

# Integrating cloud services with Polaris

Presented by: Wes Osborn



CENTRAL  
LIBRARY  
CONSORTIUM

# Topics

Why the cloud?

Cloud Backups

DNS

Notices

# IAAS vs PAAS Cloud Providers

IAAS = Infrastructure as a Service

Run a virtual machine on somewhere else

PAAS = Platform as a Service

Services that you can “bolt” together

# Why the Cloud?

Because it's easy and they are better than you

# Azure Certifications

The image is a screenshot of a web browser displaying the Microsoft Azure support page for certifications. The browser's address bar shows the URL [azure.microsoft.com/en-us/support/trust-center/compliance/](https://azure.microsoft.com/en-us/support/trust-center/compliance/). The page header includes the Microsoft Azure logo, navigation links (Features, Pricing, Documentation, Downloads, Gallery, Blog, Community, Support), and a search bar. The main content is divided into two sections: ISO/IEC 27001:2005 Audit and Certification, and SOC 1 and SOC 2 SSAE 16/ISAE 3402 Attestations. The first section features the BSI logo and text describing the annual certification against the ISO/IEC 27001:2005 standard. The second section features the AICPA SOC logo and text describing the audit against the Service Organization Control (SOC) reporting framework.

Microsoft Azure

SALES 1-800-867-1389 | MY ACCOUNT | PORTAL


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## ISO/IEC 27001:2005 Audit and Certification


Azure is committed to annual certification against the [ISO/IEC 27001:2005](#), a broad international information security standard. The ISO/IEC 27001:2005 certificate validates that Microsoft has implemented the internationally recognized information security controls defined in this standard, including guidelines and general principles for initiating, implementing, maintaining, and improving information security management within an organization.

The audit included the Information Security Management System (ISMS) for Azure, encompassing infrastructure, development, operations, management, support, and [in-scope services](#). The [certificate](#) issued by the [British Standards Institution \(BSI\)](#) is publicly available.



IS 577753

## SOC 1 and SOC 2 SSAE 16/ISAE 3402 Attestations



Azure has been audited against the [Service Organization Control \(SOC\)](#) reporting framework for both **SOC 1 Type 2** and **SOC 2 Type 2**. Both reports are available to customers to meet a wide range of US and international auditing requirements.

The SOC 1 Type 2 audit attests to the design and operating effectiveness of Azure controls. The SOC 2 Type 2 audit included a further examination of Azure controls related to security, availability, and confidentiality. Azure is audited annually to ensure that security controls are maintained.

Audits are conducted in accordance with the Statement on Standards for Attestation Engagements (SSAE) No. 16 put forth by the Auditing Standards Board (ASB) of the American Institute of Certified Public Accountants (AICPA) and International Standard on Assurance Engagements (ISAE) 3402 put forth by the International Auditing and Assurance Standards Board (IAASB). In addition, the SOC 2 Type 2 audit included an examination of the Cloud Controls Matrix (CCM) from the Cloud Security Alliance (CSA).

The audit included the Information Security Management System (ISMS) for Azure, encompassing infrastructure, development, operations, management, support, and [in-scope services](#). Customers should contact [Azure Support](#) (or new customers can contact their account representative) to request a copy of the SOC 1 Type 2 and SOC 2 Type 2 reports for Azure.

# AWS Certifications

## AWS Compliance

AWS Compliance enables our customers to understand the robust controls in place at AWS to maintain security and data protection. As you build systems on top of AWS cloud infrastructure, compliance responsibilities will be shared. AWS Compliance provides assurance related to the underlying infrastructure and your organization owns the compliance initiatives related to anything placed on the AWS infrastructure. The information provided by AWS Compliance helps you to understand our compliance posture and to assess your organization's compliance within your industry and/or government requirements.



**AWS is Level 1 compliant** under the Payment Card Industry (PCI) Data Security Standard (DSS). Customers can run applications on our PCI-compliant technology infrastructure for storing, processing, and transmitting credit card information in the cloud.



AWS enables covered entities and their business associates subject to the **U.S. Health Insurance Portability and Accountability Act (HIPAA)** to leverage the secure AWS environment to process, maintain, and store protected health information.



**AWS is ISO 27001 certified** under the International Organization for Standardization (ISO) 27001 standard. ISO 27001 is a widely-adopted global security standard that outlines the requirements for information security management systems.



**AWS publishes a Service Organization Controls 1 (SOC 1), Type II report.** The audit for this report is conducted in accordance with the Statement on Standards for Attestation Engagements No. 16 (SSAE 16) and the International Standards for Assurance Engagements No. 3402 (ISAE 3402).

# Uptime – Really Hard

## Service Level Agreements

Last Updated: October 2014

### Active Directory

We guarantee at least 99.9% availability of the Azure Active Directory Basic and Premium services. The services are considered available in the following scenarios:

- Users are able to login to the service, login to the Access Panel, access applications on the Access Panel and reset passwords.
- IT administrators are able to create, read, write and delete entries in the directory or provision or de-provision users to applications in the directory.

No SLA is provided for the Free tier of Azure Active Directory. Availability is calculated over a monthly billing cycle.

[Download Active Directory SLA](#)

# Those pesky nines

Availability %	Downtime per year
90% ("one nine")	36.5 days
95%	18.25 days
97%	10.96 days
98%	7.30 days
99% ("two nines")	3.65 days
99.5%	1.83 days
99.8%	17.52 hours
99.9% ("three nines")	8.76 hours
99.95%	4.38 hours
99.99% ("four nines")	52.56 minutes
99.999% ("five nines")	5.26 minutes



# More Features – Can you do this?

## API Keys

Description

Adding a description to your API key will allow you to filter activity by the key.

Only Allow The Key To Work From Certain IP Addresses

Only Allow This

Test Key ?

You can use a test key to experiment with Mandrill's API. No mail is actually sent, but webhooks trigger normally and you can generate synthetic bounces and complaints without impacting your reputation.

Create API Key

# More Features – Can you do this?

[+ Expand All](#)

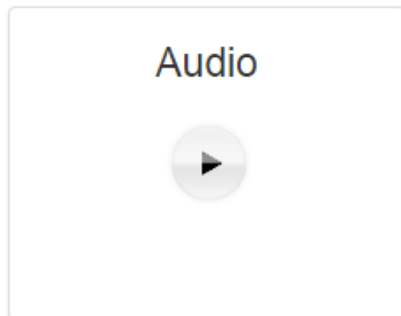
POST <http://dialout.clcOhio.org/call/TwilioResponse> 13:01:26 EDT 2014-10-03 62ms **200**  

- ▶ Request
- ▼ Response
  - ▶ Headers
  - ▼ Body [Show Raw](#)

```
<Response>
  <Say voice="woman">Hello, this is a message from Bexley Public Library for jimmy hayes.</Say>
  <Say voice="woman">Our records indicate you have 1 held item at Bexley Public Library available for pickup by Thursday, October 09
. </Say>
  <Say voice="woman">If you have questions regarding your library account, please call 6 1 4, 6 5 3, 2 7 4 5. Thank you for using the 1
ibrary. Goodbye. </Say>
  <Hangup />
</Response>
```

▶ POST <http://dialout.clcOhio.org/call/TwilioStatus> 13:01:49 EDT 2014-10-03 103ms **200**  

## Media



Because technology  
changes

[http://youtu.be/Uk\\_vV-JRZ6E?t=16s](http://youtu.be/Uk_vV-JRZ6E?t=16s)

# Backups

Can you ever be too safe?

# Do you follow the 3-2-1 backup rule?

3 Copies

2 Formats

1 Stored Offsite

Cloud backups can help!

# Azure & SQL 2014

Integrated – set and forget it

Very fast upload speeds – over 800 Mb/s!

Inexpensive - the price is always going down

# Cost of Tape Loader

Quantum



## Quantum SuperLoader 3 EC-LLHAE-YF Black 24TB 2U Rack Mountable 6Gb/s SAS 1 x RJ-45 Ethernet - Network Interface LTO Ultrium 5 Tape Autoloader w/ Barcode Reader

Be the first to review this product...

In stock.

- 2U Rack Mountable
- 6Gb/s SAS
- 1 x RJ-45 Ethernet - Network Interface

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FREE SHIPPING AVAILABLE


QTY:


~~\$5,913.99~~  
**\$3,799.99**

Save: \$2,114.00 (36%)

Sold and Shipped by:  
Newegg

ADD TO CART ▶

 Add to Wish List

 Price Alert



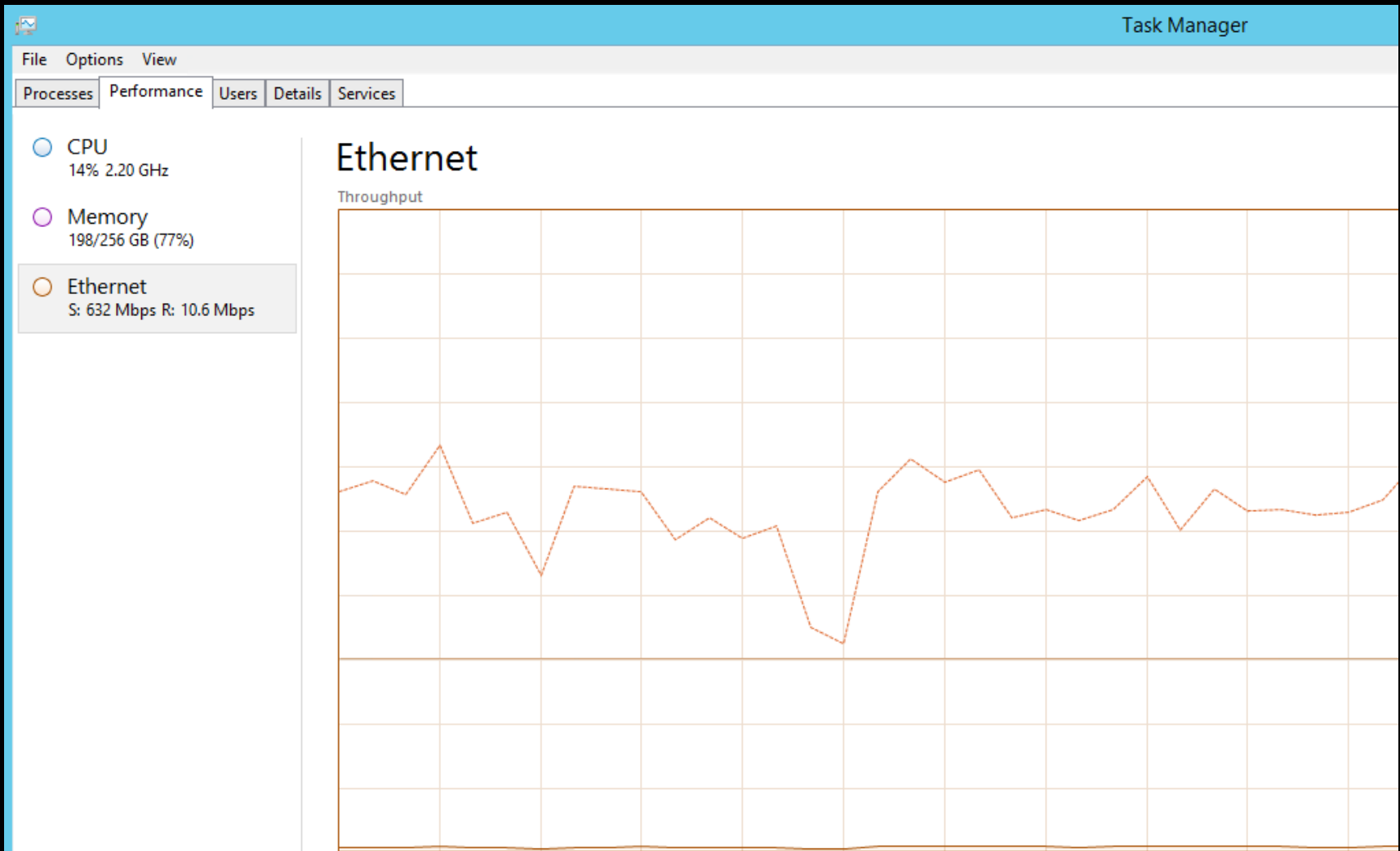
Get 10% off  
Your Purchase  
(up to \$20) when you pay  
with Visa Checkout.

# Azure storage cost for CLC's database

NAME	BILLABLE UNITS	TOTAL (USD)
Standard IO - Page Blob/Disk (GB) - Locally Redundant	1130.55	56.53
Shared Websites Hours - Websites	232.00	3.02
Data Transfer Out (GB) - Zone 1	3.08	0.27
Storage Transactions (in 10,000s) - Data Management	501.20	0.18
Data Transfer In (GB) - Zone 1	4588.11	0.00
Free Websites - Websites	0.00	0.00
Standard IO - Table/ Queue (GB) - Locally Redundant	0.00	0.00



# Azure Backup Running



# Major setup steps

1. Setup Azure Storage Blob
2. Setup Encryption
3. Run manual backup
4. Setup managed backup
5. Perform test restore

You don't have a backup  
unless you've tested  
your restore procedure

Without a restore it's just bits taking up space

# Setting up Azure Storage Blob

[http://www.sqlcoffee.com/SQLServer2014\\_0006.htm](http://www.sqlcoffee.com/SQLServer2014_0006.htm)

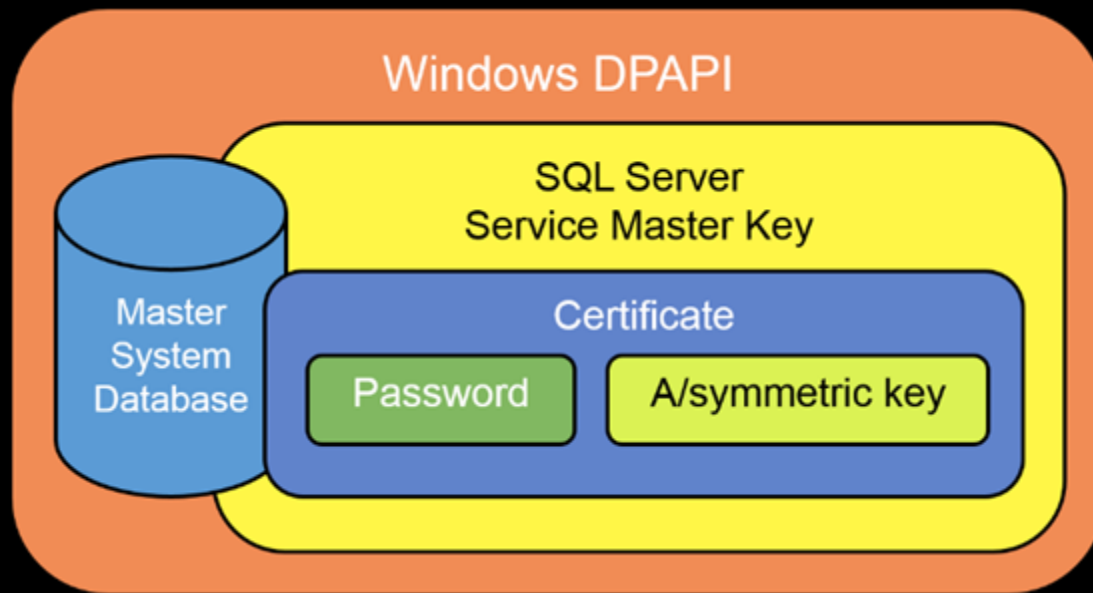
^^^^Caution only use to Setup Azure Storage^^^^

The screenshot shows the Azure portal interface. At the top, the word "storage" is displayed. Below it, a message states: "You have no storage accounts. Create one to get started!" with a "CREATE A STORAGE ACCOUNT" button. On the left, a navigation pane lists "ALL ITEMS", "WEB SITES", "VIRTUAL MACHINES", and "MOBILE SERVICES". Below this, a "NEW" section contains various service categories: "COMPUTE", "SQL DATABASE", "DATA SERVICES", "STORAGE", "APP SERVICES", "HDINSIGHT", "NETWORK SERVICES", "CACHE", "STORE", and "RECOVERY SERVICES". The "DATA SERVICES", "STORAGE", and "QUICK CREATE" (with a lightning bolt icon) buttons are highlighted with red boxes. On the right, a configuration panel for a storage account is visible, with a red box around it. It includes fields for "URL" (containing "morillo" and ".\*.core.windows.net"), "LOCATION/AFFINITY GROUP" (set to "East US"), "SUBSCRIPTION" (set to "Visual Studio Ultimate with MSDN"), and "REPLICATION".

# Setting up Encryption

<http://go.clcoho.org/iZKnH>

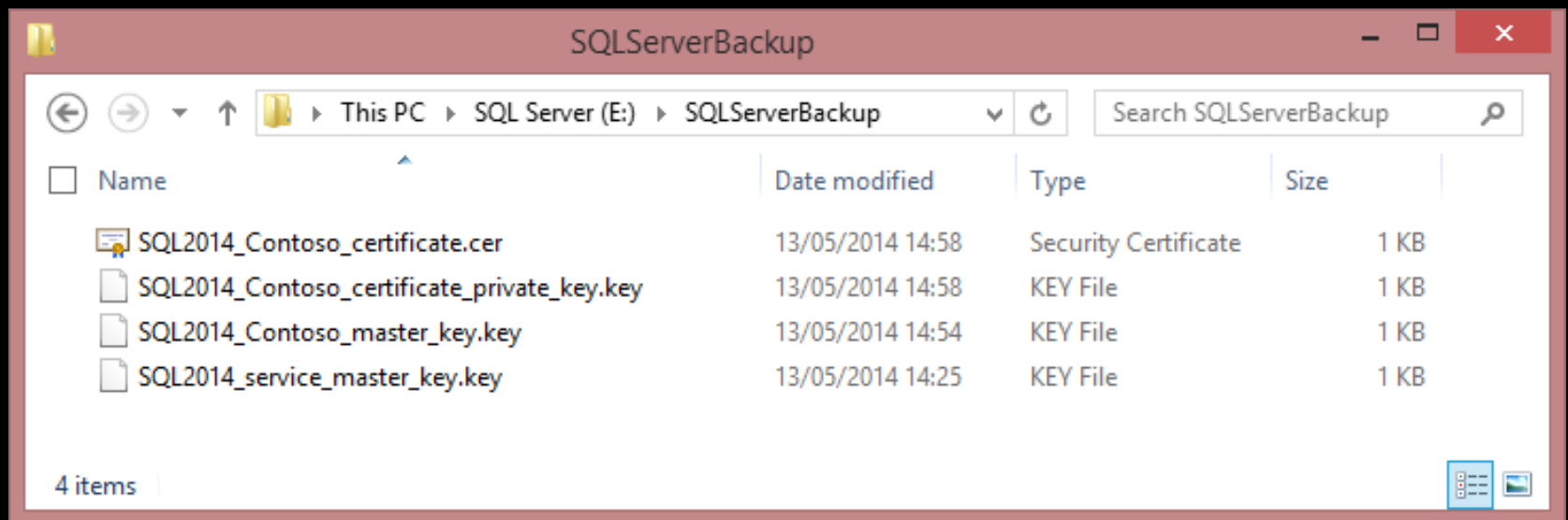
^^^Setup local encrypted backups^^^



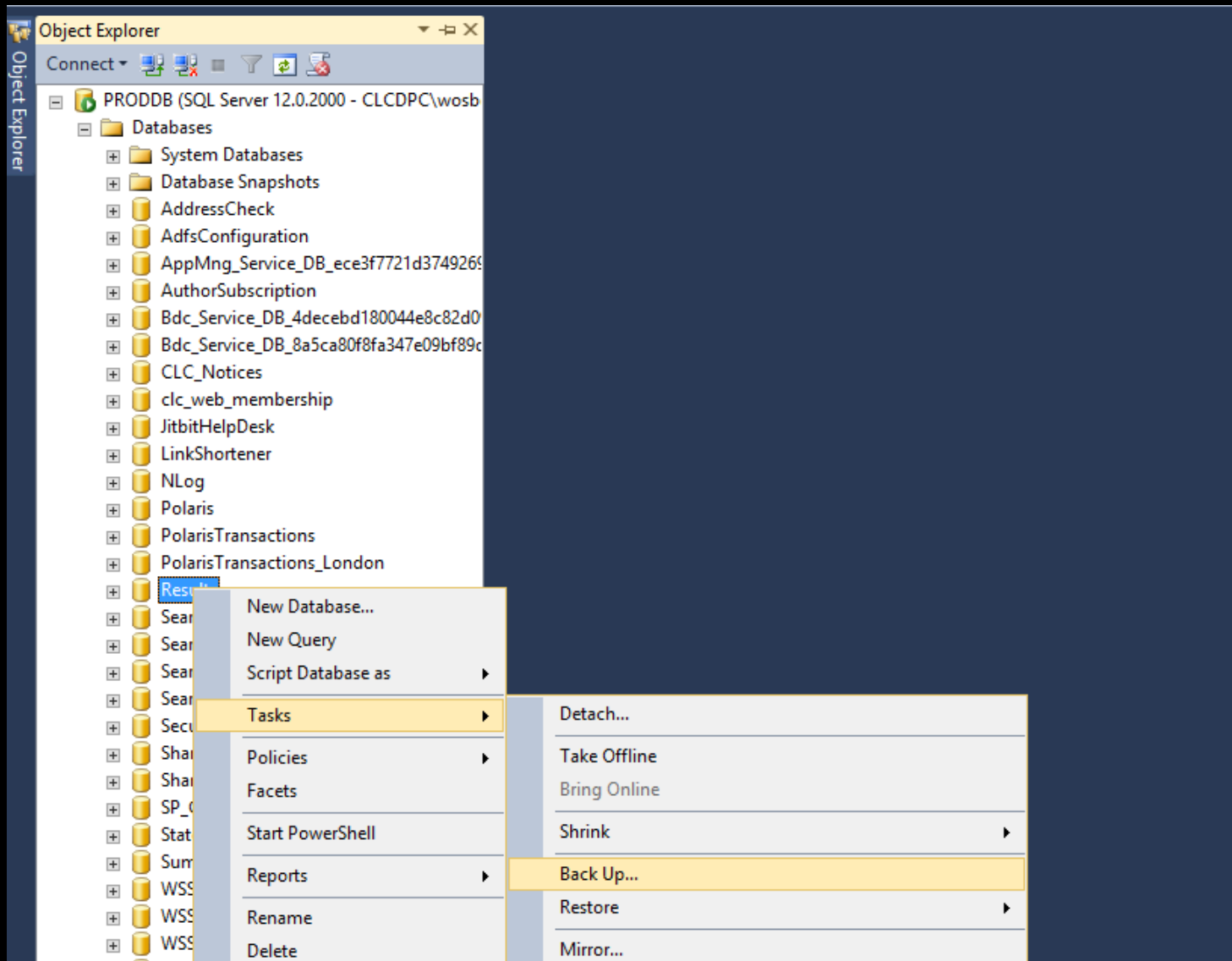
Keep the Keys!!!!!!!!!!!!!!!!!!!!

Keep the Password!!!!!!!!!!!!!!!!!!!!

Otherwise No Backup



# Testing Manual Backup to Azure



# Encrypt Manual Backup

Back Up Database - Results

Select a page

- General
- Media Options
- Backup Options**

Script Help

Backup set

Name: Results-Full Database Backup

Description:

Backup set will expire:

After: 0 days

On: 10/ 3/2014

Compression

Set backup compression: Use the default server setting

Encryption

Encrypt backup

Algorithm: AES 128

Certificate or Asymmetric key: AzureBackup (Certificate)

Connection

Server: PRODDB

Connection: CLCDPC\wosbom

[View connection properties](#)



# Testing Manual Backup to Azure

**Back Up Database - Results**

Select a page

- General
- Media Options
- Backup Options

Script Help

**Source**

Database: Results

Recovery model: FULL

Backup type: Full

Copy-only backup

Backup component:

- Database
- Files and filegroups:

**Destination**

Back up to: URL

File name: Results\_backup\_2014\_10\_03\_155146.bak

SQL credential: AzureBackup

Azure storage container: proddb-mssqlserver

URL prefix: https://clcbbackup.blob.core.windows.net/proddb-mssqlserver

**Connection**

Server: PRODDB

Connection: CLCDPC\wosbom

[View connection properties](#)

**Progress**

Ready

# Automating Azure Backups

The screenshot displays the SQL Server Enterprise Manager interface. On the left, the Object Explorer shows the server hierarchy for 'PRODDB (SQL Server 12.0.2000 - CLCDPC\wosb)'. The 'Managed Backup' folder is highlighted with a red circle, and a red arrow points from it to the 'Managed Backup' configuration window on the right.

The 'Managed Backup' window is titled 'Managed Backup' and shows the 'General' page. The status is 'Ready'. The 'Enable managed backup' checkbox is checked. The configuration section includes:

- File retention: 30 days
- SQL credential: AzureBackup (with a 'Create...' button)
- Storage URL: https://clcbbackup.blob.core.windows.net/

The encryption section shows:

- Encrypt backup: checked
- Algorithm: AES 128
- Certificate or Asymmetric key: AzureBackup (Certificate)

At the bottom, the 'Connection' section shows 'PRODDB [CLCDPC\wosborn]' and a link to 'View connection properties'. The 'Progress' section is currently empty.

# Azure Restore

# instructions document

<http://go.clcoho.org/azurerestorepug2014>

From your friends at the CLC

# DNS

Why would you want to run this internally?

# Benefits of “outsourcing” DNS

Reliable – If DNS doesn't work, its all gone

Better performance

Cool DNS hacks

# Amazon Web Services Route 53

## Cheap and Reliable

Amazon Route 53 DNS-Queries		
\$0.40 per 1,000,000 queries for the first 1 Billion queries	3,969,998 Queries	\$1.59
<b>Total:</b>		<b>\$1.59</b>
Amazon Route 53 HostedZone		
\$0.10 per Hosted Zone for additional Hosted Zones	11 HostedZone	\$1.10
\$0.50 per Hosted Zone for the first 25 Hosted Zones	25 HostedZone	\$12.50
<b>Total:</b>		<b>\$13.60</b>

# AWS Route 53 Setup

1. Create zones (domainname.org)
2. Create records (MX, A, CNAME, etc.)
3. Test using AWS Name Servers
4. Update Registrar

# Creating a Hosted Zone

Create Hosted Zone

Go to Record Sets

Delete Hosted Zone

Search:

1 to 36 of 36 Hosted Zones

	Domain Name	Hosted Zone ID	Record Set Count	Comment
<input type="checkbox"/>	clcoho.com.	Z70EMT7OITF68	8	
<input type="checkbox"/>	moldi.org.	Z26CJXEG4QP1HH	7	Overdrive Digital Books
<input type="checkbox"/>	clcoho.org.	ZY4TCAHVL0P6H	90	
<input type="checkbox"/>	sms.clcoho.org.	Z28ZQVHO9GQWU8	4	Used to store MX records for Twilio SMS Service
<input type="checkbox"/>	marysvillelib.org.	Z23L6FRPSE12CG	14	
<input type="checkbox"/>	fcdlibrary.org.	ZWROOOUFZ7DCC	14	
<input type="checkbox"/>	fcdlibrary.com.	Z2YQI8IY7E7QMK	5	
<input type="checkbox"/>	wagnallslibrary.org.	Z1GXL9T3AE1BGV	13	
<input type="checkbox"/>	marysville.lib.oh.us.	Z1AX3VZJFQ22EA	6	
<input type="checkbox"/>	photoho.org.	ZE2714PW9XPCE	8	
<input type="checkbox"/>	pickeringtonlibrary.net.	Z115HULPZMYKZJ	6	
<input type="checkbox"/>	wagnalls.com.	Z3KWO8165FKIOM	6	
<input type="checkbox"/>	ghmchs.org.	Z1H7U0TBDS11SK	6	
<input type="checkbox"/>	clc.lib.oh.us.	ZO5GD6P59ISJH	7	
<input type="checkbox"/>	wagnalls.org.	Z3M380C17WNT8T	9	
<input type="checkbox"/>	clcoho.net.	Z207FOM35XOEPY	6	

Create Hosted Zone

Domain Name:

Comment:

Create



# Creating a record set

**Create Record Set**

**Name:**

**Type:**

**Alias:**  Yes  No

**TTL (Seconds):**

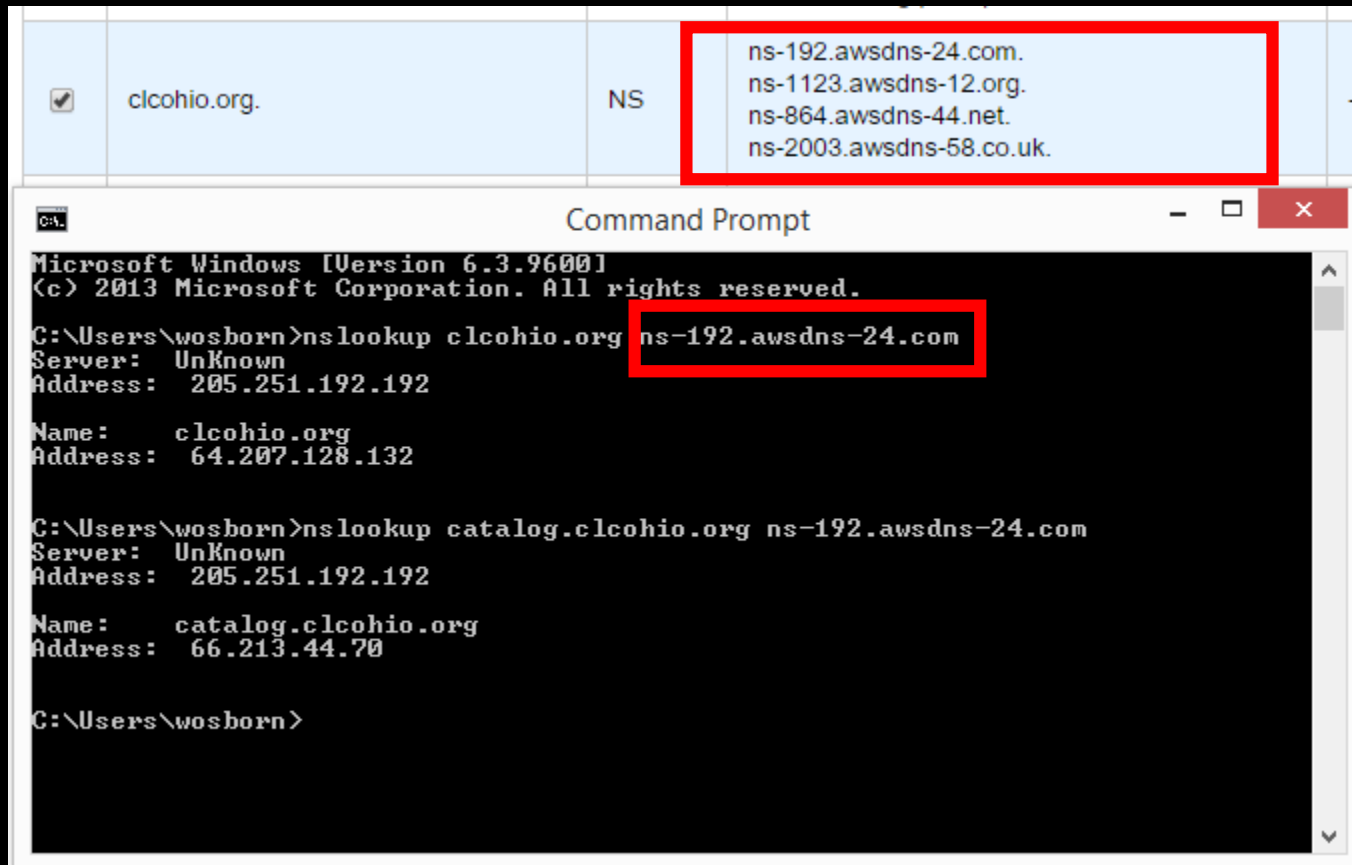
**Value:**

The domain name that you want to resolve to instead of the value in the Name field.  
Example:  
www.example.com

**Routing Policy:**

Route 53 responds to queries based only on the values in this record. [Learn More](#)

# Testing your new DNS entries



The image shows a Windows DNS console window and a Command Prompt window. The DNS console window displays the configuration for the domain `clcoho.org.`, which is set to NS (Name Server). The NS records are listed as follows:

Record
<code>ns-192.awsdns-24.com.</code>
<code>ns-1123.awsdns-12.org.</code>
<code>ns-864.awsdns-44.net.</code>
<code>ns-2003.awsdns-58.co.uk.</code>

The Command Prompt window shows the results of two `nslookup` commands. The first command tests the `clcoho.org` domain, and the second command tests the `catalog.clcoho.org` subdomain. Both commands use `ns-192.awsdns-24.com` as the DNS server.

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\wosborn>nslookup clcoho.org ns-192.awsdns-24.com
Server: UnKnown
Address: 205.251.192.192

Name: clcoho.org
Address: 64.207.128.132

C:\Users\wosborn>nslookup catalog.clcoho.org ns-192.awsdns-24.com
Server: UnKnown
Address: 205.251.192.192

Name: catalog.clcoho.org
Address: 66.213.44.70

C:\Users\wosborn>
```

# Making live – Updating your Name Server records

[Overview](#) [Pointers](#) [Transfer](#) [Contact](#) [DNS](#) **[Nameservers](#)** [Security](#) [Subdomains](#) [Renew](#)

Every domain requires a set of nameservers to allow visitors on the Internet to reach it. Normally, you should not need to change your nameservers from the defaults. If you do need to change your nameservers, you may do so below.

## Update Name Servers

**Use default name servers**

**Nameserver 1**

*ns1.dotster-default.domainparkingserver.net*

**Nameserver 2**

*ns2.dotster-default.domainparkingserver.net*

**Use different name servers**

**Nameserver 1**

ns-1123.awsdns-12.org

**Nameserver 2**

ns-192.awsdns-24.com

**Nameserver 3**

ns-2003.awsdns-58.co.uk

**Nameserver 4**

ns-864.awsdns-44.net

# Other DNS Hacks

## Creating a PAC Down page (S3)

Bucket: catalog.clcoho.org  
Region: US Standard  
Creation Date: Sun Sep 01 21:42:20 GMT-400 2013  
Owner: Me

▶ Permissions

▼ Static Website Hosting

You can [host your static website](#) entirely on Amazon S3. Once you enable your bucket for static website hosting, all your content is accessible to web browsers via the Amazon S3 website endpoint for your bucket.

**Endpoint:** [catalog.clcoho.org.s3-website-us-east-1.amazonaws.com](http://catalog.clcoho.org.s3-website-us-east-1.amazonaws.com)

Each bucket serves a website namespace (e.g. "www.example.com"). Requests for your host name (e.g. "example.com" or "www.example.com") can be routed to the contents in your bucket. You can also redirect requests to another host name (e.g. redirect "example.com" to "www.example.com"). See our [walkthrough](#) for how to set up an Amazon S3 static website with your host name.

Do not enable website hosting

Enable website hosting

**Index Document:**


**Error Document:**

▶ **Edit Redirection Rules:** You can set custom rules to automatically redirect web page requests for specific content.

# Other DNS Hacks

## Creating a PAC Down page (R 53)

**Edit Record Set**

**Name:** catalog .clcoho.org 

**Type:** A - IPv4 address ▼

**Alias:**  Yes  No

**Alias Target:**

**Routing Policy**

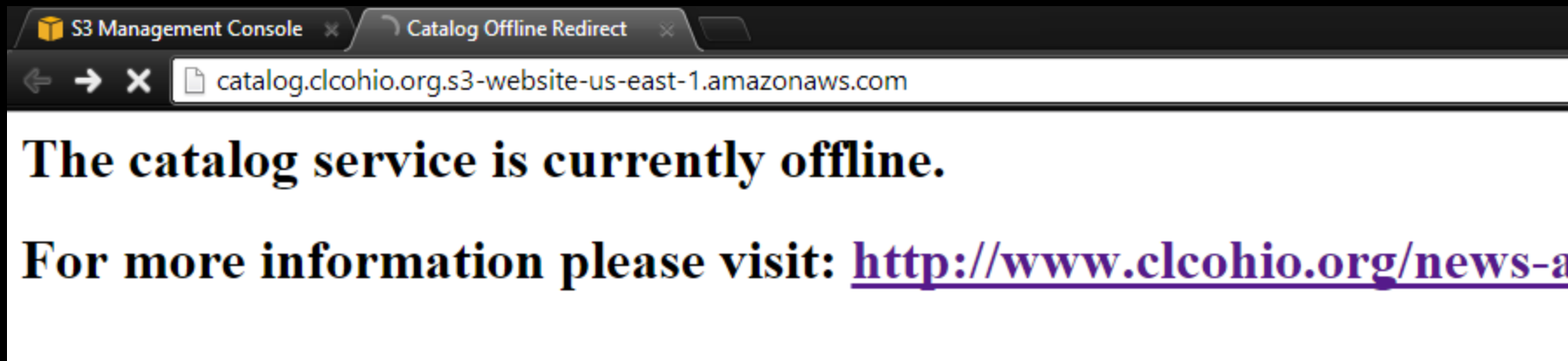
Route 53 responds:  
[More](#)

**Evaluate Target**

- S3 Website Endpoints —
- catalog.clcoho.org (s3-website-us-east-1)
- Elastic Load Balancers —
- No Targets Available
- CloudFront Distributions —
- No Targets Available
- Record Sets in this Hosted Zone —
- redirect.clcoho.org.
- devsip.clcoho.org.
- autodiscover.clcoho.org.

# Creating a PAC Down page

## What the patron sees



Cool hack – Redirect “naked”  
request to www

If you type in: [clcohoio.org](http://clcohoio.org)

You’ll be redirected to:  
[www.clcohoio.org](http://www.clcohoio.org)

# Creating a S3 bucket to handle the redirect

## Bucket: clcoho.org ✕

Bucket: clcoho.org  
Region: US Standard  
Creation Date: Sat Feb 23 22:38:25 GMT-500 2013  
Owner: Me

▶ Permissions

▼ Static Website Hosting

You can [host your static website](#) entirely on Amazon S3. Once you enable your bucket for static website hosting, all your content is accessible to web browsers via the Amazon S3 website endpoint for your bucket.

**Endpoint:** [clcoho.org.s3-website-us-east-1.amazonaws.com](http://clcoho.org.s3-website-us-east-1.amazonaws.com)

Each bucket serves a website namespace (e.g. "www.example.com"). Requests for your host name (e.g. "example.com" or "www.example.com") can be routed to the contents in your bucket. You can also redirect requests to another host name (e.g. redirect "example.com" to "www.example.com"). See our [walkthrough](#) for how to set up an Amazon S3 static website with your host name.

Do not enable website hosting

Enable website hosting

Redirect all requests to another host name


To redirect requests to another bucket, enter the name of the target bucket below. If you are redirecting to a root domain address (e.g. example.com), see our [walkthrough](#) for configuring root domain website hosting.

Redirect all requests to:



# Pointing to the S3 bucket

**Edit Record Set**

**Name:** clcoho.org 

**Type:** A – IPv4 address ▼

**Alias:**  Yes  No

**Alias Target:**

**Alias Hosted:** — Record Sets in this Hosted Zone —  
**www.clcoho.org.**

**Routing Policy:** Simple ▼

Route 53 responds to queries based only on the values in this record. [Learn More](#)

**Evaluate Target Health:**  Yes  No

# Notices

Make your life easier and your patrons happier

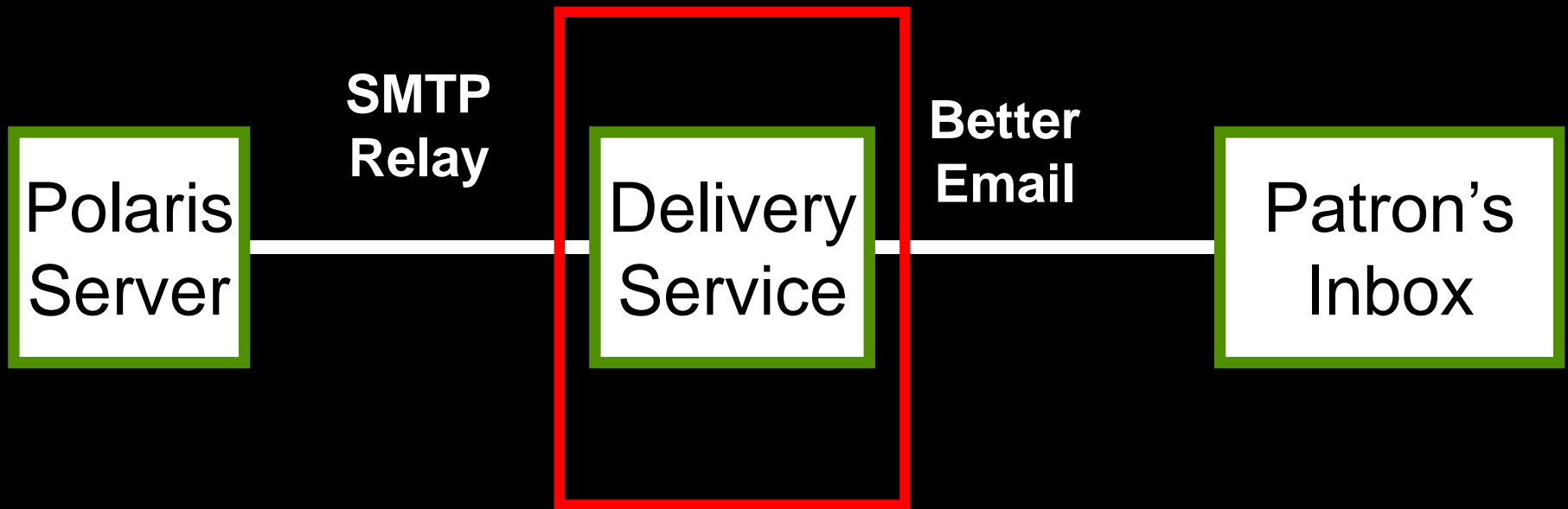
# Improving Notices

Improving Email Notices

Improving Telephone Notices

Improving SMS Notices

# How to make better email



What delivery service should I use?

# Why CLC uses Mandrill

Great reporting

Individual IP

SPF & DKIM Anti-SPAM records

Awesome APIs

Inbound processing

# Mandrill – Searching Messages

https://mandrillapp.com/activity?date\_format=mm%2Fdd%2Fyy&q=full\_email%3Acwosborn%40gmail.com&date\_range=7&start\_date=09%2F27%2F2014&stop\_date=10%2F04%2F2014

## Outbound

Activity Tags Templates Rules Split Tests URL Patterns Subaccounts

full\_email:cwosborn@gmail.com  Date Range Last 7 Days

Tips for using search

2 Delivered + 2 Sent = 100.0% Deliverability 0.0% (0) Avg Open Rate

Status	Sender	Email	Subject
Delivered Oct 3, 2014 11:37 am	fcdweb@fcdlibrary.org	cwosborn@gmail.com	Your Title List
Oct 1, 2014			
Delivered Oct 1, 2014 5:19 am	search@fcdlibrary.org	cwosborn@gmail.com	Saved Search Results


View Content

# Mandrill – View Content

[https://mandrillapp.com/activity/content?id=20141004\\_fe8542485889463e92d270d7a6721081](https://mandrillapp.com/activity/content?id=20141004_fe8542485889463e92d270d7a6721081)

HTML Text

October 4, 2014



You have overdue items at the London Library. Call 740-852-9543 or log in to My Account <http://www.mylondonlibrary.org> for more information. If you have returned them, please excuse this notice. Otherwise, please return them as soon as possible to avoid increasing fines.

<b>Title</b>	Pregnancy : the beginner's guide.
<b>Author</b>	
<b>Call No.</b>	618.2 BHA
<b>Barcode</b>	30191002284504
<b>Format</b>	Book
<b>Due Date</b>	10/2/2014
<b>Check-out Date</b>	9/11/2014
<b>Check-out From</b>	London Public Library

<b>Title</b>	Pregnancy day by day : an illustrated daily countdown to motherhood, from conception to childbirth a
<b>Author</b>	
<b>Call No.</b>	618.2 PRE
<b>Barcode</b>	30191002284728
<b>Format</b>	Book
<b>Due Date</b>	10/2/2014
<b>Check-out Date</b>	9/11/2014
<b>Check-out From</b>	London Public Library

# Mandrill – Bounce Handling

Rule Name

process bounces

if a message is bounced and any of the following conditions are met:

recipient's email matches \*

then do this:

send event to web https://notices.clcc

<https://notices.clcohio.org/email/processfailure?auth=1vp1bgKfZKfisY7kEUaIK>

Trigger on  hard\_bounce  soft\_bounce  spam  unsub  reject

Description

Process Bounced and Marked as Spam messages

Key

ZTPmHsC

[reset key](#)



# Creating a record set

The screenshot shows the Polaris Record Set interface. The window title is "Record Set 38049 - Polaris". The menu bar includes "File", "Edit", "View", "Tools", and "Help". The toolbar contains icons for file operations and help. The main area displays the record set details:

- Name:** FCL Bounced Emails
- Owner:** Central Library Consortium (sys)
- Record type:** Patron
- Note:** (empty)
- Number of records:** 386

A vertical red bar on the left side of the main area is labeled "Patron Record Set". Below the details, there is a table of records. The table has columns for "Barcode", "State", "Postal...", and "Library". A large black box is overlaid on the "Barcode" column, obscuring the data. The "State" column shows "OH" for all records, and the "Library" column shows "Fairfield County ...".

Barcode	State	Postal...	Library
21868000655477	OH	43130...	Fairfield County ...
21868000692132	OH	43155...	Fairfield County ...
21868000809710	OH	43130...	Fairfield County ...
21868000840061	OH	43130...	Fairfield County ...
21868000857248	OH	43130...	Fairfield County ...
21868000897921	OH	43138	Fairfield County ...
21868000920079	OH	43102...	Fairfield County ...
21868000944467	OH	43130	Fairfield County ...
21868000985627	OH	43107	Fairfield County ...
21868001072680	OH	43130...	Fairfield County ...
21868001095558	OH	43150...	Fairfield County ...
21868001198857	OH	43130...	Fairfield County ...
21868001240550	OH	43130	Fairfield County ...
21868001272090	OH	43150	Fairfield County ...
21868001331276	OH	43130...	Fairfield County ...
21868001399109	OH	43130...	Fairfield County ...

At the bottom of the window, it says "For Help, press F1" on the left and "250 of 386 record(s) retrieved" on the right.

# Updating Patron Account

Claims/Lost:	0/0	Alt Email address:
Items held:	0	Birth date:
Total holds/ILL:	0/0	Email address:

## Notes

Non-blocking:

Blocking:

4/14/2014 - Address kosiereye@greenapple.com bounced.

# Mandrill Setup

1. Setup Mandrill Account – Get API keys
2. Setup relay through Polaris SMTPSVC
3. Enjoy!

# Get Account info from Mandrill

## SMTP & API Credentials

Send email using [our API](#) or get started quickly with SMTP using the information below:

**Host** smtp.mandrillapp.com

**Port** 587

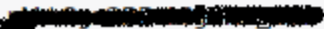
**SMTP Username** clcdpc@clcoho.org

**SMTP Password** any valid API key

## API Keys

[+ New API Key](#)

Key



Created: Jun 17, 2014 11:30 am

# Verify Polaris SMTP Server

Administration Explorer - System

- System: CLC
  - Parameters
  - Profiles
  - Permissions
  - Security
  - Policy Tables
  - Database Tables
  - Notification Tables
- Server
- Library
- Branch
- Cataloging

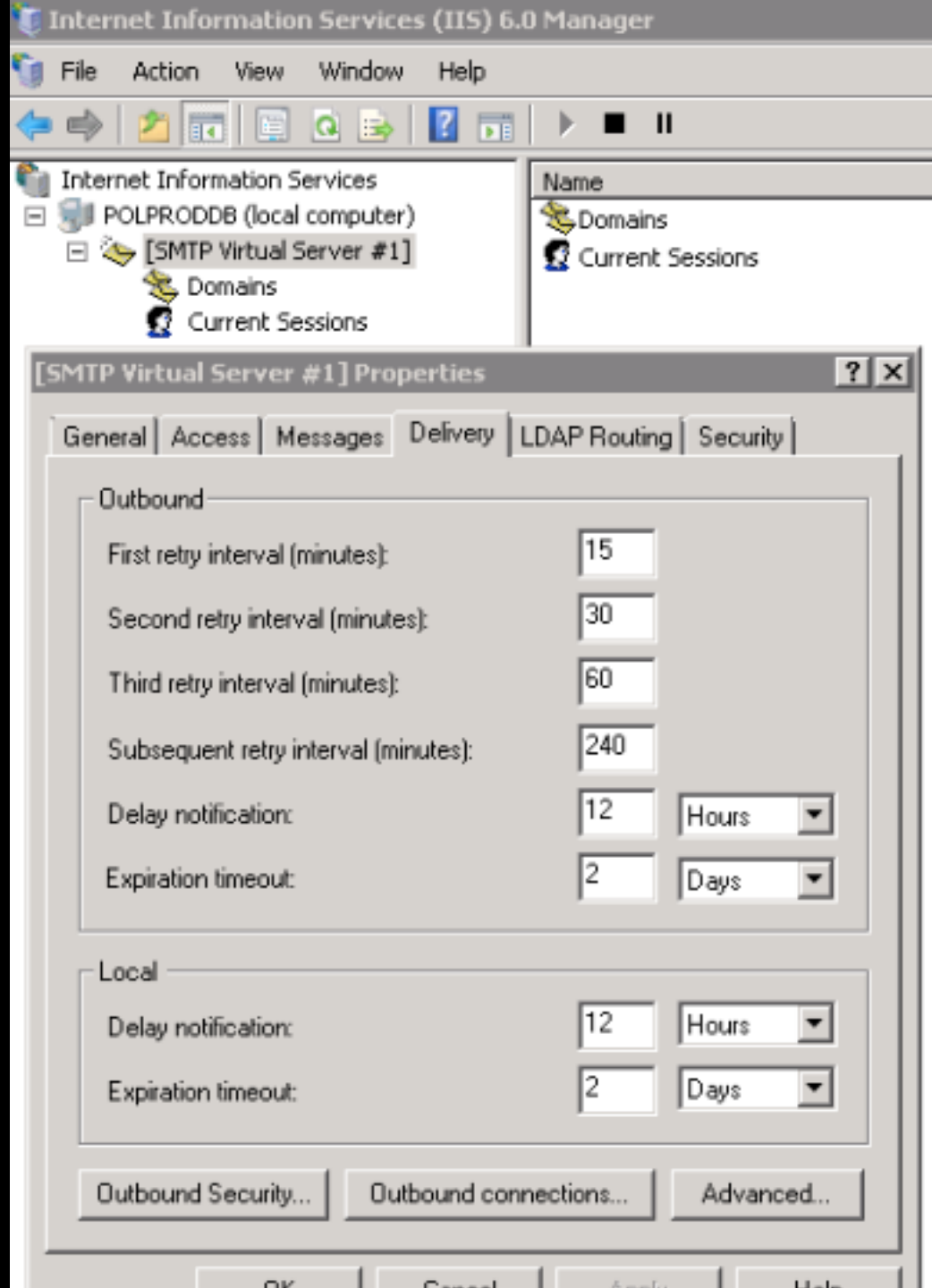
	Children's PAC	Staff Client	Mobile PAC
	Acquisitions / Serials	Patron Services	Cataloging
Profile			Value
Branch list order			Yes
Categorization of Z39.50 targets			Setup . . .
Default polaris user in PAC			OPAC Defa
Did you mean: Enabled			Yes
Email notification: Email address of sender			clcdpc@do
Email notification: Server running SMTP service			PolProdDB

# Setup Relay to Mandrill

Launch IIS 6.0  
Manager

Right Click on  
SMTP Server

Click Properties



# Entering Credentials

The image shows a screenshot of the Exchange Server configuration interface. The main window is titled "[SMTP Virtual Server #1] Properties" and has tabs for General, Access, Messages, Delivery, LDAP Routing, and Security. The "Delivery" tab is selected, showing "Outbound" and "Local" settings. A red arrow points from the "Outbound Security..." button in the main window to the "Outbound Security" dialog box. The dialog box has three radio buttons: "Anonymous access", "Basic authentication", and "Integrated Windows Authentication". "Basic authentication" is selected. Below it, the "User name" field contains "clcdpc@clcoho.org" and the "Password" field is masked with asterisks. At the bottom of the dialog, the "TLS encryption" checkbox is checked. The "Outbound Security" dialog box also has "OK", "Cancel", and "Help" buttons.

[SMTP Virtual Server #1] Properties

General Access Messages Delivery LDAP Routing Security

Outbound

First retry interval (minutes): 15

Second retry interval (minutes): 30

Third retry interval (minutes): 60

Subsequent retry interval (minutes): 240

Delay notification: 12 Hours

Expiration timeout: 2 Days

Local

Delay notification: 12 Hours

Expiration timeout: 2 Days

Outbound Security... Outbound connections... Advanced...

OK Cancel Apply Help

Microsoft SQL S

Outbound Security

Anonymous access  
No user name or password required.

Basic authentication  
The password will be sent over the network in clear text using standard commands.

User name: clcdpc@clcoho.org Browse...

Password: .....

Integrated Windows Authentication  
The client and server negotiate the Windows Security Support Provider Interface.

Account: Browse...

Password: .....

TLS encryption

OK Cancel Help

# Setting Outbound Port

The image shows a screenshot of the Exchange Server configuration interface. The main window is titled "[SMTP Virtual Server #1] Properties" and has tabs for General, Access, Messages, Delivery, LDAP Routing, and Security. The "Delivery" tab is selected, showing "Outbound" and "Local" settings. A red arrow points from the "Outbound connections..." button in the "Delivery" tab to the "Outbound Connections" dialog box. In this dialog box, the "TCP port:" field is set to "587". Other settings in the dialog include "Limit number of connections to:" (checked, 10000), "Time-out (minutes):" (10), and "Limit number of connections per domain to:" (checked, 1000). The dialog box has "OK", "Cancel", and "Help" buttons.

[SMTP Virtual Server #1] Properties

General Access Messages Delivery LDAP Routing Security

Outbound

First retry interval (minutes): 15

Second retry interval (minutes): 30

Third retry interval (minutes): 60

Subsequent retry interval (minutes): 240

Delay notification: 12 Hours

Expiration timeout: 2 Days

Local

Delay notification: 12 Hours

Expiration timeout: 2 Days

Outbound Security... Outbound connections... Advanced...

OK Cancel Apply Help

Microsoft SQL S

Outbound Connections

Limit number of connections to: 10000

Time-out (minutes): 10

Limit number of connections per domain to: 1000

TCP port: 587

OK Cancel Help



# Creating a record set

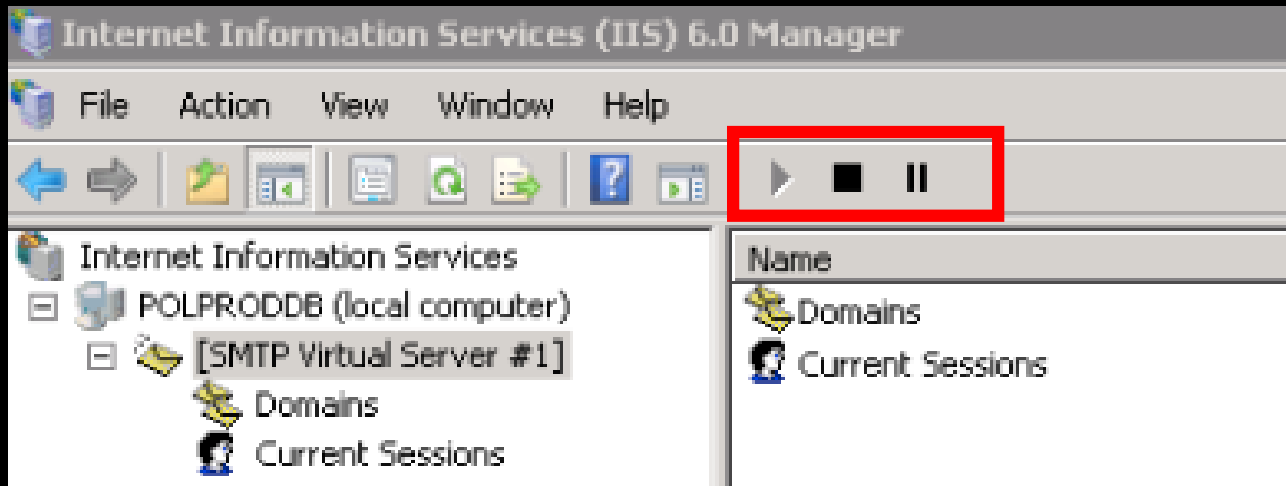
The image shows two overlapping windows from an Exchange Server management console. The background window is titled "[SMTP Virtual Server #1] Properties" and has tabs for General, Access, Messages, Delivery, LDAP Routing, and Security. The "Delivery" tab is active, showing settings for "Outbound" and "Local" delivery. The "Outbound" section includes fields for "First retry interval (minutes)" (15), "Second retry interval (minutes)" (30), "Third retry interval (minutes)" (60), "Subsequent retry interval (minutes)" (240), "Delay notification" (12 Hours), and "Expiration timeout" (2 Days). The "Local" section includes "Delay notification" (12 Hours) and "Expiration timeout" (2 Days). At the bottom of the "Delivery" tab are buttons for "Outbound Security...", "Outbound connections...", and "Advanced...".

The foreground window is titled "Advanced Delivery" and contains the following fields and options:

- "Maximum hop count:" with a text box containing "15".
- "Masquerade domain:" with an empty text box.
- "Fully-qualified domain name:" with a text box containing "proddb.cldpc.org" and a "Check DNS" button.
- "Smart host:" with a text box containing "smtp.mandrillapp.com".
- Two checkboxes:  "Attempt direct delivery before sending to smart host" and  "Perform reverse DNS lookup on incoming messages".

At the bottom of the "Advanced Delivery" window are buttons for "OK", "Cancel", and "Help". A red arrow points from the "Advanced..." button in the background window to the "Smart host:" field in the foreground window.

# Restart and enjoy the goodness!



@mandrillapp.com  
pp.com. [205.201.139.240])  
53

```
(version=TLSv1.2 cipher=ECDHE-RSA-AES128-GCM-SHA256 bits=128/128);  
Fri, 03 Oct 2014 08:37:53 -0700 (PDT)  
Received-SPF: pass (google.com: domain of bounce-md_30099752.542ec2a0.v1-eae61c3a4e4ec0863a5d9ee225323b@mandrillapp.com  
Authentication-Results: mx.google.com;  
  spf=pass (google.com: domain of bounce-md_30099752.542ec2a0.v1-eae61c3a4e4ec0863a5d9ee225323b@mandrillapp.com des  
  dkim=pass header.i=@fcdlibrary.org  
DKIM-Signature: v=1; a=rsa-sha1; c=relaxed/relaxed; s=mandrill; d=fcdlibrary.org;  
  h=From:Subject:To:Message-Id:Date:MIME-Version:Content-Type; i=fcdweb@fcdlibrary.org;  
  bh=mZrQoD3QDhannU8IKPjL79PIwQM=;  
  b=JkeYcqHqEYr4NFMURyfabC+qLUNv1vC2d6EhM3m30+RIKK2Krkj3ikTs5qh4125LPkR8wN5Jv8P15  
  UvNDucyviCTy7Zw1DnkHTx2xTv6aXGQJGikQ9nUNKto36o1LiKuQ1uB69vzbZic9q52BAa/U7+SQ  
  usS20QbicmqF9GoED0E=  
DomainKey-Signature: a=rsa-sha1; c=noFWS; q=dns; s=mandrill; d=fcdlibrary.org;  
  b=gaePTBcgxDC+5C4uXw7YSRruXXBwBu3MY72EOyjuQFbZGdRfpx8BtWHwv5TSK0jaNEIU7SRtgNct  
  NuE3xq2rVQs+Hs+1pTsk+t6dnGFxc58VpRCy0MzEgW7pEaHPH2SEZ9CWhIVk5TrsqkjWPcUSkuc  
  cjcj8H82R1My4KbsIk=;  
Received: from pmta05.wdc01.mailchimp.com (127.0.0.1) by mail139-240.wdc04.mandrillapp.com id h5r1d21jvjgf for <cwosborn@g  
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=mandrillapp.com;  
  i=@mandrillapp.com; q=dns/txt; s=mandrill; t=1412350624; h=From :  
  Subject : To : Message-Id : Date : MIME-Version : Content-Type : From :  
  Subject : Date : X-Mandrill-User : List-Unsubscribe;  
  bh=xjVdSPclRkCjTMB6zLdhoH1PhZCS2G8lwxverF/1N9g=;  
  b=fgvuDys3F0N3Z19Jc+8mJPqaLLsFFbUIlHkZURjehy4zPXPMPAYQSh9Ukx5E4+bSuG3bE1T  
  YgXzVjRrQUCl22p20+N3jvA1/5/iS8RKYxxNqIdYhHw7k1cMeD9J3nRyOXM/TWnMoKd9dbu0  
  ote1ETGg8NpcA1zWXVc1o002y+/WE=
```



PRODUCTS

PRICING

SOLUTIONS

API & DOCS

HELP

SIGNUP

LOGIN



## The Best Phone Number You've Ever Programmed

Introducing MMS on US Twilio Phone Numbers. Zero Wait Time.

[Learn More](#)

[Get Started Today »](#)

APIs + Telephone = Awesome

# Why Twilio?

Cheap per minute pricing

Great APIs and logs

No telephony hardware!

# Twilio Cost

## Local phone numbers

*e.g. +1 -415-xxx-xxxx for San Francisco,  
United States*

**\$1** / month  
per phone number

## Connect with local numbers

Starting at

**\$0.01**  
per minute  
to receive calls

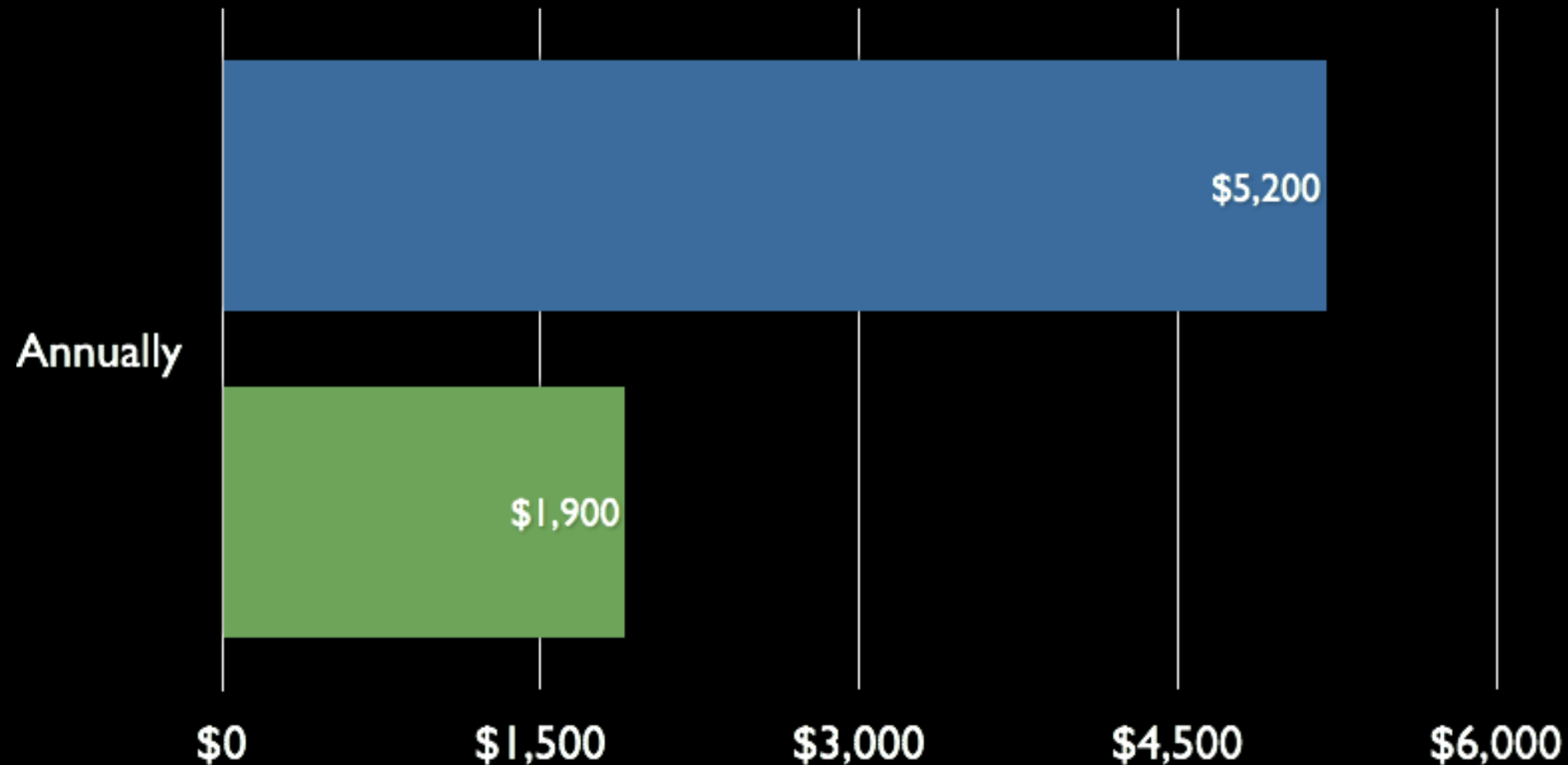
**\$0.02**  
per minute  
to make calls

# Annual Costs

## 500-700 calls a day

■ iTiva + ATT

■ Twilio



# Twilio - Detailed logs

## Calls

CLC's Production Account ▾



325,202 Calls

[Export to CSV](#)

Date	Direction	From	To	Type	Status	Duration	Cost
13:01:13 EDT 2014-10-04	Outgoing API	(877) 772-6657	(740) 777-7391	Phone	No Answer	---	---
13:01:37 EDT 2014-10-04	Outgoing API	(877) 772-6657	(614) 863-5868	Phone	No Answer	---	---
13:01:11 EDT 2014-10-04	Outgoing API	(877) 772-6657	(740) 601-2189	Phone	No Answer	---	---
13:01:09 EDT 2014-10-04	Outgoing API	(877) 772-6657	(740) 207-7005	Phone	Failed	---	---
13:01:42 EDT 2014-10-04	Outgoing API	(877) 772-6657	(740) 746-1007	Phone	No Answer	---	---

Process is not currently running

Calls Placed	78	Calls Placed Last Run	476
Calls Answered	34	Calls Answered Last Run	419
Patrons Already Called	0	Calls In Process	0

Last run at: 10/4/2014 1:00:01 PM

# Twilio - More logging goodness

[+ Expand All](#)

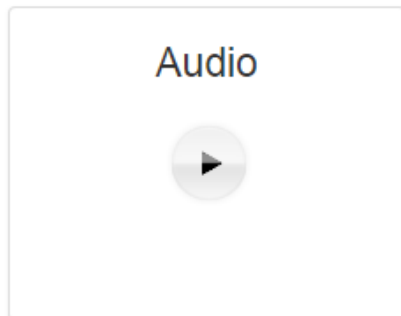
POST http://dialout.clcohio.org/call/TwilioResponse 13:01:26 EDT 2014-10-03 62ms 200 [C](#) [v](#)

- ▶ Request
- ▼ Response
  - ▶ Headers
  - ▼ Body [Show Raw](#)

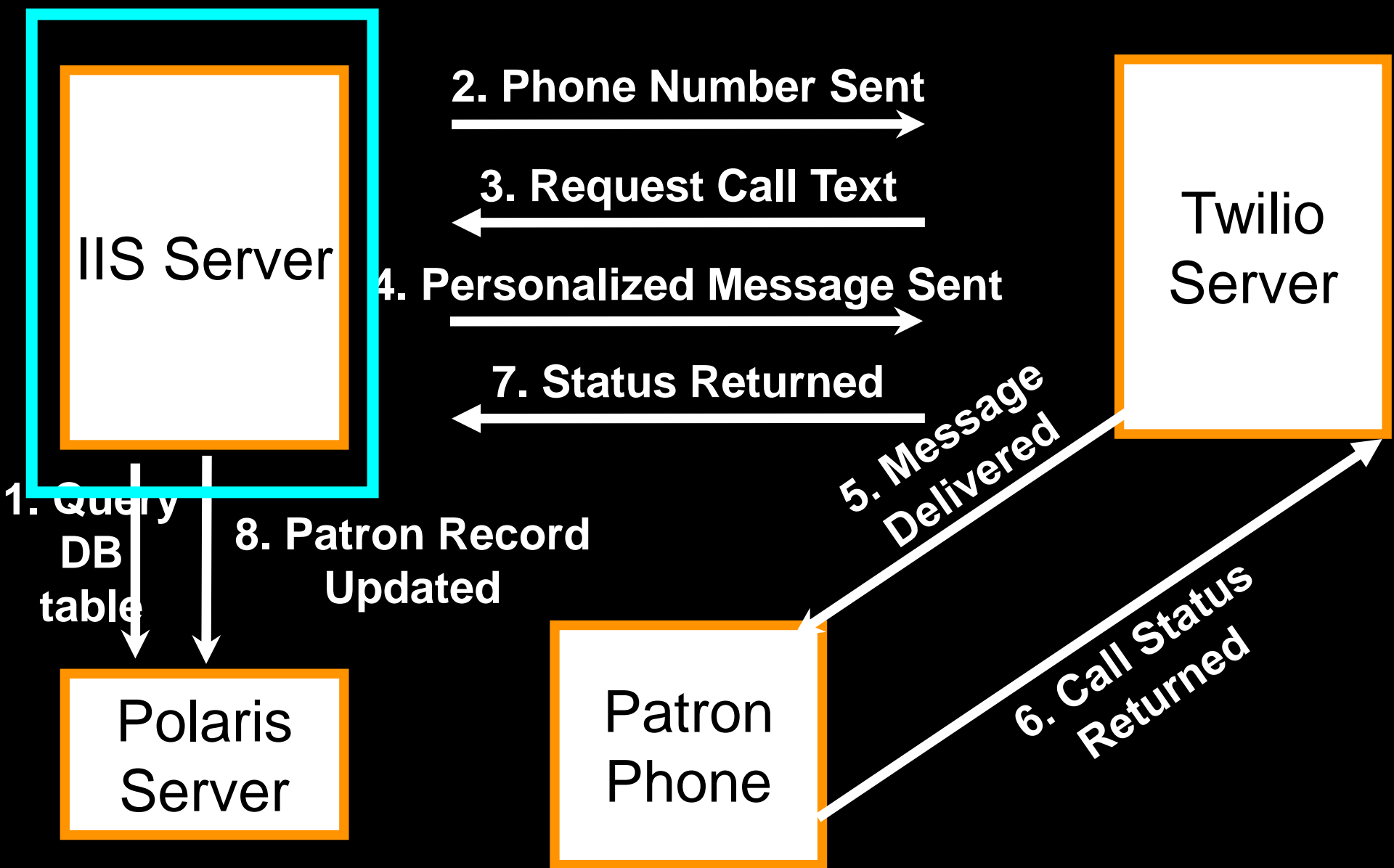
```
<Response>
  <Say voice="woman">Hello, this is a message from Bexley Public Library for jimmy hayes.</Say>
  <Say voice="woman">Our records indicate you have 1 held item at Bexley Public Library available for pickup by Thursday, October 09
. </Say>
  <Say voice="woman">If you have questions regarding your library account, please call 6 1 4, 6 5 3, 2 7 4 5. Thank you for using the 1
ibrary. Goodbye. </Say>
  <Hangup />
</Response>
```

▶ POST http://dialout.clcohio.org/call/TwilioStatus 13:01:49 EDT 2014-10-03 103ms 200 [C](#) [v](#)

## Media







# Use CLC's software

Our developer will configure & install CLC's Twilio integration code for one Polaris library. Must have Polaris API (PAPI).

# SMS Notices      Need I say more?

The screenshot shows the Administration Explorer interface for the Central Library Consortium. The left-hand pane displays a tree view of system components, with 'Mobile Phone Carriers' selected. The main pane displays a table of mobile phone carriers with the following data:

...ID	Carrier Name	SMS Address	Display
1	AT&T	@txt.att.net	No
2	Bell Canada	@txt.bellmobility.ca	No
3	Cellular One	@mobile.celloneus...	No
4	Cingular (Now AT...	@txt.att.net	No
5	Nextel	@messaging.nextel...	No
6	Qwest	@qwestmp.com	No
7	Southwestern Bell	@email.swbw.com	No
8	Sprint	@messaging.sprint...	No
9	T-Mobile	@tmomail.net	No
10	Tracfone	@txt.att.net	No
11	Verizon	@vtext.com	No
12	Virgin Mobile	@vmobl.com	No
13	Virgin Mobile Cana...	@vmobile.ca	No
14	USA Mobility	@airmessage.net	No
15	Bell South	@bellsouth.net	No
16	MetroPCS	@mymetropcs.com	No
17	Boost Mobile	@myboostmobile.c...	No
18	Helio	@myhelio.com	No
19	Fido	@fido.ca	No
20	Telus	@msg.telus.com	No
21	Rogers AT&T Wirel...	@pcs.rogers.com	No
22	Rogers Canada	@pcs.rogers.com	No
23	Any Mobile Carrier	@sms.clcohio.org	Yes
24	CLC Test - Do Not ...	@inbound.clcohio....	No

At the bottom of the window, it indicates '24 row(s)' and the user 'Wosborn' is logged in. The status bar also includes the text 'For Help, press F1'.

# SMS via Polaris email issues

Complicated for patrons

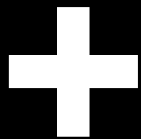
Complicated for staff

Unreliable – Carriers flag you as SPAM

A better way to send SMS



**twilio**



**MANDRILL**

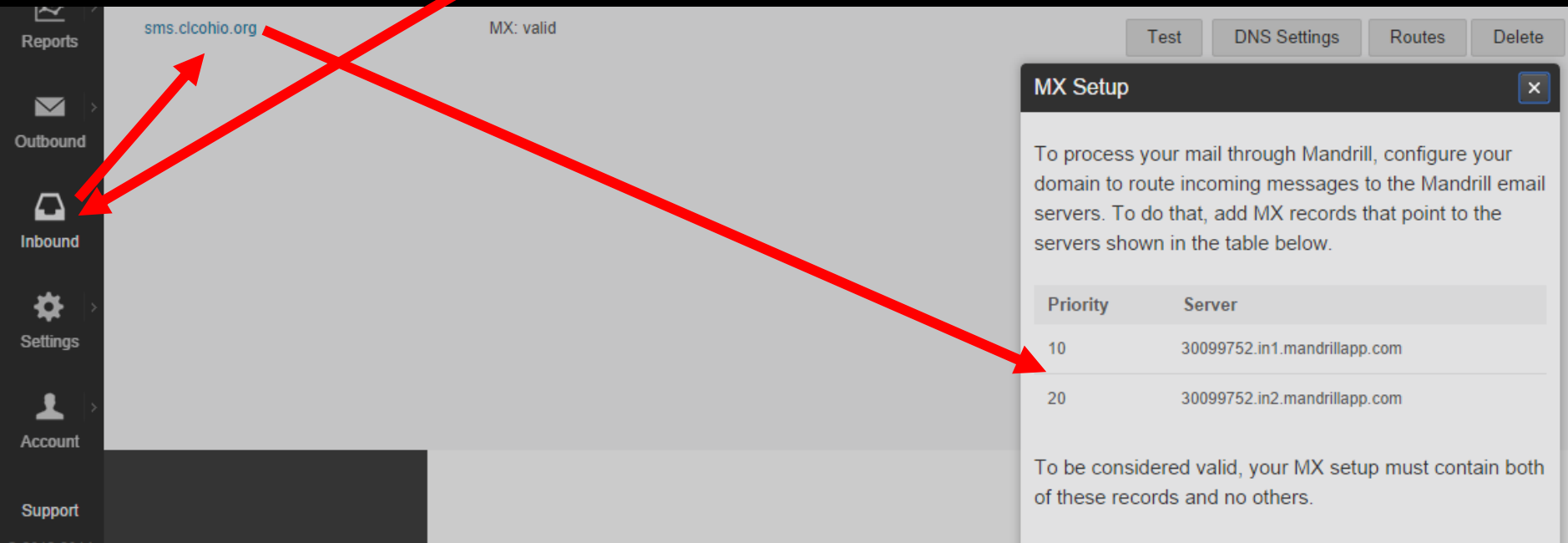
# SMS via Mandrill and Twilio

## Setup Summary

1. Decide on domain to setup for handling SMS messages (@sms.domain.org)
2. Setup Mandrill to handle inbound messages for the domain
3. Create web app to handle inbound JSON data from Mandrill and fire off Twilio process
4. Setup DNS MX records to route messages to Mandrill
5. Test by emailing 1234567890@sms.domain.org
6. Add new mobile carrier for @sms.domain.org and switch all patrons to that carrier, disable others

# Hacking the Mobile Carrier List

 23	Any Mobile Carrier	@sms.clcohoio.org	Yes
--	--------------------	-------------------	-----



The screenshot shows the Mandrill interface for the domain `sms.clcohoio.org`. The status is "MX: valid". A sidebar on the left contains navigation options: Reports, Outbound, Inbound, Settings, Account, and Support. A modal window titled "MX Setup" is open, providing instructions and a table of required MX records.

Test DNS Settings Routes Delete

**MX Setup** ✕

To process your mail through Mandrill, configure your domain to route incoming messages to the Mandrill email servers. To do that, add MX records that point to the servers shown in the table below.

Priority	Server
10	30099752.in1.mandrillapp.com
20	30099752.in2.mandrillapp.com

To be considered valid, your MX setup must contain both of these records and no others.

Red arrows in the image point from the domain name in the table above to the domain in the interface, from the email icon in the sidebar to the domain, and from the email icon in the sidebar to the MX Setup modal.

# Adding the Mandrill MX Records to AWS Route 53



Services ▾

Edit ▾

Dashboard

**Hosted Zones**

Health Checks

Domains

Back to Hosted Zones

Create Record Set

Import Zone File

Delete Record Set

Search:

Any Type ▾

Aliases Only

Weighted Only

<input type="checkbox"/>	Name	Type	Value
<input type="checkbox"/>	sms.clcohoio.org.	MX	10 30099752.in1.mandrillapp.com 20 30099752.in2.mandrillapp.com



# Telling Mandrill what to do with the incoming message

## Mailbox Routes for sms.clcohoio.org

+ Add New Route

Route	Webhook
*@sms.clcohoio.org	https://notices.clcohoio.org/sms/process?auth=1vp1bgKfZKfisY7kEU

# Inbound messages delivered to your application as JSON

## What is the format of inbound email webhooks?

Inbound emails are processed based on the routes you've set up, and messages matching the routes are sent to your specified URL(s) as a webhook. The webhooks generally follow the same format as other [webhooks for Mandrill](#).

The webhook request is a standard POST request with a single parameter - `mandrill_events`. This parameter will contain a JSON-encoded array of the messages that match the webhook information. Each element in this array is a JSON object with the following:

KEY	DESCRIPTION	
ts	integer UTC unix timestamp when the event occurred	
event	the name of the event (for inbound, will be 'inbound')	
msg	details about the message for which the event occurred	
	raw_msg	the full content of the received message, including headers and content
	headers	an array of the headers received for the message, such as 'Dkim-Signature', 'Mime-version', 'Date', 'Message-Id', etc.

# Message flowing through Mandrill

## >Outbound Log

Status	Sender	Email
<span style="color: green;">●</span> Delivered Oct 4, 2014 2:45 pm	<a href="mailto:plcirc@pickawaylib.org">plcirc@pickawaylib.org</a>	<a href="mailto:4198909166@sms.clcchio.org">4198909166@sms.clcchio.org</a>

## >Inbound Log

```
"helo": "mail139-240.wdc04.mandrillapp.com",  
"key": "Dp3hh6Q01B_4lm7gPxz7zw",  
"client_address": "205.201.139.240",  
"mail_from": "bounce-md_30099752.5430403d.v1-54e509c6fa994ef6980bf2818d9662b4@mandrillapp.com",  
"to": [  
  "4198909166@sms.clcchio.org"  
]  
}
```

## Full Response

```
[  
  {  
    "email": "4198909166@sms.clcchio.org",  
    "pattern": "**",  
    "url": "https://notices.clcchio.org/sms/process?auth=1vplbgKfZKfisY7kE"   
  }  
]
```

# Hand off to Twilio for delivery

Message SID SM8cec7d87c5076f2133672067592eca07

Date 14:45:22 EDT 2014-10-04

Direction Outgoing API

Cost -\$0.0075

From (614) 654-4435

To (419) 890-9166

Status Sent

Body

Title: [REDACTED]  
Author: Temple, Bob, author.  
Material: [REDACTED]  
Due: 10/25/2014

Access your library account for additional information.

# Patron gets text message



# Overview of delivery process

1. Polaris generates email for 1234567890@sms.clcoho.org
2. Local Polaris SMTP server hands the message off to Mandrill for delivery
3. Messages is routed from outbound Mandrill service to inbound Mandrill service
4. Inbound Mandrill service posts JSON message data to CLC developed web application
5. CLC web application calls Twilio API to deliver the SMS message
6. Twilio delivers message to patron's phone

# Issues with Twilio SMS

1. Can get expensive, \$0.0075 per message seems cheap until you start sending 70,000 a month.
2. Carrier's would like you to buy short codes, which cost \$3,000+ just for the short code.
  1. If you use traditional "long" phone numbers to deliver the message, you must buy several messages and rotate them so your messages don't get flagged as spam.
  2. You need to create a sub-account with Twilio to randomize the multiple "long" phone numbers you're going to use
3. Polaris create SMS messages that are too long can cause delivery problems

# Why Cloud Services?

Because they're awesome of course!



# Questions?

## What cool cloud services does your library use?

Wes Osborn: [wosborn@clcoho.org](mailto:wosborn@clcoho.org)



**CENTRAL**  
**LIBRARY**  
**CONSORTIUM**