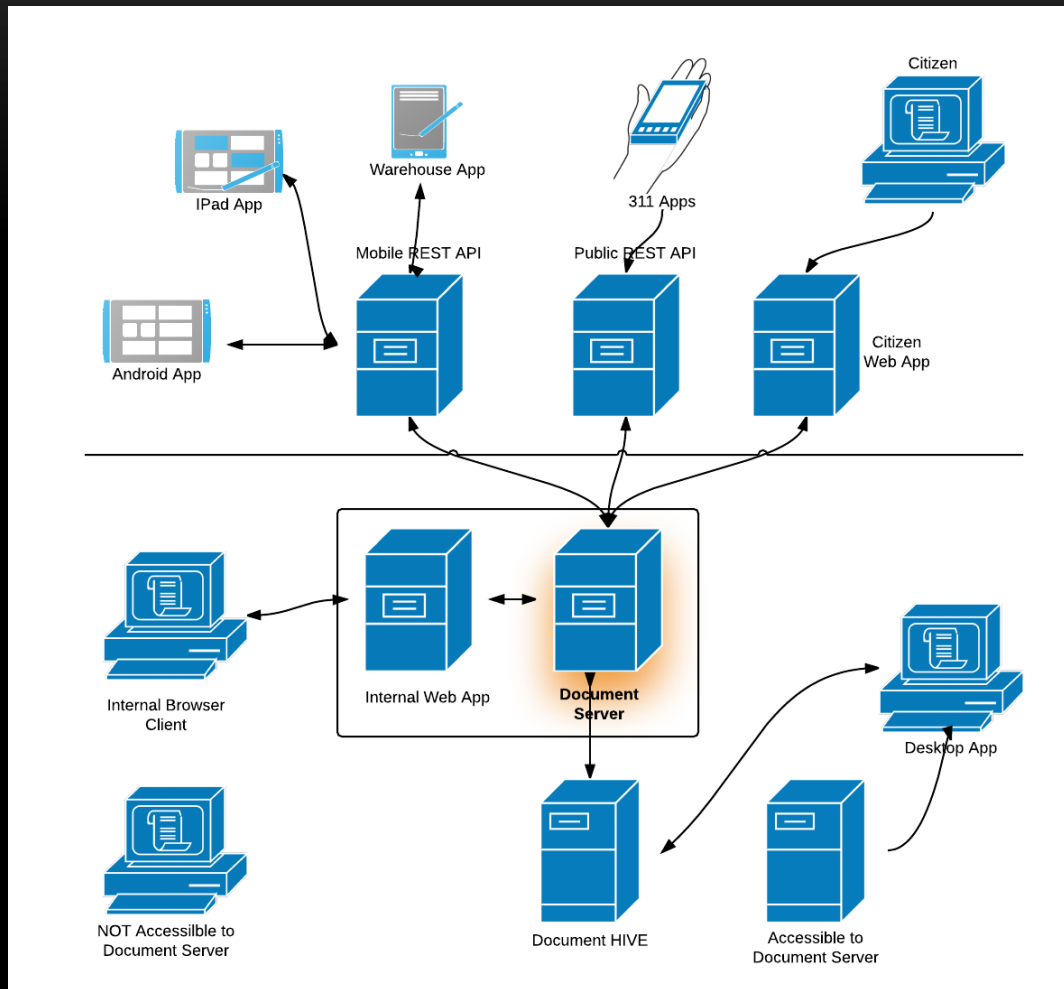
- Reports
- Security Tokens
- Client Licenses
- User License Manager
  - Search
  - Licenses in Use
- System Settings
  - Search
  - Long Descriptions

# DOCUMENTS HISTORY

- In the desktop app, when a document is “added” to an asset, Lucy.exe does not touch the document file, it just adds a record in an xxDoc table in the database and stores the path to the file.
- In the web app, users can “upload” files, which adds a record in the xxDoc table in the database, and also copies the file through the web app to a designated “document hive” by the Document Server.
- The web app also has the ability to “add” files instead of uploading them. Users can choose to just provide the path to a file without “uploading” it.
- Only files accessible to the Document Server are available to all platforms (Internal Web, Desktop, and Mobile devices).



# DOCUMENT SERVER DIAGRAM



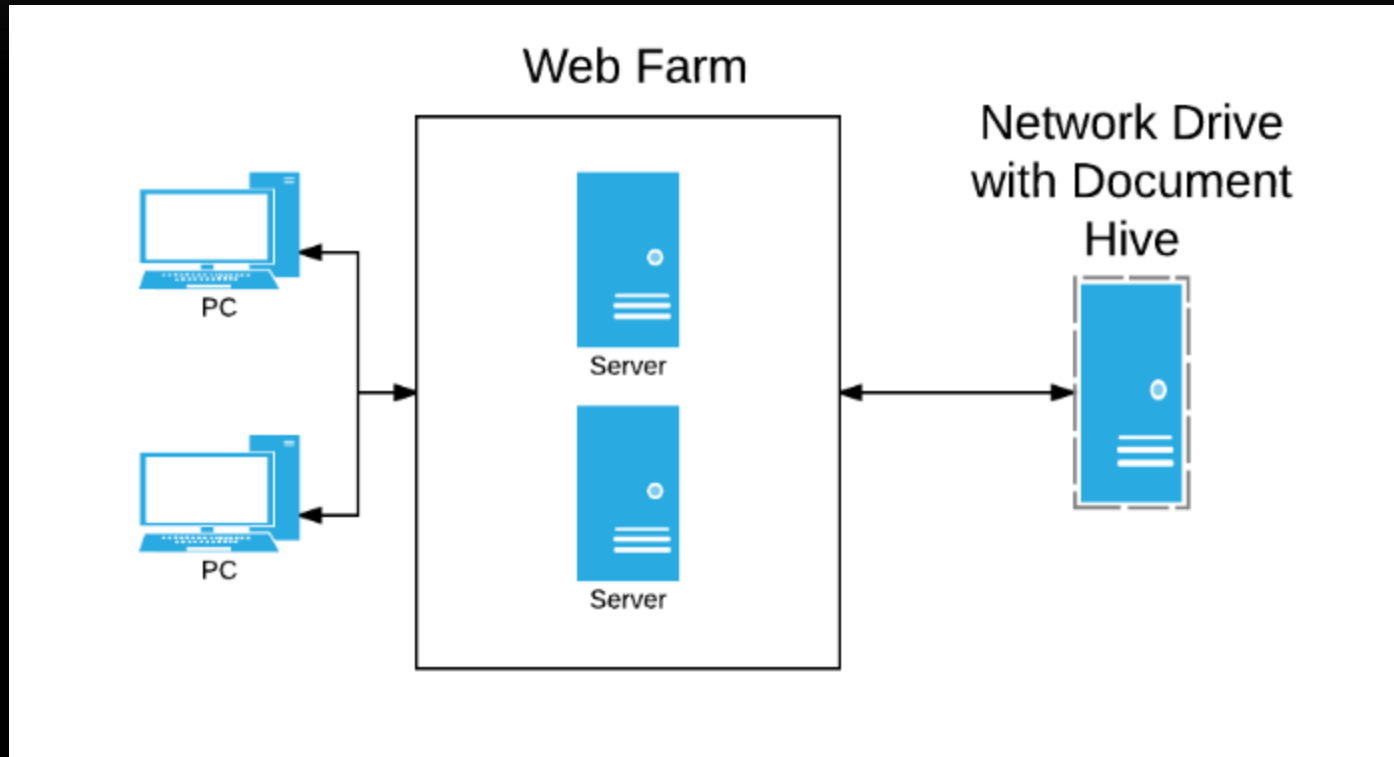
# DOCUMENT SERVER

- The Document Server is a web app that allows us to share documents between the desktop, web, and mobile devices
- Most installations run the Document Server on the same IIS as the Internal Web App
- Lucity 2015 - used to manage Report (.rpt) files
- Lucity 2015 - used to move attachments for emails
- Lucity 2016R2 – used to manage sign library files
- The Document Server must be accessible to Internal Web, Citizen Web, and REST APIs so that they can all access the same documents
- Files “Added” to Lucity aren’t shared across platforms. Files “Uploaded” to Lucity ARE shared across platforms.

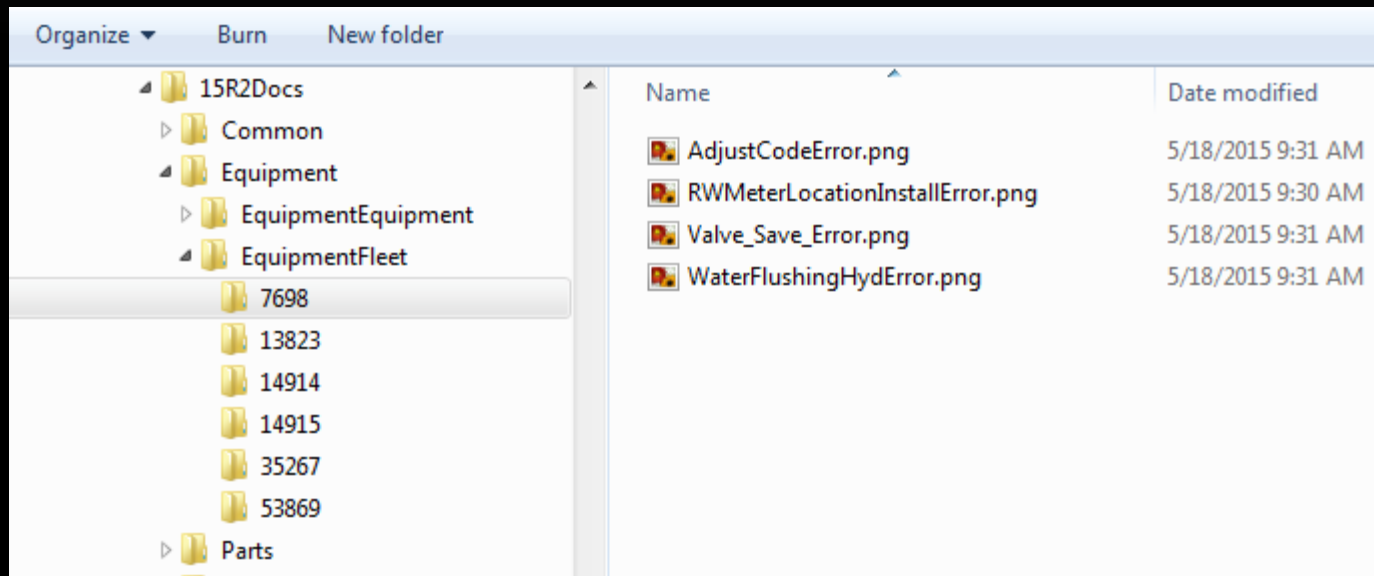
# DOCUMENT SERVER TERMS

- Document Server
  - The Web App running in IIS
- Document Server Hive
  - A UNC path where the documents reside
- Shares Accessible to Document Server
  - Shares other than the Document Server Hive that the Document Server can access
    - Notice the different Document Server App Pool
- Locations/Shares Not Accessible to Document Server
  - Files on another network, on local C:\ drives, etc.

# DOCUMENT HIVES



# A DOCUMENT SERVER HIVE



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# DOCUMENT LIST DIALOG

Documents

Documents (2)

Links (0)

^ Description ↓	File Name	File Size (KB)	Copy to WO
A bus stop picture I ADDED	BusStop1.jpg		false
A bus stop picture I UPLOADED	Q5.png	69	false

Add Document

Upload Document

Open

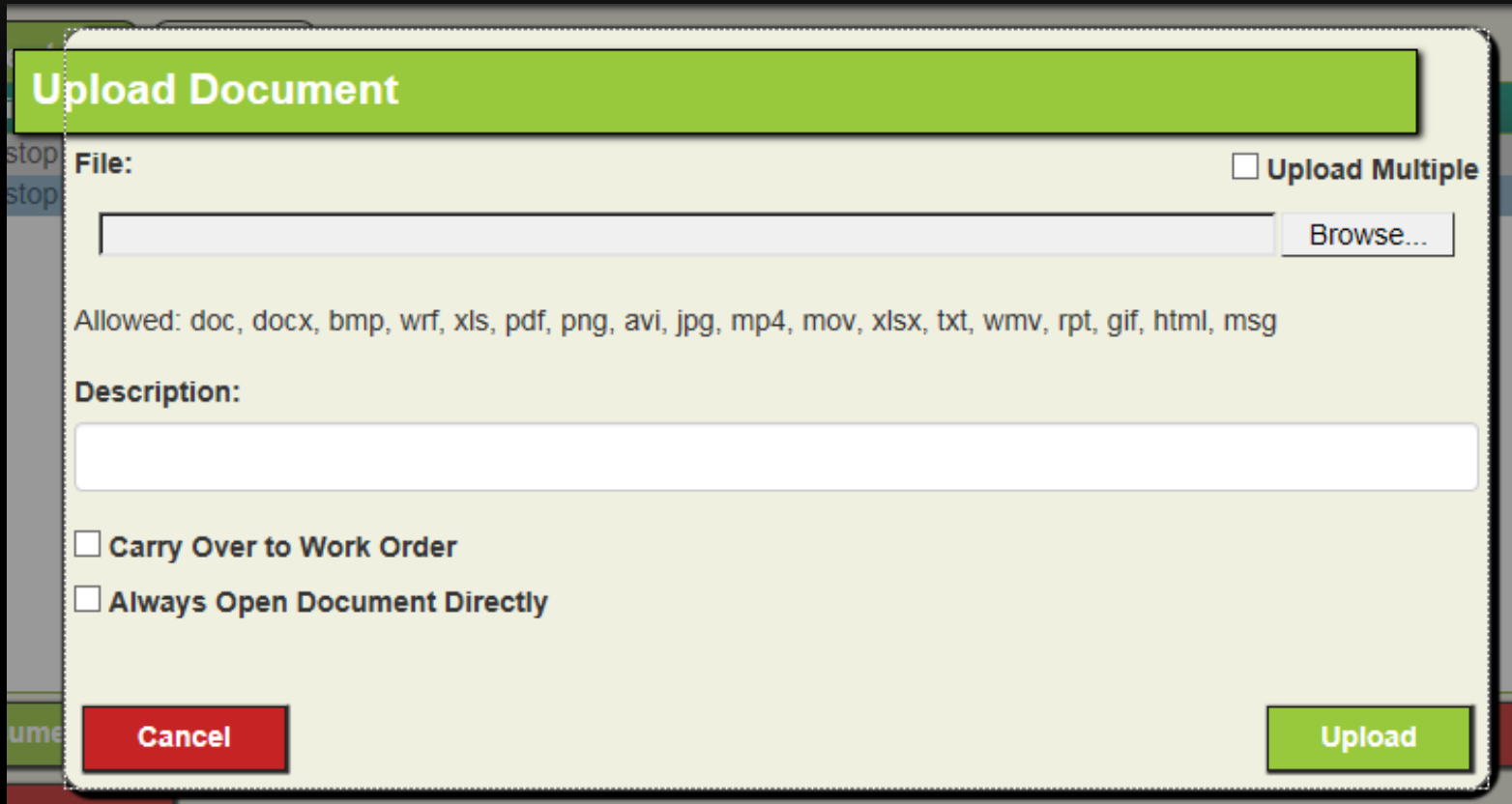
Information

Edit

Delete

Close

# DOCUMENT UPLOAD DIALOG



The image shows a software dialog box titled "Upload Document" with a green header bar. The dialog has a light beige background and a thin black border. It contains the following elements:

- Title Bar:** A green bar at the top with the text "Upload Document" in white.
- File Section:**
  - Label: "File:"
  - Input field: A white text box for the file path.
  - Button: A "Browse..." button to the right of the input field.
  - Checkbox: An unchecked checkbox labeled "Upload Multiple" in the top right corner.
- Allowed File Types:** A line of text below the input field listing supported formats: "Allowed: doc, docx, bmp, wrf, xls, pdf, png, avi, jpg, mp4, mov, xlsx, txt, wmv, rpt, gif, html, msg".
- Description Section:**
  - Label: "Description:"
  - Input field: A large white text box for the document description.
- Options Section:**
  - Checkbox: An unchecked checkbox labeled "Carry Over to Work Order".
  - Checkbox: An unchecked checkbox labeled "Always Open Document Directly".
- Buttons:** At the bottom, there are two buttons: a red "Cancel" button on the left and a green "Upload" button on the right.

# DOCUMENTS SYSTEM SETTINGS

Documents <span>▼</span>	
Setting Description	Setting Value
Always Delete file when document references are deleted if no other items reference file	FALSE
Documents with file size greater than given size, are opened using file path.	500
Enable External Document Integration	FALSE
List of document types that are allowed to be added to records (white list)	doc,docx,bmp,wrf,xls,pdf,png,avi,jpg,mp4,mov,xlsx,txt
List of document types that are allowed to be uploaded by citizens	gif,png,bmp,wrf,pdf,jpg,avi
List of document types that are not allowed to be added to records (black list)	exe,com,dll,ocx,bat,reg,tmp,dat,scr,bak,acl,acm,cpl,ax,
Maximum size for uploaded document in mb (Citizen)	2
Maximum size for uploaded document in mb (Internal)	2
Path where uploaded documents are stored (Citizen) (Citizen Document Hive)	\\lct-fs-01\q\group\rkraft\web\17Test
Path where uploaded documents are stored (Internal) (Document Hive)	\\lct-fs-01\q\group\rkraft\web\17Docs
Path where uploaded Sign Library images are stored	\\lct-fs-01\q\group\rkraft\web\17SignLib\
URL of Document Server	http://LCT-W2008R2-01/LucyDocumentServer17/



# DOCUMENT PERMISSIONS

- Per Module Permissions:
  - Documents – Add
    - In the desktop, allows “Add”. “Upload” is not an option in the desktop.
    - In the web, allows “Upload”, but does not allow “Add”
  - Documents – Delete
  - Documents – Delete File
- Application Level Permission, under “Lucity Apps, Lucity Web”
  - Documents – Add Without Upload
- **Lucity encourages UPLOADING and discourages ADDING!**

# DOCUMENT SERVER ORPHANS

- A report is emailed each week to the email address(es) configured on the “List of email addresses for system health notifications” System Setting.

**Subject:** Weekly Orphaned DocumentServer Digest

## This email was generated by Lucy

The following files were found on the DocumentServer but do not have a corresponding record in any of the Document records:

[\\gbams-net-02\q\group\rkraft\web\15R2Docs\Equipment\EquipmentEquipment\5452\Scheduler.txt](#)  
[\\gbams-net-02\q\group\rkraft\web\15R2Docs\Work\WorkRequest\22647\rivers2mountains.jpg](#)  
[\\gbams-net-02\q\group\rkraft\web\15R2Docs\Work\WorkRequest\22647\Tulips.jpg](#)  
[\\gbams-net-02\q\group\rkraft\web\15R2Docs\Work\WorkWorkOrder\6761\Koala.jpg](#)  
[\\gbams-net-02\q\group\rkraft\web\15R2Docs\Work\WorkWorkOrder\8129\1280X800\\_03.jpg](#)  
[\\gbams-net-02\q\group\rkraft\web\15R2Docs\Work\WorkWorkOrder\8132\07 - Conquest.jpg](#)

This email came from an automated system. Do not reply to this email.

# SIGN LIBRARY

- Lucity 2016R2
  - New Tool in Street Sign MUTCD Library to manage custom signs
  - Signs provided by Lucity are separated from your custom signs
  - Custom signs are managed by Document Server and stored in a Sign Library hive
  - Demo

# EXTERNAL DOCUMENTS 2016

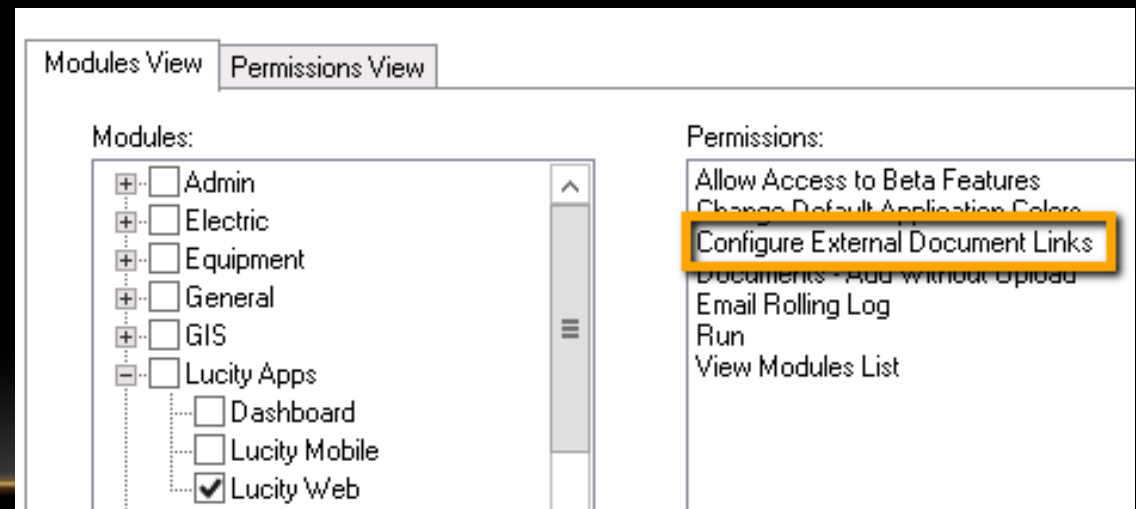
- These are module specific links
- Useful for linking to external document systems which have an identifier in the url which can be extracted from a Lucity record
- System Setting “Enable External Document Integration”

Documents ▼	
Setting Description	Setting Value
Always Delete file when document references are deleted if no other items reference file	FALSE
Documents with file size greater than given size, are opened using file path.	500
Enable External Document Integration	TRUE
List of document types that are allowed to be added to records (white list)	



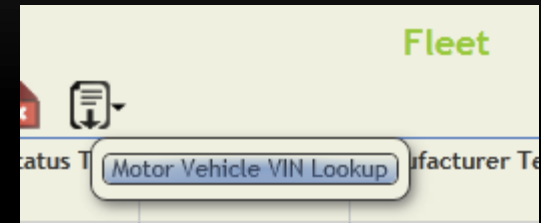
# EXTERNAL DOCUMENTS 2016

- Everyone who can view the module can view the links
- Configuring new links requires a permission in Lucy Apps>>Lucy Web called “Configure External Document Links”



# EXTERNAL DOCUMENTS 2016

- Every link is active and available for every record
- Use %%propertyname% in the url to automatically insert a value into the url.

A screenshot of a dialog box titled 'Edit External Document'. The dialog has a green header bar with the title. Below the header, there are two text input fields. The first field is labeled 'External Document URL:' and contains the text 'http://www.vindecoderz.com/EN/check-lookup/%%VIN%%'. The second field is labeled 'External Document Description:' and contains the text 'Motor Vehicle VIN Lookup'. At the bottom of the dialog, there are two buttons: a red 'Cancel' button on the left and a green 'Save' button on the right.

# REPORT FILE MANAGEMENT

- In Lucy 2015, we began managing the .rpt files using the Document Server to reduce the need for an IT Admin to be the middle man.
  - This also simplifies .rpt file management for web farms.
  - Reports can be managed just like documents that are uploaded

## 1. Identify the Reports Hive for the reports (.rpt files)

- This is a system setting that Document Server uses to read/write the files

Maximum size for uploaded document in mb (Int...	2
Path where Reports are stored (Reports Hive)	\\gbams-net-02\q\group\rkraft\web\16Reports\

## 2. The Lucy 2015 upgrade sets the Reports Hive to be the folder where your custom .rpt files already exist.

- C:\InetPub\wwwroot\LucyWeb\Reports\

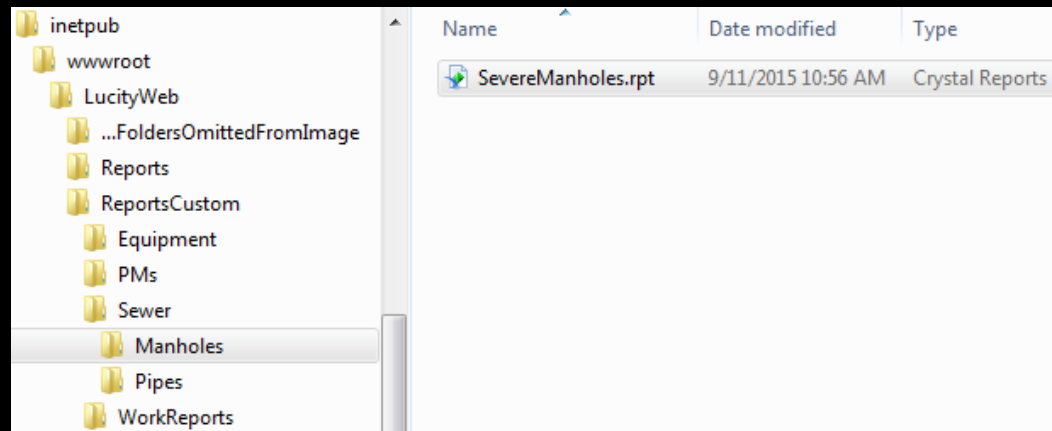
Path where Reports are stored (Reports Hive)	c:\inetpub\wwwroot\LucyWeb\Reports\
----------------------------------------------	-------------------------------------

- This allowed custom reports in the web app to keep working. Except for the fact that we had a bug. We fixed the bug in 15.0SP1.

## 3. Lucy recommends that the Reports Hive be moved to a network share to make it easier to re-install the Lucy Web App, and easier to separate/identify custom reports, and potentially to make the Reports Hive network accessible to users.

# EXECUTION OF CRYSTAL REPORTS

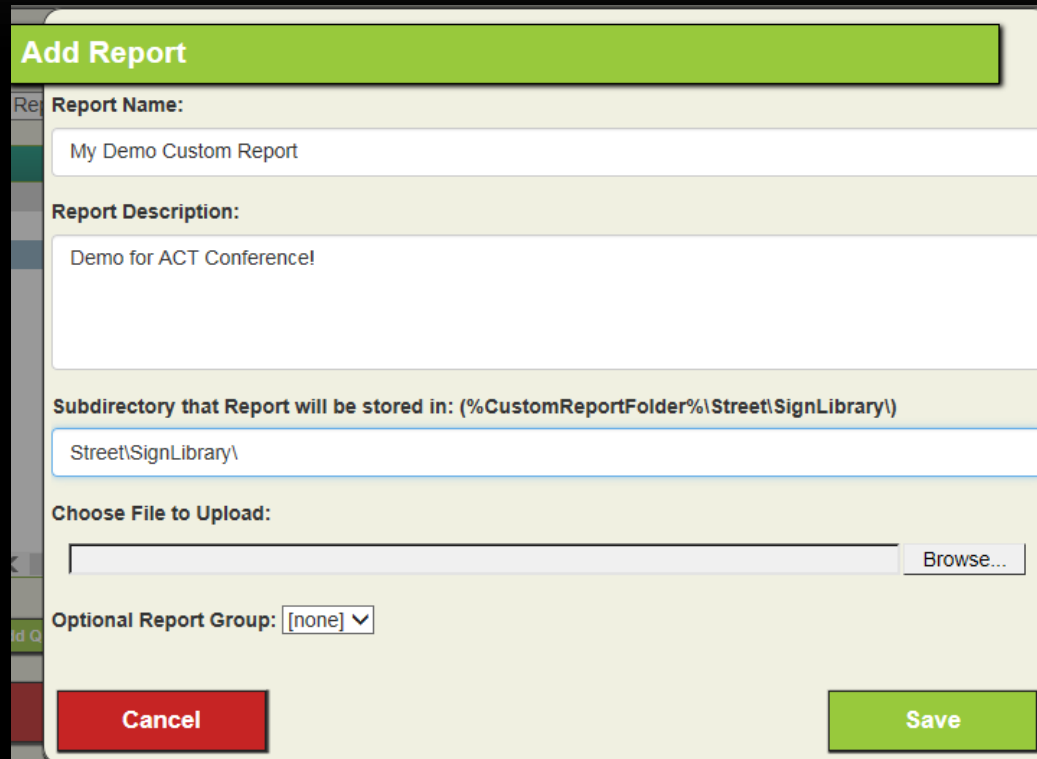
- Your Reports Hive eventually should be on a network share, but our web app needs the .rpt files to be local to run them.
  - Therefore we have a process to copy all the custom .rpt files from the Reports Hive to the LucyWeb server in a new folder named \ReportsCustom files needed to run the reports
  - This process makes it easier to manage .rpt files in web farms too





# REPORT FILE PROCESS – 1 OF 3

- User uploads an .rpt file through the web interface

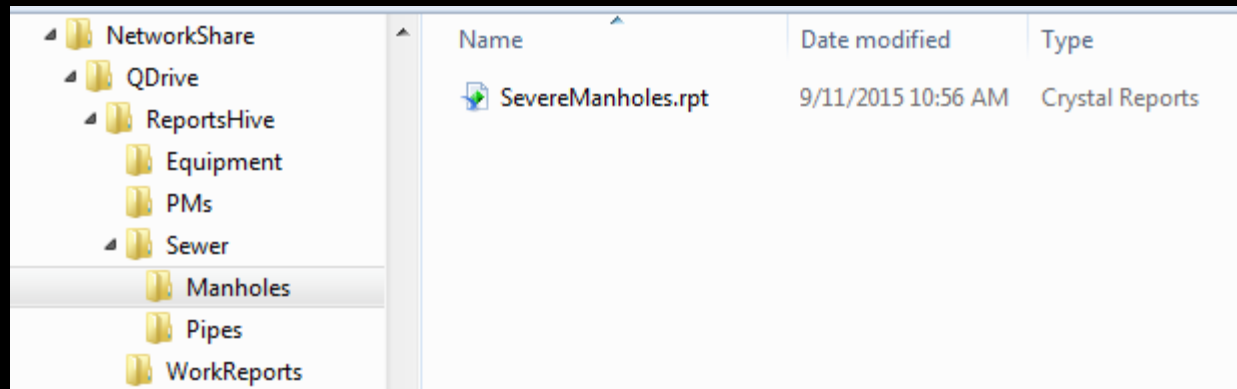


The screenshot shows a web interface titled "Add Report" with a green header bar. The form contains the following fields and controls:

- Report Name:** A text input field containing "My Demo Custom Report".
- Report Description:** A larger text area containing "Demo for ACT Conference!".
- Subdirectory that Report will be stored in: (%CustomReportFolder%\Street\SignLibrary\)**: A text input field containing "Street\SignLibrary\".
- Choose File to Upload:**: A text input field with a "Browse..." button to its right.
- Optional Report Group:**: A dropdown menu currently showing "[none]" with a downward arrow.
- Buttons:** A red "Cancel" button and a green "Save" button at the bottom right.

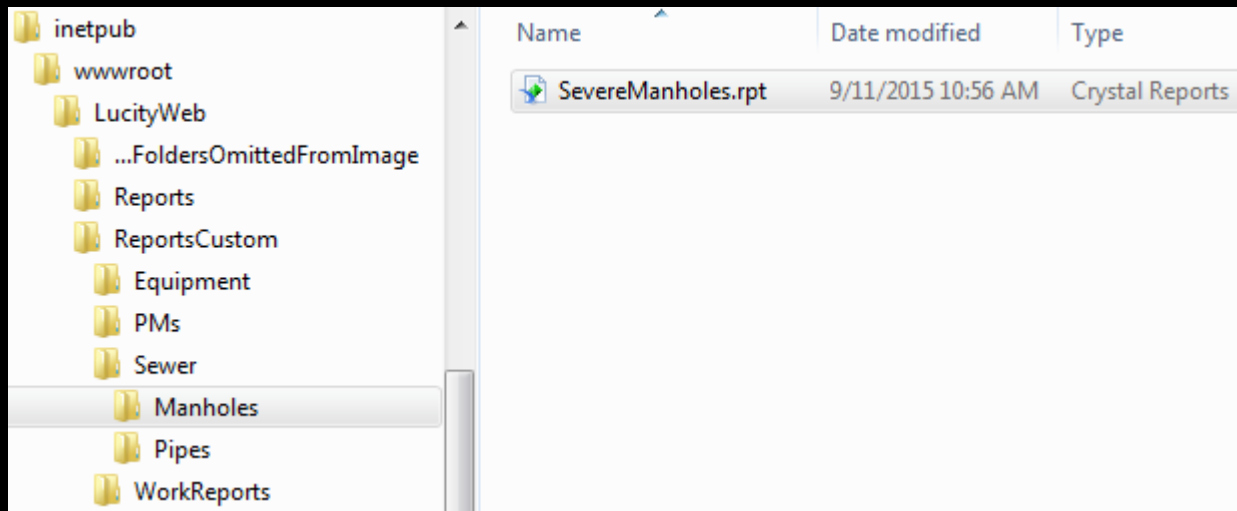
# REPORT FILE PROCESS – 2 OF 3

- The Document Server stores the .rpt file in the Reports Hive



# REPORT FILE PROCESS – 3 OF 3

- Web Task Runner on each IIS Server downloads the .rpt file to the folder it will run the report from, which is  
...\\wwwroot\\LucityWeb\\ReportsCustom



# DOWNLOADING AND UPDATING REPORTS

- You can replace an existing .rpt file with the update button.
- In Lucity 2016 we added an option to download any .rpt file from the web app so that your Crystal Report writers can easily use an existing report as the starting point for a new report.



# CRYSTAL REPORT TYPES

- Two options for rendering Crystal Reports in the web app
  - “Basic View” - PDF
  - “Advanced View” - HTML
- Basic Reports are rendered as a single PDF with a maximum number of pages (controlled by a System Setting)
  - Setting this too high can have severe performance impacts
- Advanced Reports show one page at a time, you can navigate, change parameter values, and export to CSV or other formats.
- “Crystal in the Web” Session Today at 1pm

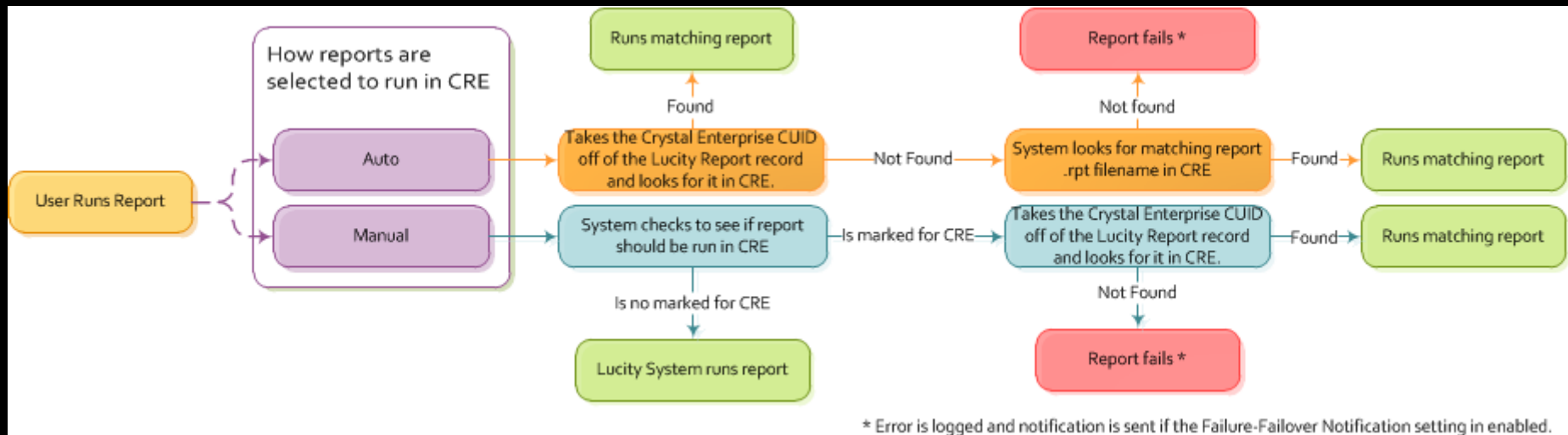
# CRYSTAL REPORTS PERFORMANCE

- Reports utilize memory per report (including subreports)
- Depending on how reports are opened (and closed) the underlying report does not always get closed on the server
- Lucity 2016r2 automatically disposes reports more than 5 minutes old for the current user when they run a new report
- If this is not sufficient this setting closes all reports immediately but requires extra processing time on the server to go to the next page because it must be reloaded every time.

Reporting	
Setting Description	Setting Value
Close reports immediately to avoid max processing limit errors (may slow report generat	FALSE
Create Bookmarks From Group Tree	FALSE
Get Custom Crystal Reports on Web App Startup	TRUE
Path where Reports are stored (Reports Hive)	D:\Lucity\CustomReports
Suppress Subtitles On Dashboard Reports	FALSE
Suppress Subtitles On View Reports	FALSE

# CRYSTAL REPORTS ENTERPRISE CRE

- You will need to create a folder and copy Lucy reports to the CRE server and you must add the report as a managed report in CRE. We do not do this for you automatically.
- We have processes that will automatically link a report in Lucy to a Managed report in CRE. We do this based on the file name of the report (.rpt)



# LUCITY SCHEDULER

- This is NOT the Work Orders Scheduler
- This is a Windows Service that Launches .EXEs
  - Executes programs every n minutes on a schedule
  - Executes ad-hoc tasks queued up by users
  - Executes tasks on a daily schedule



# LUCITY SCHEDULER

- Create Requests from Emails (1/minute) – Lucity 2014
  - Lucity.GenerateRequests.exe
- GIS SpatialUpdate (5/minute) – Lucity 2014
  - Lucity.SpatialUpdater.exe
- GIS Task Runner (1/minute) – Lucity 2014R2
  - Lucity.GISTaskRunner.exe
- SendEmails from EmailQueue (replaces C++) (1/minute) Lucity 2014R2
  - Lucity.SendMail.exe

# CAN SKIP SOME CLIENTS

LucityMain.ini lists clients available

LucityServices.ini

[INFO]

STR:CLIENTSTOSKIP=Clint022,clint018

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# LUCITY SCHEDULER TASK RUNNER

- Lucity 2015R2
  - Task Runner executes tasks queued up in Lucity Task Scheduler (LTasks table)
    - Street Models
    - Update Last Inspection Date in two Street Tools
    - Checks every 5 minutes (7am to 5pm), or every 120 minutes based on LWorkingHours table.
    - Disable checking by deleting records from LWorkingHours table
- Future releases
  - Other tools that take a long time to run
  - Possibly generate PDF reports and email them

# LUCITY SCHEDULER DAILY

- Lucity 2016 Release
  - Lucity Scheduler runs tasks at specific times:
    - PM WorkOrder Generator re-written and replaced with a .Net Version
    - NightlyTasks (currently started by PM WorkOrder Generator in Lucity 2014R2, Lucity 2015, and Lucity 2015R2)
      - Purges data from tables, etc. – details on next slide
    - Equipment and Fleet Calculations
    - Construction Calculations

# NIGHTLY TASKS

- At 2AM daily
- Easy for Lucity to add new Custom Tasks mid-release
  - Email of Orphaned Documents (Once a week)
  - Email for Parts Reconciliation
  - Parts Reorder
  - Request Notifications
  - Work Order Notifications
  - Street Index
  - Pavement Field Update Inspection Flag
  - Mobile Cache Schedule
  - Pull Customer Stats to send to Lucity (Once a month)
  - Subset Cleanup
  - Delete orphaned resources, comments, etc

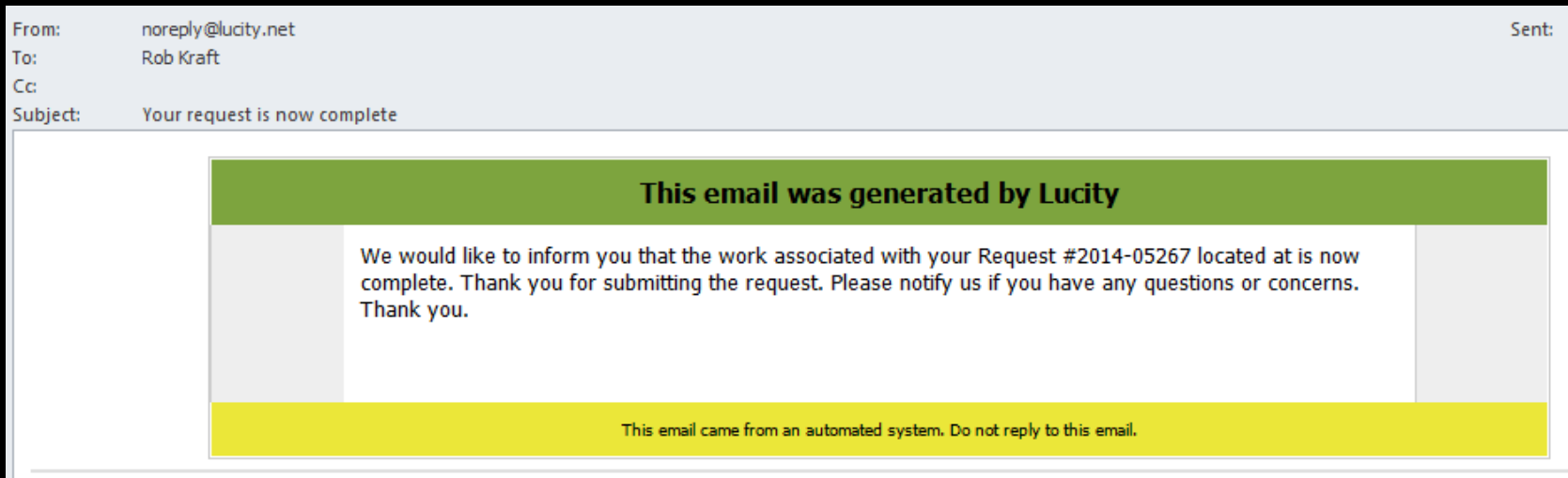
# LUCITY WEB TASK RUNNER

- Lucity 2015 Web Apps added Web Task Runner
  - Each web app checks LTasks table every minute for tasks
    - Clear Caches
    - Restart Web App
    - Send Rolling Logs
    - Download Custom Crystal Reports

# SEND EMAILS

- Allows HTML Formatted Emails
  - You can put simple HTML tags in notifications
- Allows TLS and Passwords
  - Email host does not need to be an open relay
  - Email host can be safely off-premise
  - Requires configuring the email password on the same machine the services runs on

# EXAMPLE OF AN EMAIL NOTIFICATION

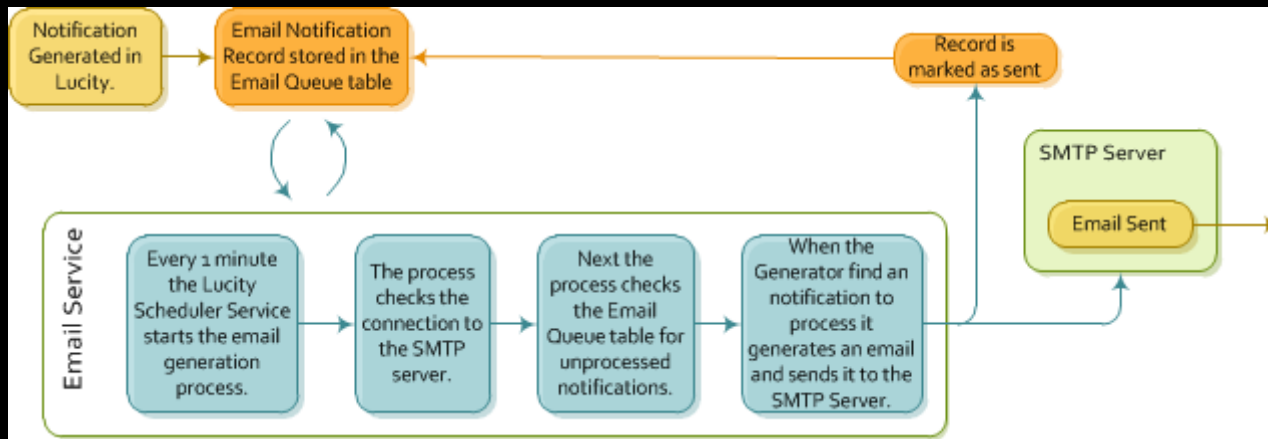


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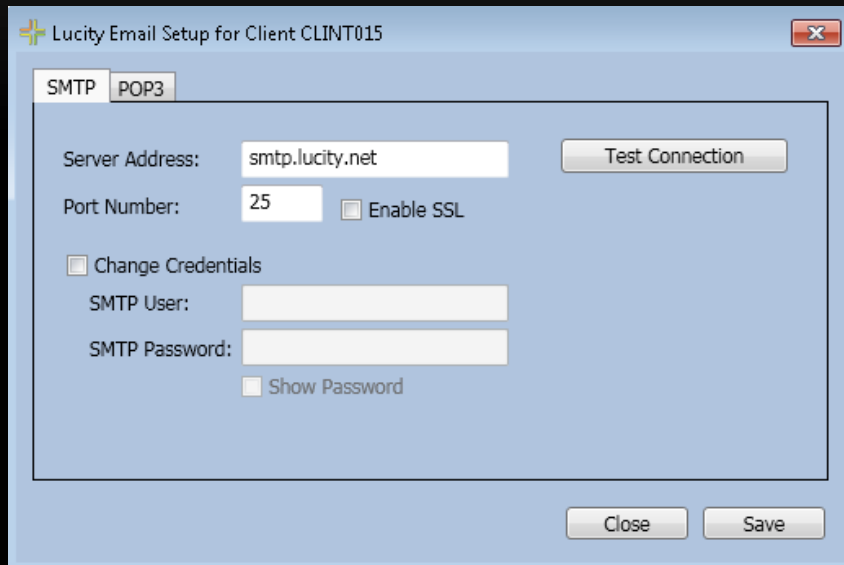
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# DIAGRAM OF EMAIL PROCESSING



# PICTURES OF EMAIL SETUP



Lucy Email Setup for Client CLINT015

SMTP POP3

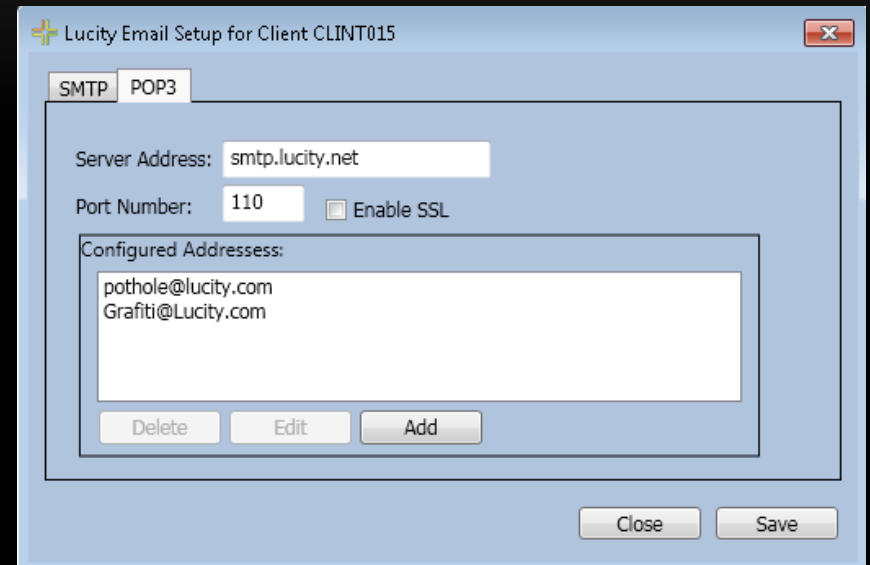
Server Address:

Port Number:  ☐ Enable SSL

☐ Change Credentials

SMTP User:

SMTP Password:  ☐ Show Password



Lucy Email Setup for Client CLINT015

SMTP POP3

Server Address:

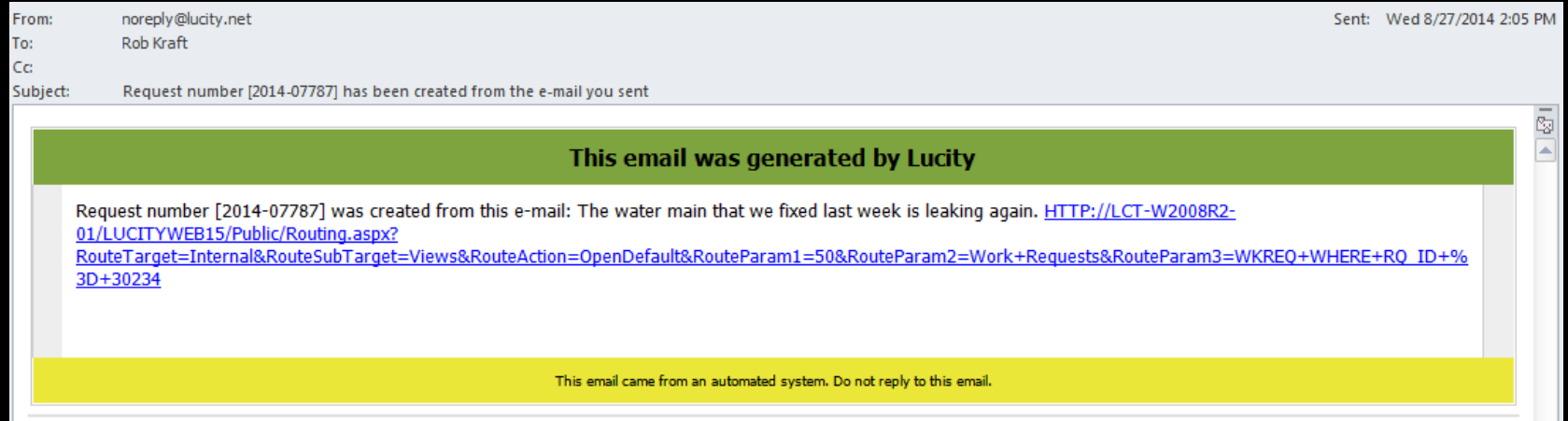
Port Number:  ☐ Enable SSL

Configured Addressess:

# GENERATE REQUESTS FROM EMAILS

- Users can send an email to an email address you create and Lucity will create a Work Request from the email.
- Users can reply to the response emails from the server to add comments
- A default Problem Code can be assigned to each configured email address

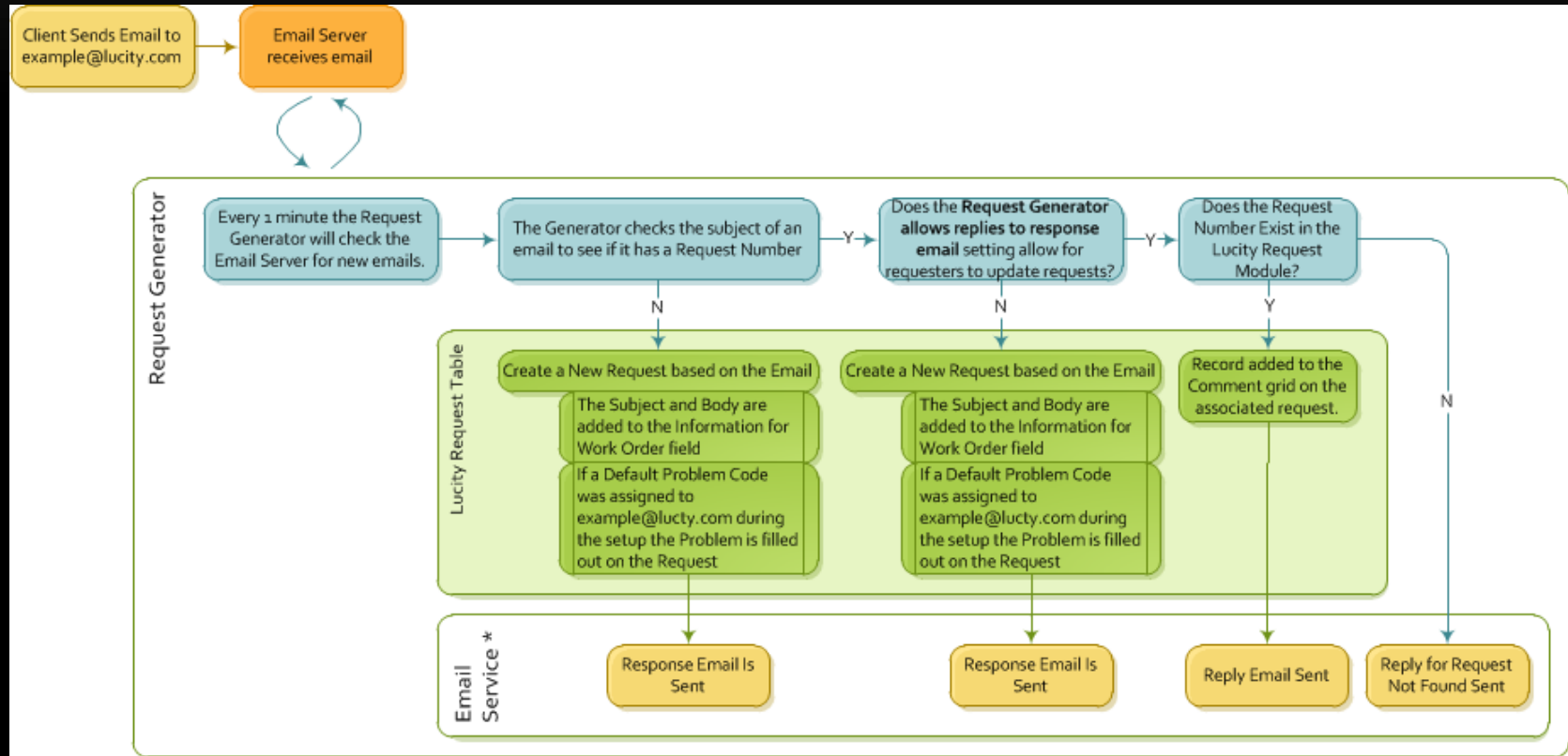
# REQUEST GENERATED FROM EMAIL



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# REQUEST FROM EMAIL PROCESS



<http://help.lucity.com/webhelp/v145/services/index.htm#30111.htm>

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# GENERATE REQUEST FROM EMAIL STEPS

1. Set up an email account in Exchange (or other email system)
2. Configure Lucy to use that email account
  - Lucy.EmailSetup.exe
3. Scheduler Service must be running

# DATA QUALITY SERVICES (DQS)

- Stand-Alone program you can use to find data that might be incorrect in your system
- Requires “Admin/Data Quality/Run” permission
  - You can click a button to see the records in the web app in many cases
  - SQL Queries are stored in XML files in the data subfolder.
  - We add more queries to the program each release.
- The program has a “Fix it” button for some data

# DATA QUALITY SERVICES - EXAMPLES

- Equipment
  - Duplicate Descriptions in Pick Lists
  - Facility Building – Missing Street Names (Launch)
- Sewer
  - “Run all” sewer errors group
  - Show active pipes w/o...,
  - Invalid Pipe Upstream Structure (Launch)



# DATA QUALITY SERVICES – EXAMPLES IN WORK

- Invalid Work Order Tasks
- Categories not used
- Orphaned Resources
- Problems with invalid default supervisors
- Problems with inactive default supervisors
- Problems associated to categories that have default supervisors not associated to the same category
- Work Flow Setup Items with a Default Supervisor that no longer exists
- Crews with Inactive Employees

# DATA QUALITY SERVICES - FIXIT

- In Lucity 2015R2 we added a “Fix It” button to DQS to easily correct the data in some cases.
- Example: Last Inspection Date in Equipment is not the Last Inspection Date from Inspections

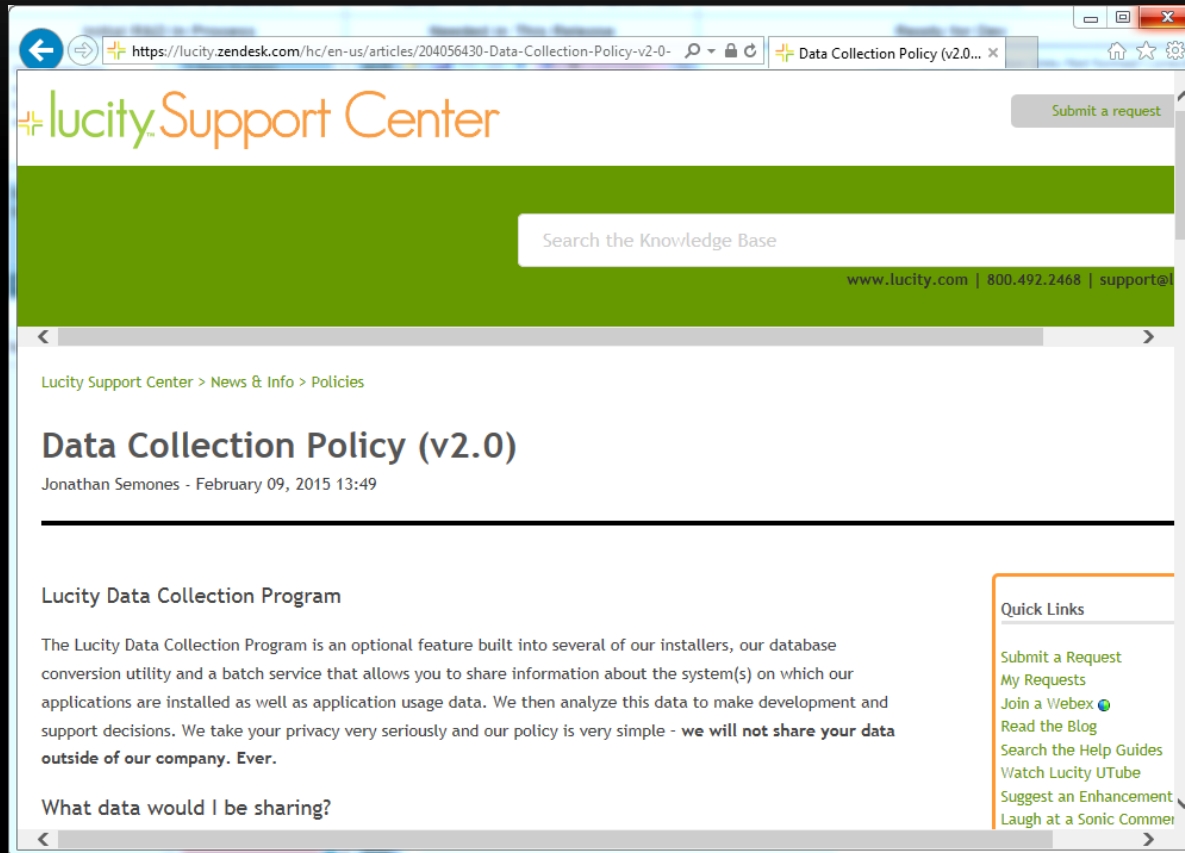
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# CLIENT SUPPORT DATA COLLECTION

- Sends information to Lucy when you install Lucy software
  - Sends App Version, OS Version, DBMS Version
- Sends additional information to Lucy on the 1<sup>st</sup> of each month
  - Send System Settings
  - Send Option Settings (xxOption tables)
  - Send Count of Records per Module
- Lucy uses this info to make development decisions
- Also can contact clients that use certain modules a lot for input

# DETAILS ABOUT DATA COLLECTED



<https://lucity.zendesk.com/hc/en-us/articles/204056430-Data-Collection-Policy-v2-0->

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# PERMISSION NAME CHANGES

Lucity Apps, Lucity Web	
Run	Allowed to log in to Lucity Web
View Modules List	Allowed to use the Modules tab
Email Rolling Log	Allowed to Email Lucity Web Logs
Documents – Add without upload	Allowed to “Add” documents to a record without “uploading” the file
Change Default App Colors	Allowed to change the default application colors
Allow Access to Beta Features	In 2015, allowed to see the beta version of the 2015R2 dashboard. No use in 2015R2.

# PERMISSION NAME CHANGES

Lucity Apps, Dashboard	
Run	Not Used
General – Edit	Allowed to edit any dashboard
Edit Own Record	Allowed to edit own dashboard
Allowed to Configure Plugin with URL	Allowed to add/edit RSS Feed, and URL type plugins

# PERMISSION CHANGES - ROLES

- Lucity 2015R2 – Security Roles
  - Lucity IT Admin
    - Formerly “Admin”, “System Configuration”, “Run”
    - Some System Settings, Clear Caches, SMTP/POP3 Email Settings
  - Lucity App Admin
    - Formerly “Admin”, “System Configuration”, “Run”
    - Design Forms/Grids/Menus/Report Groups
    - Some System Settings, Clear Caches, POP3 Email Settings
    - Copy Filter to multiple people
    - Send Rolling Logs, Send Data Stats, Update App Colors
  - Security Admin
    - Managers Users and Groups in the Security.Exe

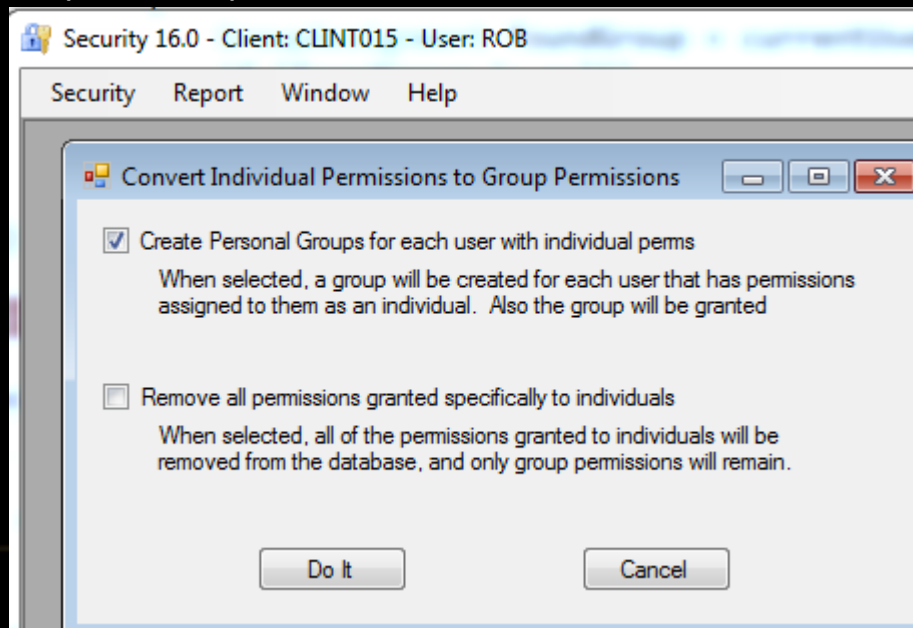
# PERMISSION TRACKING/FUTURE

- The “Lucity IT Admin” role cannot make permission changes,
  - except to make themselves Security Admin.
- “Security Admin” role cannot make themselves a “Lucity IT Admin”
- Lucity 2015R2 added logging of major permission changes:
  - When a person is added/removed from the “Lucity IT Admin”, “Lucity App Admin”, or “Security Admin” roles
  - Logged to rolling.log, windows event log, and email.
- In Lucity 2016R2 we added a System Setting to Allow All Users Access to All Views.
  - Makes setup easier for clients that don’t desire



# END OF INDIVIDUAL PERMISSIONS

- **Lucity 2016 – Dropped Individual Permissions**
  - Everything done for an individual can be done with groups, even if the group exists for just one individual.
  - Removes a lot of complexity from our software
  - Improves performance



# PASSWORD RESTRICTIONS

- Lucity 7.6 and later allows you to set a minimum password length
- Lucity 2015R2 new system settings:
  - *Maximum Password Age*
  - *Days before password expiration to warn users*
  - *Days before password expiration to warn user with Email*
  - *Password must meet complexity requirements*
    - Passwords need three of (Uppercase letter, Lowercase letter, number, special character)
- Password last changed defaults to 10 years ago if no password last changed date stored for the user.
- Send email to user when their password changes - Lucity 2016
- Allow easily guessed passwords - Lucity 2016
- Option to view your password rules - Lucity 2016
- Expiration after n days with warnings – Lucity 2016R2
- Minimum password age and password history - Lucity 2016R2

# CACHING IN LUCITY WEB APP

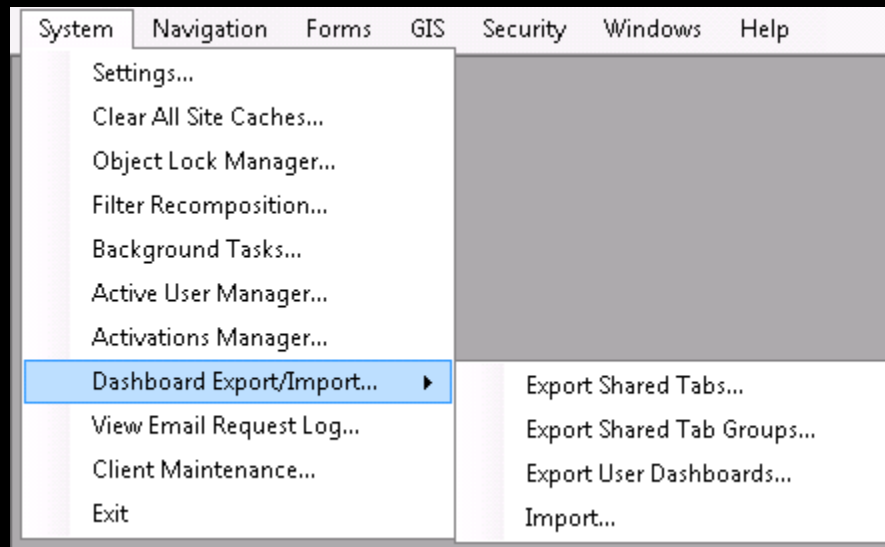
- Browser caching
  - Html files, javascript files
- Lucity Browser App Caching
  - List of modules
- Lucity Silverlight Caching
- Lucity Server Side Caching
  - Web App
  - REST API
- Lucity Detail Form Caching
  - Pick Lists

# HTML DASHBOARDS

- Create/Manage Shared Tabs
- Create/view dashboards for other users
- Assign Links
- User Pane
  - Change Passwords
  - Settings
    - Email rolling logs
    - Send data stats
    - View Licenses in Use
- Timesheets
- Favorites include Filters

# DASHBOARD EXPORT/IMPORT

- Supported in Lucity 2016r2 SP1
- Allows export and import of dashboards and tabs between a test and production system, or between 2 production systems, or any variation.



# DASHBOARD EXPORT

- Will not create new users
- Will generate and update dashboards for existing users that have already been loaded into Lucity Security
- An export creates a text file with json data containing all the information exported.
- Export as many as you like

Export Shared Dashboard Tabs

Select All ☐ Tab Name

<input checked="" type="checkbox"/>	Parks
<input type="checkbox"/>	Facilities
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Fleet
<input type="checkbox"/>	Water
<input type="checkbox"/>	Sewer
<input type="checkbox"/>	Storm
<input type="checkbox"/>	Plant
<input type="checkbox"/>	Streets
<input type="checkbox"/>	Traffic
<input type="checkbox"/>	Reports
<input type="checkbox"/>	Rob's Shared Data Drills
<input type="checkbox"/>	Rob's Shared URLs
<input type="checkbox"/>	Rob's Shared BSS Feeds

Select one or more shared tabs

Change or append something to a tab name to avoid overwriting existing tabs

Help  
Mouse over a control to see its description.

Naming (Optional):  
New Tab Name:  Tab(s) Suffix:

Description (Optional):

Associate users and views

20 shared tabs currently listed. 0 tabs selected.

☐ Export Associated Views  
☐ Export Associated Users

Export... Close

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	Select All	Username	Last Name	First Name	Department	Default Rules Group
▶	<input checked="" type="checkbox"/>	Nicole				
	<input type="checkbox"/>	a	a	aa		
	<input type="checkbox"/>	madams	Adams	Michael		Administrator
	<input type="checkbox"/>	valessi	Alessi	Venetta	Fleet	
	<input type="checkbox"/>	dallgood	Allgood	Dorris	Water Plant	
	<input type="checkbox"/>	oallman	Allman	Olin	Facilities	
	<input type="checkbox"/>	kappollis	Appollis	Kirby	Landfill	
	<input type="checkbox"/>	sarends	Arends	Sam	FOG	
	<input type="checkbox"/>	marmstrong	Armstrong	Melissa		Administrator
	<input type="checkbox"/>	rasmus	Asmus	Rae	Bridges	
	<input type="checkbox"/>	abaisden	Baisden	Assunta	Fleet	
	<input type="checkbox"/>	jbandy	Bandy	Jeannette	Bridges	
	<input type="checkbox"/>	jebandy	Bandy	Jenine	NPDES	
	<input type="checkbox"/>	mbarber	Barber	Matt	Streets	
	<input type="checkbox"/>	ebart	Bart	Emily	Traffic	
	<input type="checkbox"/>	cbartolomeo	Bartolomeo	Claire	Water Quality	
	<input type="checkbox"/>	ibashaw	Bashaw	Jolynn	Bridges	

## Help

Mouse over a control to see its description.

Description (Optional):

271 users available for export of 295 currently listed. 0 users selected.

- ☐ Export Associated Views  
☐ Export Associated Links

Export...

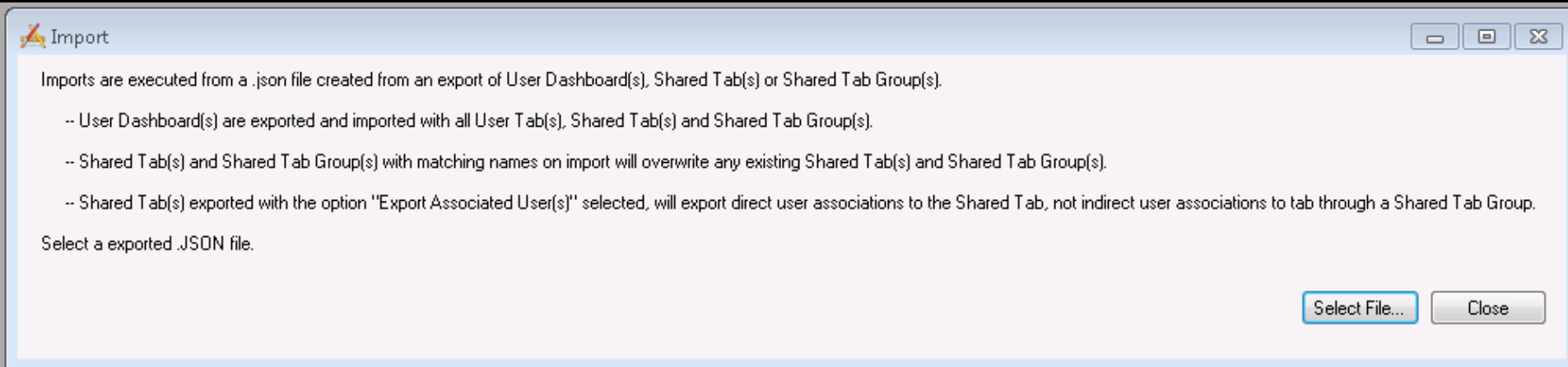
Close



# DASHBOARD IMPORT

- Imports will overwrite items with the same name
- A user dashboard import will completely overwrite their dashboard
- A shared tab import with user associations will add the shared tab to the user's dashboard
- A shared tab group import with user associations will replace the user's current shared tab group with the new imported group

# DASHBOARD IMPORT



# BROWSER SUPPORT NOW

- **Lucity 2016R2**
  - **Only IE 11 is fully supported**
  - Firefox and IE10 can be used for most features, but a few features do not work optimally.
  - Chrome can be used for Timesheets, Dashboards, and Scheduler, but not views.
  - Timesheets and Dashboard work pretty well on tablets too.
- Fully supported means we will get something working if problems are found.
- Chrome is not supported for any version of Lucity as of September, 2015 because Google removed support for Silverlight.
- Windows 10 Edge is not supported because it does not support Silverlight
- IE Compatibility View is not supported
  - “Display intranet sites in Compatibility View” is on by default.

# BROWSER SUPPORT IN THE FUTURE

- Lucity 2017
  - Hopefully, the current versions of IE, Microsoft Edge, Chrome, and FireFox will all be almost fully supported. Possibly Safari and Opera too.
    - The Editable Resource Grid, and GIS Map are likely to remain in Silverlight and thus only work on IE11
    - Open in Desktop will only work in IE11 (ActiveX), we don't intend to support that in other browsers.
- Our goal is to support modern browsers and to have a touch friendly interface. All of our new UIs in HTML should be doing this.

# INITIATIVES FOR THE FUTURE

- Initiative - **Eliminate Silverlight**
  - Our technology stack is C# .Net on the web server providing a REST API, and HTML using the AngularJS framework in the browsers.
  - Support Chrome, FireFox, IE (Edge and/or 11), Safari, tablets
- Initiative – **Make everything browser-based**: eliminate Lucy.Admin.exe, Lucy.Security.exe
- Initiative – Stateless Server
  - To eliminate need for “Sticky Sessions” in server farms, and improve scalability
- Support SQL Server 2016, Support Windows Server 2016 (HTTP2)

# NO LONGER SUPPORTED

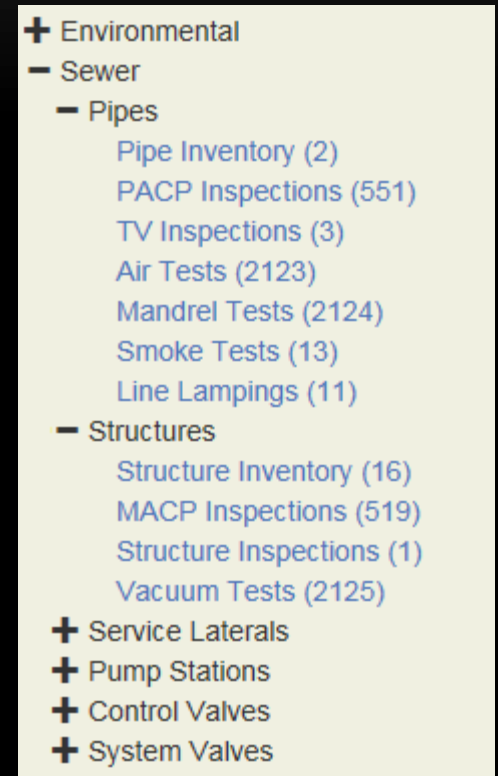
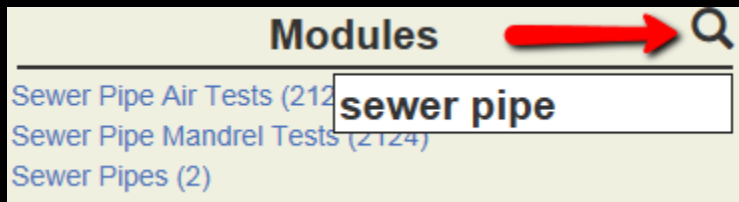
- Lucity 2015
  - Dropped Microsoft Access, Lucity Field
  - Dropped Mobile Manager
  - Dropped GISViewer
- Lucity 2015R2
  - Dropped SQL Server 2005 Express Edition. Minimum Express Edition 2008 (10GB dbs)
  - Dropped Windows Server 2008. Minimum is now Windows Server 2008R2.
- Lucity 2016
  - Dropped IE9
  - Old Warehouse devices (Windows Mobile Lucity PDA Barcode app)
  - Dropped SQL Server 2005
  - Lucity Mobile Apps versioned 1.x (Android and IOS)
- September 2015
  - Google dropped Silverlight support from Chrome
- Lucity 2016R2
  - Dropped IE10

# SINGLE, UNIFIED DATABASE

- We combined all the Lucity databases into a single database for SQL Server clients. (Oracle clients already had one database)
- Before you can upgrade to Lucity 2016 from Lucity 2015R2 you will need to run the unification process
  - Upgrade to Lucity 2015R2
  - Run the report to identify custom objects in the database
  - Run the unification process, probably takes 10 to 30 minutes
    - Must be done on the same SQL Server Instance
  - Upgrade to Lucity 2016
    - You cannot upgrade from pre-Lucity 2015R2 directly to 2016.
- Details Wednesday at 3:00pm

# MODULES MENU IN 2015R2

- Instead of a group for inventory and a group for asset, inventories and assets of the same type are grouped together.
- Options are at the bottom under System Configuration instead of under General.
- The modules menu is searchable!





# DIAG.HTML

- A tool to assist you with getting the web application working.
  - <http://server/LucityWeb/Public/Diag.html>

Local Browser Information	Server Information
JavaScript <b>IS WORKING</b> in your web browser	Name of Logged In User = No user is logged in on this computer.
Your web browser supports JavaScript version 1.3	IP Address of Logged In User = N/A
Required HTML5 Feature sessionStorage is supported.	Browser User Agent = Mozilla/5.0 (Windows NT 6.1; WOW64; Trident/7.0; EIE10;ENUSWOL; rv:11.0) like Gecko
Silverlight is installed. undefined	Server Name = LCT-W2008R2-01
Your browser is Netscape version 5.0 (Windows NT 6.1; WOW64; Trident/7.0; SLCC2; .NET CLR 2.0.50727; .NET CLR 3.5.30729; .NET CLR 3.0.30729; Media Center PC 6.0; CMDTDF; .NET4.0C; .NET4.0E; MS-RTC LM 8; InfoPath.3; EIE10;ENUSWOL; rv:11.0) like Gecko	IP Address of Server = 172.16.2.90
	Lucity Version = 15.0 Service Pack 0
	Lucity File Version = 15.0.0.5345
	Date/Time on Server = Thursday, August 21, 2014 2:35:29 PM
	System Setting for 'Web App URL' = HTTP://LCT-W2008R2-01/LUCITYWEB15
	System Setting for 'Client Name' = Master SQL Server Development
	System Setting for 'Client Number' = Clint015

# IIS STUFF

- Virus scanner configurations may effect Lucity Web and Lucity Citizen Portal applications (mobile and rest apps are less critical)
  - Google: mcafee 81595
- Some clients experience IIS App Resets mysteriously. This may be caused by the large number of file folders in LucityWeb that IIS “watches”. We have a fix that will be part of Lucity 2016 that alleviates the problem. The FCNMode fix.
- Windows Server 2016 supports HTTP2, which can be much faster than HTTP. HTTP2 only works over TLS/SSL.
- By 1/1/2017 – Mobile Warehouse and Mobile IOS require SSL!

# BACKUPS

- **Backup your databases!** If you have SQL Express, get SQL Backup Master to do it.
- Test restoring from your backups.
- Backup nightly or at least weekly and **get the backup files offsite.**
- Backup your documents too (document hives).
- Re-Index your tables nightly or at least weekly for better performance.
- Keep your backup files in a secure location and preferably encrypted.

# CITIZEN WEB APP TEMPLATE

- We wrote a new citizen web app for Lucity 2014R2 that is responsive so it will work on phones and tablets.
  - This is just a “getting started” template that you can build on.
  - <http://demo.lucity.net/LucityCustomCitizen/>
- Built With:
  - REST API – Today at 2PM Session about our REST API

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# NEW WAREHOUSE APP

- We wrote a new warehouse app in Lucity 2015R2 for Android Phones and iPhones and it is available in the app stores.
- Built With:
  - REST API – Today at 2PM Session about our REST API

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# MISC. NEW FEATURES IN 2016R2

- Filter decomposition
- Default Views Per Group for Work Orders, Requests, PMs, Plant, Equipment
- Metric and DateFormats
- *Include Client Name on the subject of every email*
- Suppress titles on reports – also bookmarks
- Reorged system settings
- Email reprocess timeout, prevent orphans in doc hive
- Asset Tree easier config; Documents upload multiple, Inspection Graph tool
- Field Properties show form caption – any user can view
- Faster HTML Grids
- Features covered earlier in this presentation
  - Admin Portal
  - Crystal Reports Enterprise Integration (CRE)

# MISC. NEW FEATURES IN 2016

- Street Name rename tool in 16.0
- Reports of Views/Grids/Forms
- Import and Update (new RUN perm)
- Desktop install includes Lucity.Security.exe and CM
- No relative doc pathing
- All reports work on dashboard – Basic and Advanced terms.
- Lucity map on dashboard
- Features covered earlier in this presentation
  - Identity Server
  - Internal Web REST API
  - External Documents

# NEW SYSTEM SETTINGS IN 2015R2

- *Comma delimited list of user names that should not be tracked in AuditLogons Table (General tab)*
  - For applications developed by clients, particularly REST applications, that may log in frequently (several times per second).
- *Date format for Notifications (General tab)*
  - Controls which date format should be used when creating web notifications.
- *Allow Animations to run inside of the website (Web Performance tab)*
  - Controls whether animations are run in the Lucity Web application. Primarily designed to improve performance for remote users. **Note:** Users can also control this for themselves within the web application.



# MISC. NEW FEATURES IN 2015R2

- Features covered earlier in this presentation
  - HTML Dashboards
  - Consolidated Database
  - No Individual Override Permissions
  - Lucity collects module counts monthly if enabled
  - Lucity Software as a Service product hosted in Amazon
  - Lucity Warehouse Mobile Web App
  - *Max # of Pages on PDF Crystal Reports (Web Performance tab)*

# MISC. NEW FEATURES IN 2015

- 2015- In Editable Grids
  - Added a *Show Only Parts on this Equipment* option to the *Work Task* editable grid when a piece of *Equipment* is added to a *Work Order* as an *Asset*. When this option is enabled and the user adds a new *Material* as a *Resource*, the pick-list will only display the *Materials* attached as *Equipment Parts* to the selected *Equipment* record.

# MISC. NEW FEATURES IN 2014R2

- Groups for Reports
- StreetList AutoComplete
- Clear Caches now works without IIS Restart for Default Values, Allow Input, and Restrict Edits
- Modify Options, Categories, FieldProperties in the web
- Automatic population of CommonIDs if not required.
- Features covered earlier in this presentation
  - Emails in .Net from Scheduler, TLS for Emails
  - Data Quality Services
  - Template for Responsive Citizen Web App

# MISC. NEW FEATURES IN 2014

- Property Viewer
- Records in Add mode option
- Copy Filter to another user
- Hide lookup buttons on Citizen Request forms
- Hyperlinks on labels
- VWRECONCILEPARTSCOUNTS
- Features covered earlier in this presentation
  - Lucity Scheduler
  - Create Work Requests from Emails
  - Lucity Client Data Collection

# TABLET MINIMUMS

- Android Phone – 50MB, Android 2.2
- iOS – iPad 2+, iPhone 4+, iOS 6.1+
- Android Tablet – 250MB, Android 4.03,
  - Large (640dp x 480dp) or Xlarge (960dp x 720dp) screens
- Android Tablet Disconnected
  - More disk for disconnected – 2 to 3 times offline cache size, not including GIS offline
  - 2 GB RAM minimum
  - 1.5 GHz minimum CPU

# EVENT TRACKING

- Event Tracking for 3<sup>rd</sup> Party Integration
- When a Work Order or Request or Asset is Added or Deleted a record is added to LEventTrack table
- This allows 3<sup>rd</sup> party integrations to watch these tables for these events
- Only tracks events done through the Lucity .Net framework, not the Lucity.exe desktop app
- Future: Track more events

# RUNNING IN TLS OVER THE INTERNET

- If you are running over the public Internet
  - Use TLS!!! (also known as SSL or HTTPS)
  - Make minimum password length AT LEAST 8!
  - Make the Maximum password age 120 days or less!
  - Enable Password Complexity!
- Use good strong passwords for Admin accounts!
- Understand
  - Virus Risks (keystroke loggers)
  - Man In The Middle Attacks
  - Denial of Services (DOS) attacks

# SECURITY RISKS

- Citizen Web App
- REST APIs and Android/Ipad Apps
- 3<sup>rd</sup> Party 311 Apps and the Public REST API
- Lucity Web if exposed to the public Internet, especially SQL filters
- Unencrypted backups

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# HARDENING FOR SECURITY

- Use TLS on all web apps
- Remove Diag.html if public internet
- How to Handle Frames (click jacking)
- Citizen – Allow advanced searches on Citizen Website = false
- Documents – Use White List(s) of document types allowed
- Documents – Maximum document size (not too large)
- Email – require logon and password for email
- General – Days to keep data in Login auditing table (90)
- Identity Server settings
- Mobile
- REST API – Allow RQNumber and Email = FALSE, Logon to use???, Send Stack Traces = FALSE
- Security – X-frame ALL blank, Block SQL = TRUE\*2, ALL TRUE?
- Security PWDs -

# SOFTWARE AS A SERVICE (SAAS)

- Hosted at Amazon
- All Lucity clients share same starting image
- Each Lucity client has their own set of VMs started from that image
- Each Lucity client has their own databases
- Client specific files stored in S3
  - Documents
  - Custom .rpt files
  - Temp files for Email attachments, report PDFs, etc
- Lucity's first SaaS client – September 2015