

# Introducing Passbook

## Part 2: Framework and Web Service API

Session 309

**Ken Ferry and Eliza Block**

Passbook Group

These are confidential sessions—please refrain from streaming, blogging, or taking pictures



# Ecosystem



Companion  
App



Server

Conduit  
App



# Ecosystem



Companion  
App



Server

Conduit  
App



# Ecosystem



Companion  
App



Server

Conduit  
App



# Ecosystem



Companion  
App



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Conduit  
App



# Ecosystem



Companion  
App



Server

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App



# Ecosystem



Companion  
App



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App





# Companion Apps

## Modifying passes

Please select a new seat:

3B

7F

12C

12D

16B

16D

16E

19F

22D

27F

Cancel

# Show Installed Passes

The screenshot shows the 'Your Passes' interface on an iPhone. At the top, the title 'Your Passes' is displayed in a light grey font, with an 'Edit' button to its right. Below the title, there are three pass entries, each with a bold title, a date and time, and a chevron icon pointing right. The first pass is 'SYD to PER' on 9/18/04 at 7:00 PM, with details 'OA 177 - Hugo Reyes - 3A'. The second pass is 'PER to SYD' on 9/21/04 at 9:10 AM, with details 'OA 26 - Hugo Reyes - 6F'. The third pass is 'SYD to LAX' on 9/22/04 at 2:55 PM, with details 'OA 815 - Hugo Reyes - 20G'. The background of the app is a dark, stormy sky with a bright lightning bolt striking down.

Pass Title	Date & Time	Details
<b>SYD to PER</b>	9/18/04, 7:00 PM	OA 177 - Hugo Reyes - 3A
<b>PER to SYD</b>	9/21/04, 9:10 AM	OA 26 - Hugo Reyes - 6F
<b>SYD to LAX</b>	9/22/04, 2:55 PM	OA 815 - Hugo Reyes - 20G

# Show Installed Passes



PKPassLibrary



PKPass



# Get Installed Passes

## PKPassLibrary

```
passLibrary = [[PKPassLibrary alloc] init];

passes = [passLibrary passes];

noteCenter = [NSNotificationCenter defaultCenter];
[noteCenter addObserver:self
                 selector:@selector(passLibraryDidChange)
                 name:PKPassLibraryDidChangeNotification
                 object:passLibrary];
```

# Get Installed Passes

## PKPassLibrary

```
passLibrary = [[PKPassLibrary alloc] init];

passes = [passLibrary passes];

noteCenter = [NSNotificationCenter defaultCenter];
[noteCenter addObserver:self
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                 object:passLibrary];
```

# Get Installed Passes

## PKPassLibrary

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passLibrary = [[PKPassLibrary alloc] init];
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```
passes = [passLibrary passes];
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noteCenter = [NSNotificationCenter defaultCenter];  
[noteCenter addObserver:self  
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                 object:passLibrary];
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# Get Installed Passes

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passes = [passLibrary passes];
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                 selector:@selector(passLibraryDidChange)  
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                 object:passLibrary];
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# Get Installed Passes

## PKPassLibrary

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passLibrary = [[PKPassLibrary alloc] init];

passes = [passLibrary passes];

noteCenter = [NSNotificationCenter defaultCenter];
[noteCenter addObserver:self
                 selector:@selector(passLibraryDidChange)
                 name:PKPassLibraryDidChangeNotification
                 object:passLibrary];
```



```
[noteCenter addObserver:self
                selector:@selector(passLibraryDidChange)
                name:PKPassLibraryDidChangeNotification
                object:passLibrary];
```

# PKPassLibrary Is Not a Singleton

alloc/init to instantiate

```
[NSNotificationCenter addObserver:self
                        selector:@selector(passLibraryDidChange)
                        name:PKPassLibraryDidChangeNotification
                        object:passLibrary];
```

- Notifications are per-library
- Thread confined


# Entitlements

An app must declare the passes it accesses

```
passes = [passLibrary passes];
```

```
<key>com.apple.developer.pass-type-identifiers</key>  
<array>  
  <string>pass.com.oceanic.BoardingPass</string>  
</array>
```

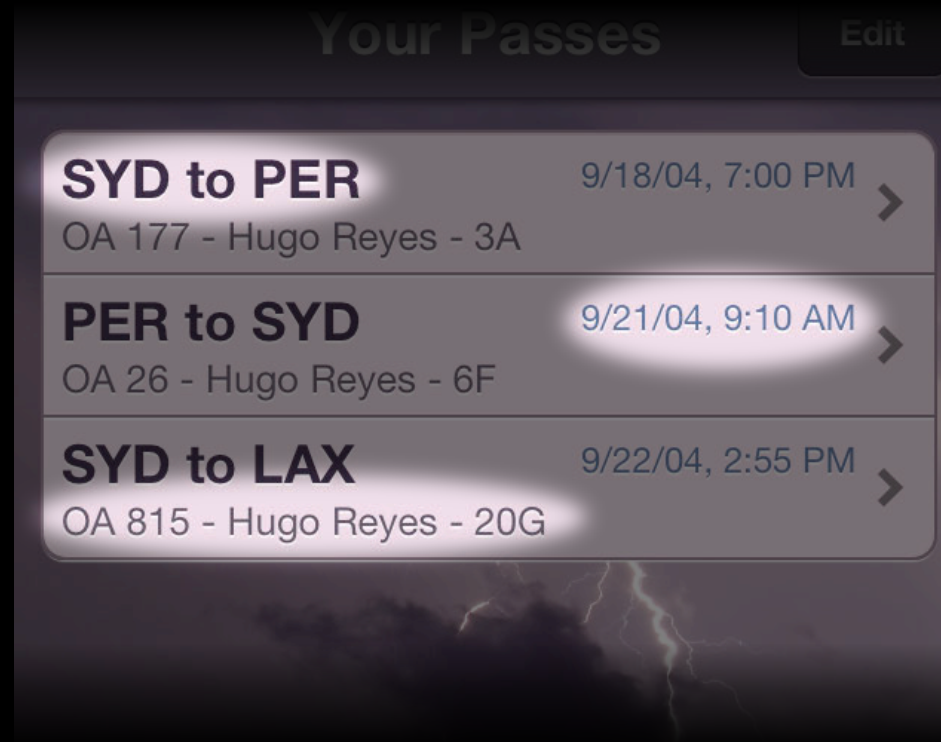
# Display a Pass in Table Form



The screenshot shows the 'Your Passes' interface of an iPhone app. At the top, the title 'Your Passes' is displayed in a light grey font, with an 'Edit' button to its right. Below the title is a table with three rows, each representing a flight pass. The table has a light purple background and rounded corners. Each row contains the route (e.g., 'SYD to PER'), the date and time (e.g., '9/18/04, 7:00 PM'), and a right-pointing chevron icon. Below the route and date, the flight details (e.g., 'OA 177 - Hugo Reyes - 3A') are listed in a smaller font. The background of the app is a dark, stormy sky with a bright lightning bolt.

Route	Date and Time	Details
<b>SYD to PER</b>	9/18/04, 7:00 PM	OA 177 - Hugo Reyes - 3A
<b>PER to SYD</b>	9/21/04, 9:10 AM	OA 26 - Hugo Reyes - 6F
<b>SYD to LAX</b>	9/22/04, 2:55 PM	OA 815 - Hugo Reyes - 20G

# Display a Pass in Table Form



The screenshot shows the 'Your Passes' app interface. At the top, the title 'Your Passes' is displayed in a light grey font, with an 'Edit' button to its right. Below the title, there is a table of three flight passes. Each pass is represented by a row with a dark background and light text. The first row shows 'SYD to PER' with the date and time '9/18/04, 7:00 PM' and a right-pointing chevron. Below this, the details 'OA 177 - Hugo Reyes - 3A' are listed. The second row shows 'PER to SYD' with the date and time '9/21/04, 9:10 AM' and a chevron, with details 'OA 26 - Hugo Reyes - 6F'. The third row shows 'SYD to LAX' with the date and time '9/22/04, 2:55 PM' and a chevron, with details 'OA 815 - Hugo Reyes - 20G'. The background of the app is a dark, stormy sky with a lightning bolt.

Your Passes		Edit
<b>SYD to PER</b>	9/18/04, 7:00 PM	>
OA 177 - Hugo Reyes - 3A		
<b>PER to SYD</b>	9/21/04, 9:10 AM	>
OA 26 - Hugo Reyes - 6F		
<b>SYD to LAX</b>	9/22/04, 2:55 PM	>
OA 815 - Hugo Reyes - 20G		

# Display a Pass in Table Form

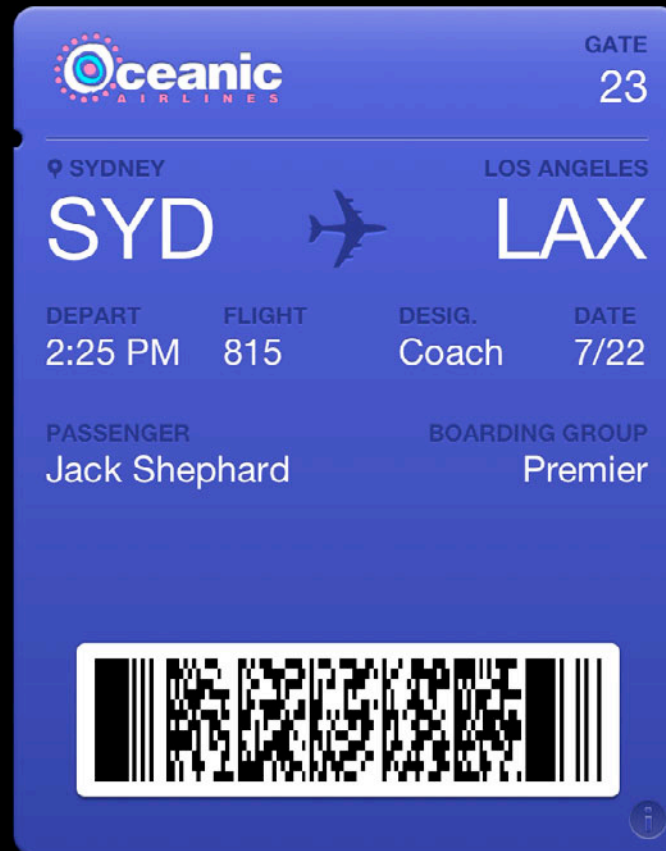
Grabbing text off the pass

```
[pass localizedValueForKey:@"monkeyProfession"]
```

```
{  
  "key": "monkeyProfession"  
  "label": "PROFESSION",  
  "value": "Butler",  
}
```



# Display a Pass for Scanning



# Display a Pass for Scanning

...in Passbook

```
[sharedApp openURL:[tappedPass passURL]]
```



# Companion Apps Are for Editing

Don't write an app if you don't need one

- Avoid duplicating Passbook
- A pass should not require an app to be useful

# Modifying a Pass

Please select a new seat:

3B

7F

12C

12D

16B

16D

16E

19F

22D

27F

Cancel

# Modifying a Pass

PKPass isn't mutable



Your Server

# Modifying a Pass

PKPass isn't mutable



request

Your Server

# Modifying a Pass

PKPass isn't mutable



request

Your Server

.pkpass data

# Modifying a Pass

Identifying a pass to your server

```
@property NSString *passTypeIdentifier;  
@property NSString *serialNumber;
```

# Modifying a Pass

## Incorporating a change

```
replacementPass = [[PKPass alloc] initWithData:data error:&error];  
...  
[passLibrary replacePassWithPass:replacementPass];
```

*Demo*

Using PassKit

Eliza Block



# Ecosystem



Companion  
App



Server

Conduit  
App



# Ecosystem



Companion  
App



Server

Conduit  
App



# Dealing with Incoming Pass Data

## PKPass

Dear Scott,

Sorry to hear about your recent troubles with our X-TREME SKY-SURFING SUIT. As a token of our appreciation for your business, please accept this coupon for 20% off any BLUNT-4CE-TRAMA first aid kit.

Thanks,

Monique Nelson  
Sporty Sports Supply Global Public  
Relations



**Coupon**

Sporty Sports Supply

# Dealing with Incoming Pass Data

## Recognizing the data

UTI	com.apple.pkpass
MIME Type	application/vnd.apple.pkpass
Extension	.pkpass

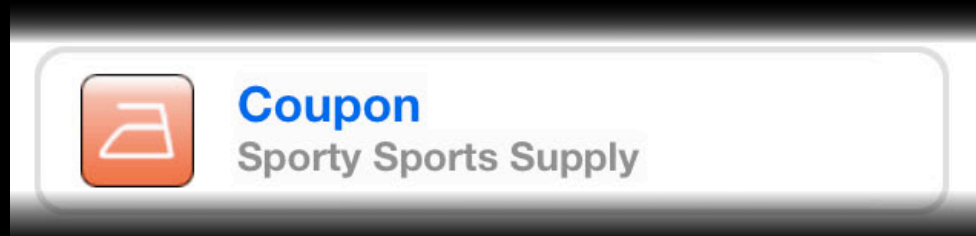
# Dealing with Incoming Pass Data

## Instantiating PKPass

```
[[PKPass alloc] initWithData:data error:&error]
```

# Dealing with Incoming Pass Data

Displaying the pass



# Dealing with Incoming Pass Data

## Displaying the pass



# Add a Pass to Passbook

## PKAddPassesViewController

```
addPassesVC = [[PKAddPassesViewController alloc]  
               initWithPass:downloadedPass];
```

```
[self presentViewController:addPassesVC  
    animated:YES  
    completion:^{}];
```





# Check for Pass Already Present

```
[passLibrary containsPass:aPass]
```

# Check for Capability

Passbook is not available on iPad

```
[PKPassLibrary isPassLibraryAvailable]
```

# PassKit

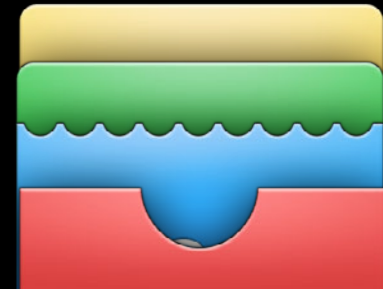
# PassKit



PKAddPasses  
ViewController



PKPass



PKPassLibrary

# Ecosystem



Companion  
App



Server

Conduit  
App



# Ecosystem



Companion  
App



Server

Conduit  
App



# Passbook from the Server Side

Eliza Block

# Web Services

## How to opt in

```
pass.json:
{
    ...
    "webServiceURL" : "https://www.foo.com/passes/",
    ...
    "authenticationToken" : "PZ8GL23T24JEB41X6U",
    ...
}
```



# Web Services

## Overview

Apple Push  
Notification Service



Your Server

# Web Services

## Overview

Apple Push  
Notification Service

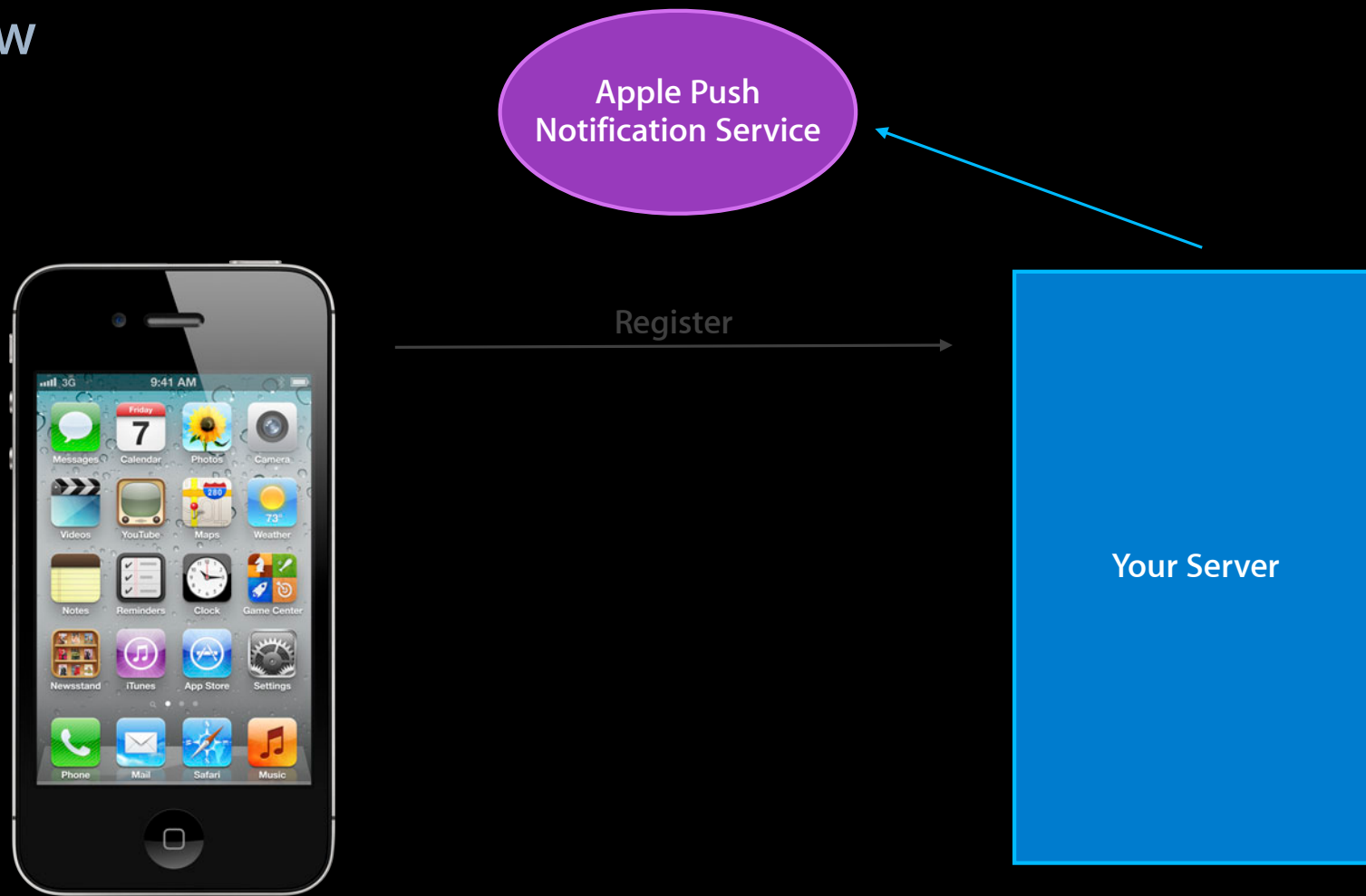


Register

Your Server

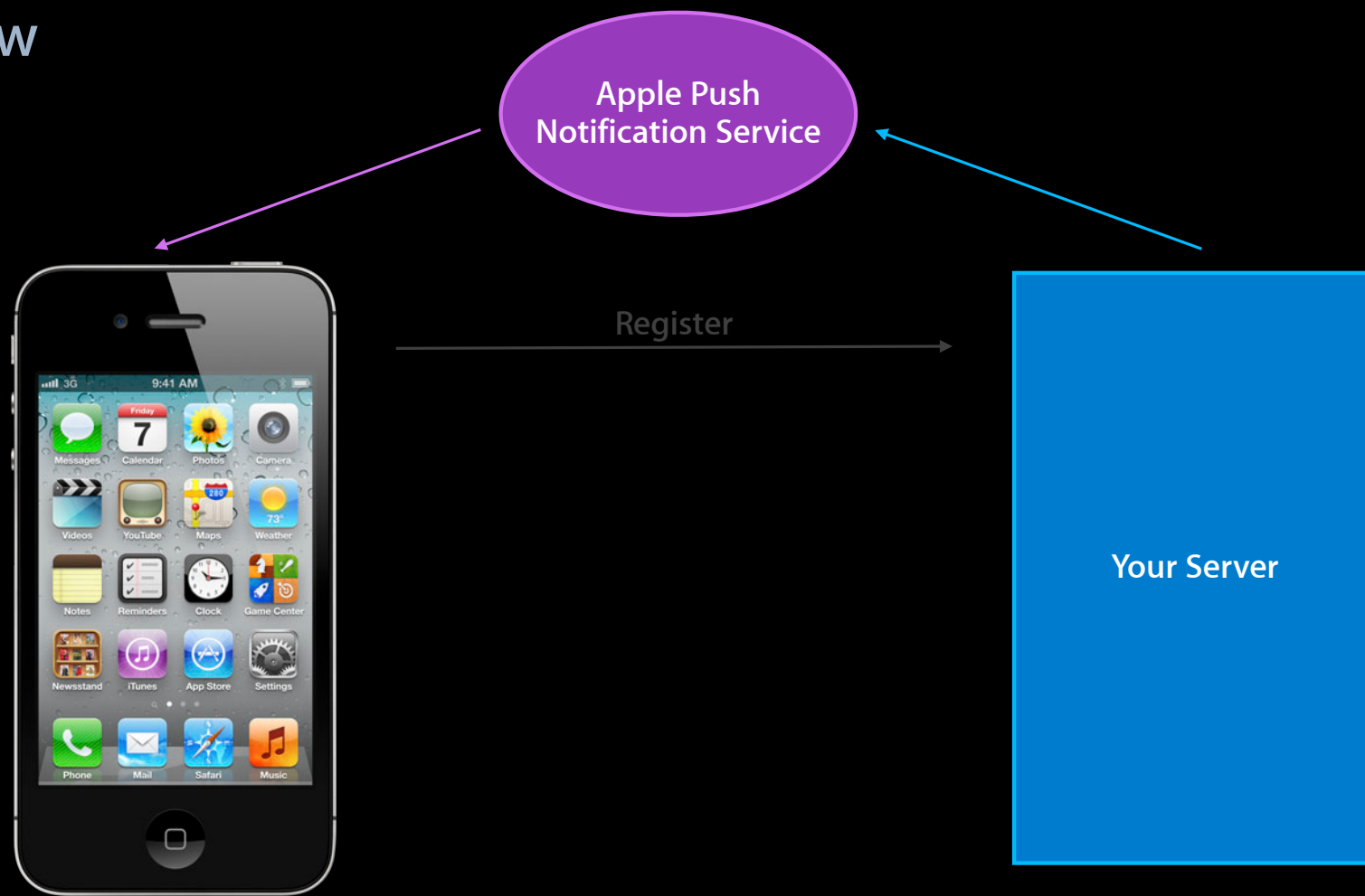
# Web Services

## Overview



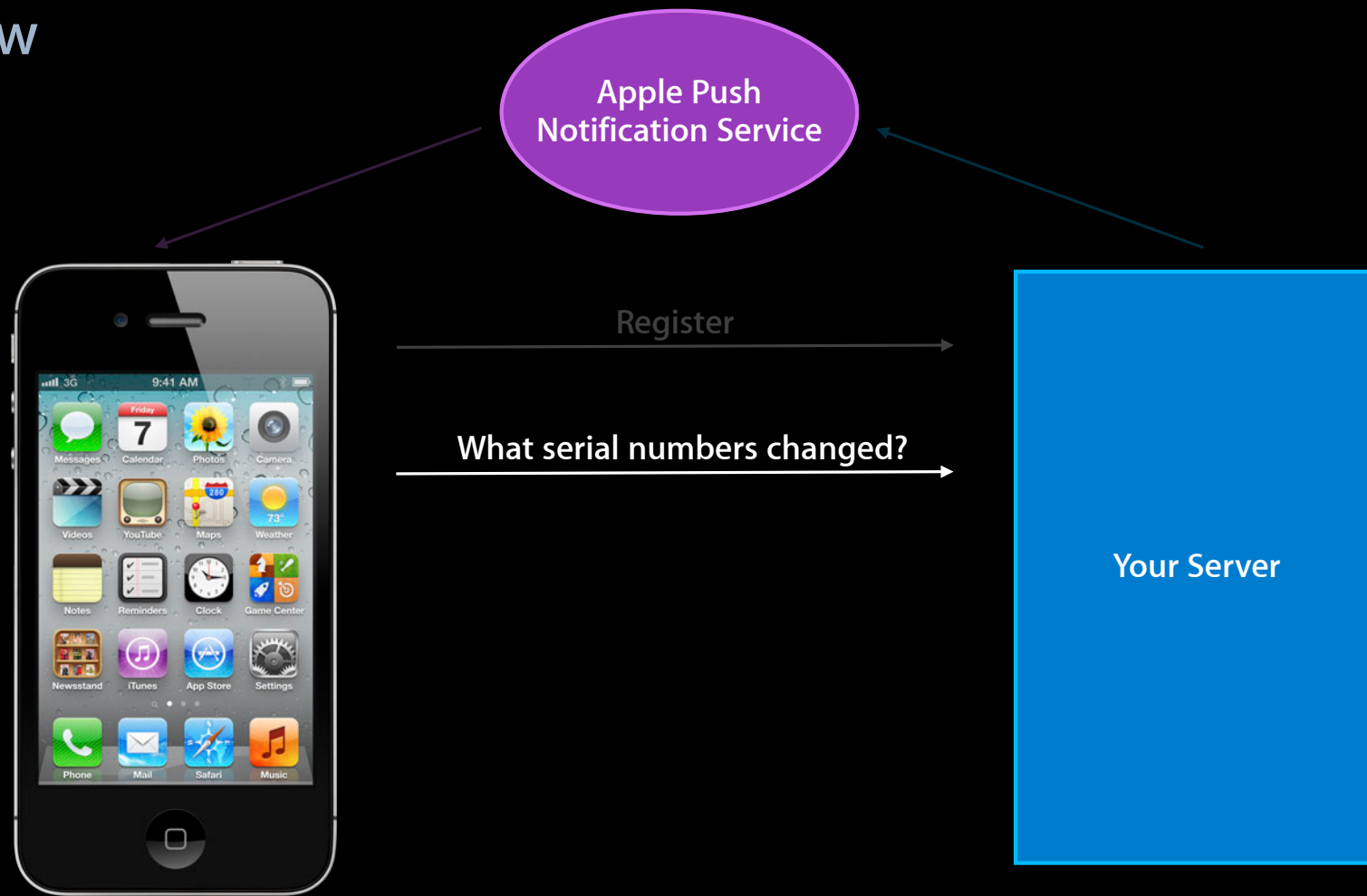
# Web Services

## Overview



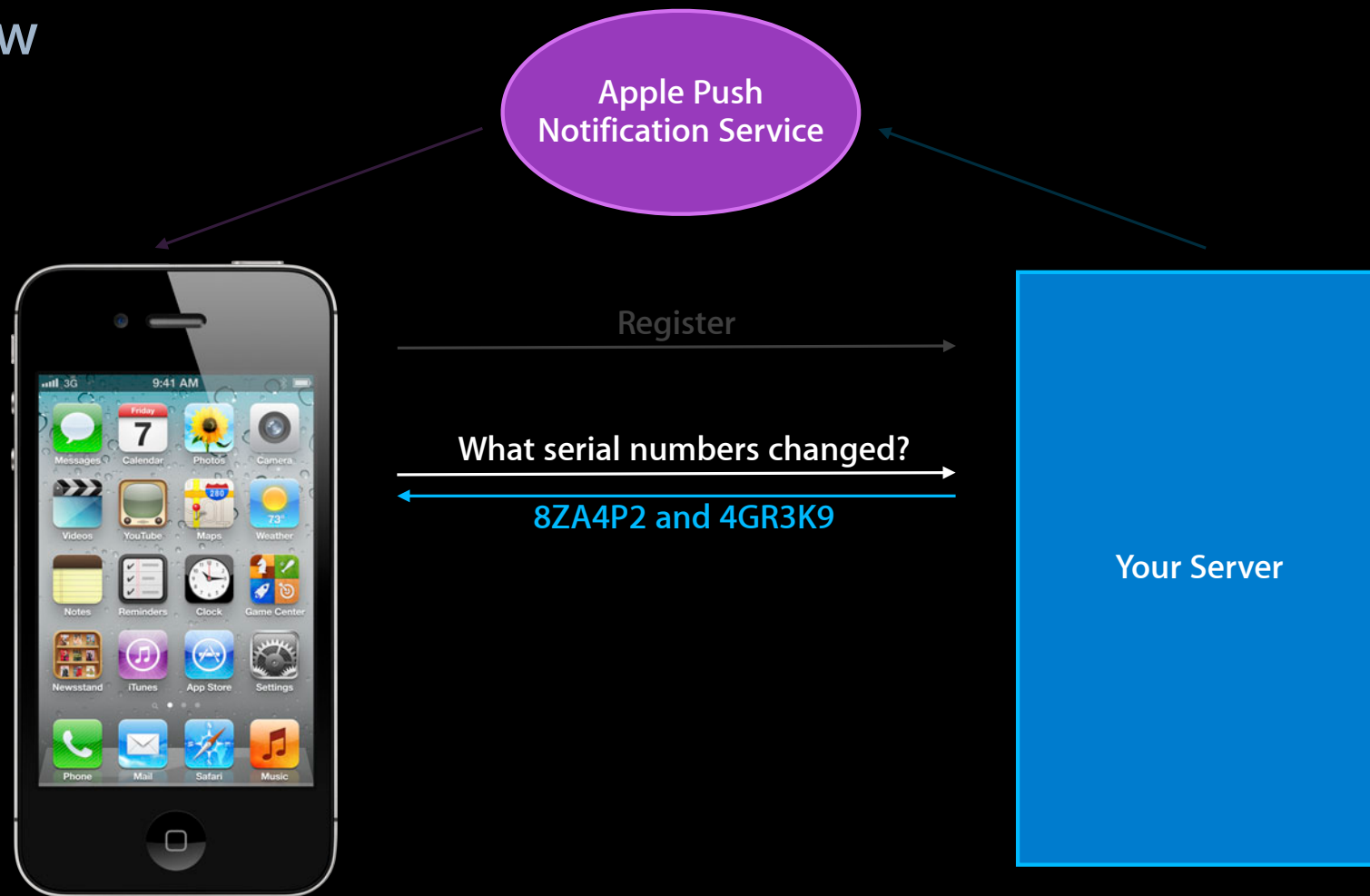
# Web Services

## Overview



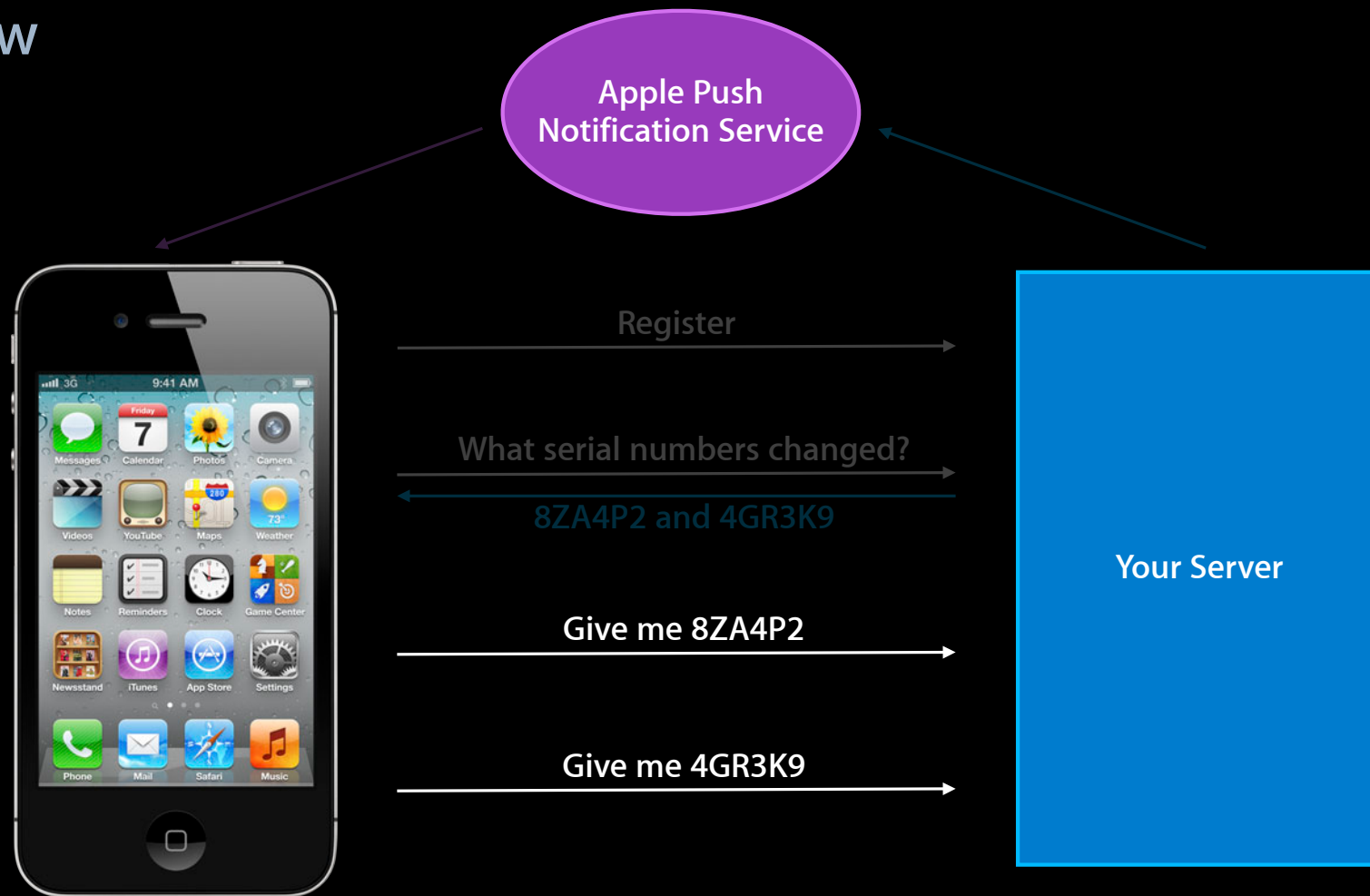
# Web Services

## Overview



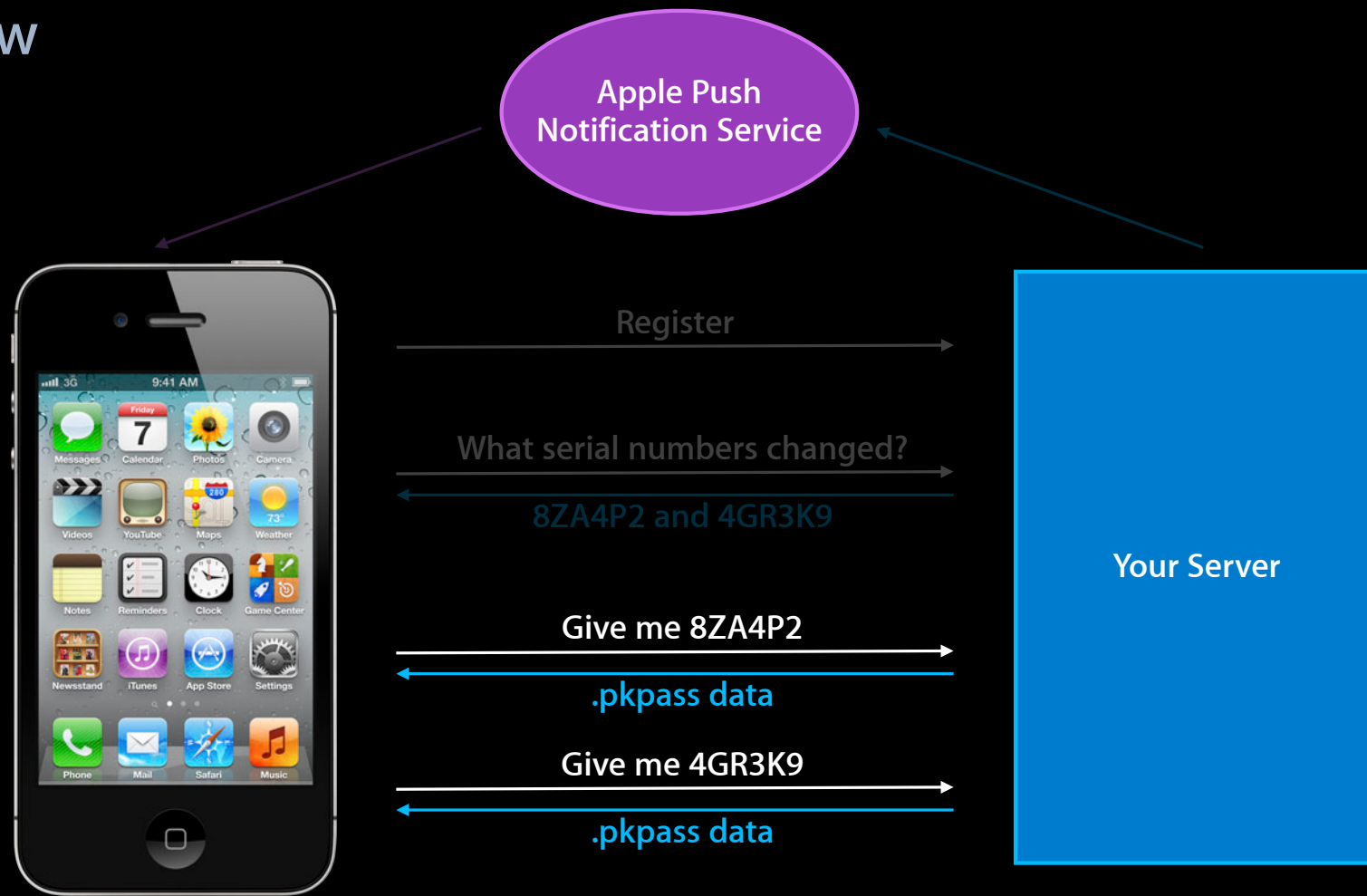
# Web Services

## Overview



# Web Services

## Overview





# Web Services

Communication elements

# Web Services

## Communication elements

- From pass.json

PassTypeID

SerialNo.

AuthToken

# Web Services

## Communication elements

- From pass.json

PassTypeID

SerialNo.

AuthToken

- From device

DeviceID

PushToken

# Web Services

## Communication elements

- From pass.json

PassTypeID

SerialNo.

AuthToken

- From device

DeviceID

PushToken

- From your server

UpdateTag

# Web Services

## Registration



Your Server

# Web Services Registration



Register

PassTypeID

SerialNo.

AuthToken

DeviceID

PushToken

Your Server

# Web Services

## Registration



Your Server

DeviceID

PushToken

PassTypeID

SerialNo.

AuthToken

# Web Services

## Registration



Your Server

DeviceID

PushToken

PassTypeID

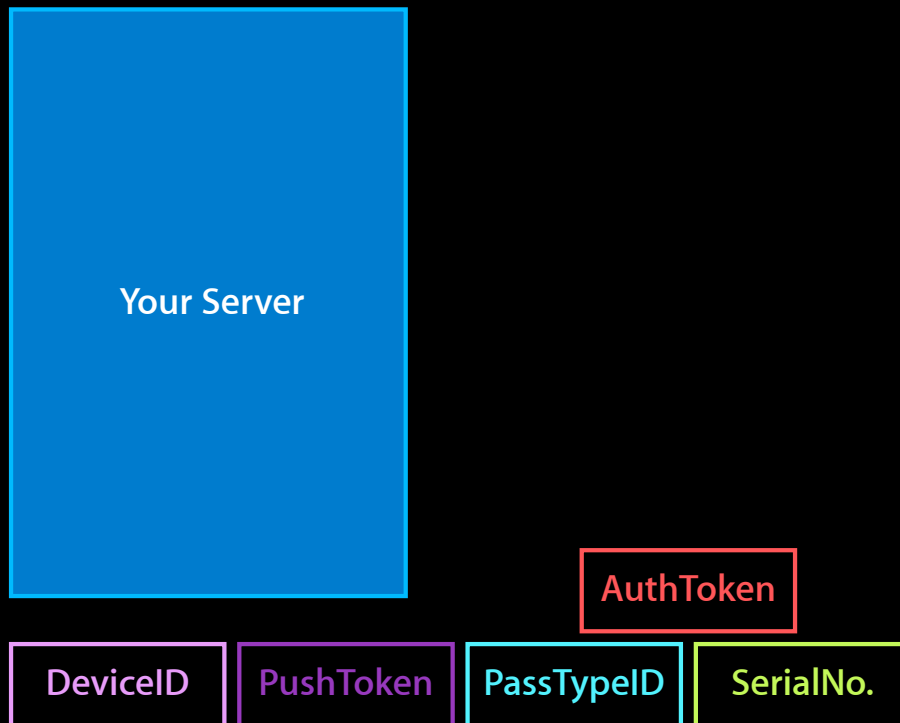
SerialNo.

AuthToken



# Web Services

## Registration



# Web Services

## Registration



Your Server

DeviceID

PushToken

PassTypeID

SerialNo.

# Web Services

Storage on your server



Your Server

DeviceID

PushToken

PassTypeID

SerialNo.

# Web Services

## Storage on your server

Devices

Your Server		

DeviceID

PushToken

PassTypeID

SerialNo.

# Web Services

## Storage on your server

Devices

Your Server	Device A	PushToken A
	Device B	PushToken B

DeviceID	PushToken	PassTypeID	SerialNo.
----------	-----------	------------	-----------

# Web Services

## Storage on your server

Devices

Your Server	Device A	PushToken A
	Device B	PushToken B
	DeviceID	PushToken

PassTypeID

SerialNo.

# Web Services

## Storage on your server

Devices

Your Server	Device A	PushToken A
	Device B	PushToken B
	DeviceID	PushToken

PassTypeID

SerialNo.

# Web Services

## Storage on your server

Devices

Device A	PushToken A
Device B	PushToken B
DeviceID	PushToken

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device B	pass.oceanic	XD28

PassTypeID

SerialNo.



# Web Services

## Storage on your server

Devices

Device A	PushToken A
Device B	PushToken B
DeviceID	PushToken

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device B	pass.oceanic	XD28

PassTypeID

SerialNo.

# Web Services

## Storage on your server

Devices

Device A	PushToken A
Device B	PushToken B
DeviceID	PushToken

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device B	pass.oceanic	XD28
DeviceID		

PassTypeID

SerialNo.

# Web Services

## Storage on your server

Devices

Device A	PushToken A
Device B	PushToken B
DeviceID	PushToken

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device B	pass.oceanic	XD28
DeviceID	PassTypeID	SerialNo.

# Web Services

Registration endpoint

# Web Services

## Registration endpoint

- POST

```
/v1/devices/<deviceID>/registrations/<passTypeID>/<serialNo.>
```

# Web Services

## Registration endpoint

- POST

```
/v1/devices/<deviceID>/registrations/<passTypeID>/<serialNo.>
```

- In the HTTP header

```
Authorization: ApplePass <authToken>
```

# Web Services

## Registration endpoint

- POST

```
/v1/devices/<deviceID>/registrations/<passTypeID>/<serialNo.>
```

- In the HTTP header

```
Authorization: ApplePass <authToken>
```

- JSON payload

```
{ "pushToken" : <pushToken> }
```

# Web Services

Unregistration endpoint



# Web Services

## Unregistration endpoint

- DELETE

```
/v1/devices/<deviceID>/registrations/<passTypeID>/<serialNo.>
```

# Web Services

## Unregistration endpoint

- DELETE

```
/v1/devices/<deviceID>/registrations/<passTypeID>/<serialNo.>
```

- In the HTTP header

```
Authorization: ApplePass <authToken>
```

# Web Services

## Storage on your server

Devices

Device A	PushToken A
Device B	PushToken B
Device C	PushToken C

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38





















# Web Services

## Handling a change

### Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	S
EK91	Hugo Reyes	9/21, 9am	OA26	
XD28	Jack Shephard	9/22, 3pm	OA815	S
CL55	Hugo Reyes	9/22, 3pm	OA815	S

# Web Services

## Handling a change

### Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	S
EK91	Hugo Reyes	9/21, 9am	OA26	
XD28	Jack Shephard	9/22, 3pm	OA815	S
CL55	Hugo Reyes	9/22, 3pm	OA815	S

# Web Services

## Handling a change

### Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	S
EK91	Hugo Reyes	9/21, 9am	OA26	
XD28	Jack Shephard	9/22, 3pm	OA815	S
CL55	Hugo Reyes	9/22, 3pm	OA815	S

# Web Services

## Handling a change

Devices

Device A	PushToken A
Device B	PushToken B
Device C	PushToken C

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

Boarding Passes

JA38	Hu
EK91	Hu
XD28	Jack
CL55	Hu



# Web Services

## Handling a change

Devices

Device A	PushToken A
Device B	PushToken B
Device C	PushToken C

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

Boarding Passes

JA38	Hu
EK91	Hu
XD28	Jack
CL55	Hu

# Web Services

## Sending a push notification

Devices

Device A	PushToken A
Device B	PushToken B
Device C	PushToken C

Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

Boarding Passes

JA38	Hu
EK91	Hu
XD28	Jack
CL55	Hu

# Web Services

## Sending a push notification



Your Server

# Web Services

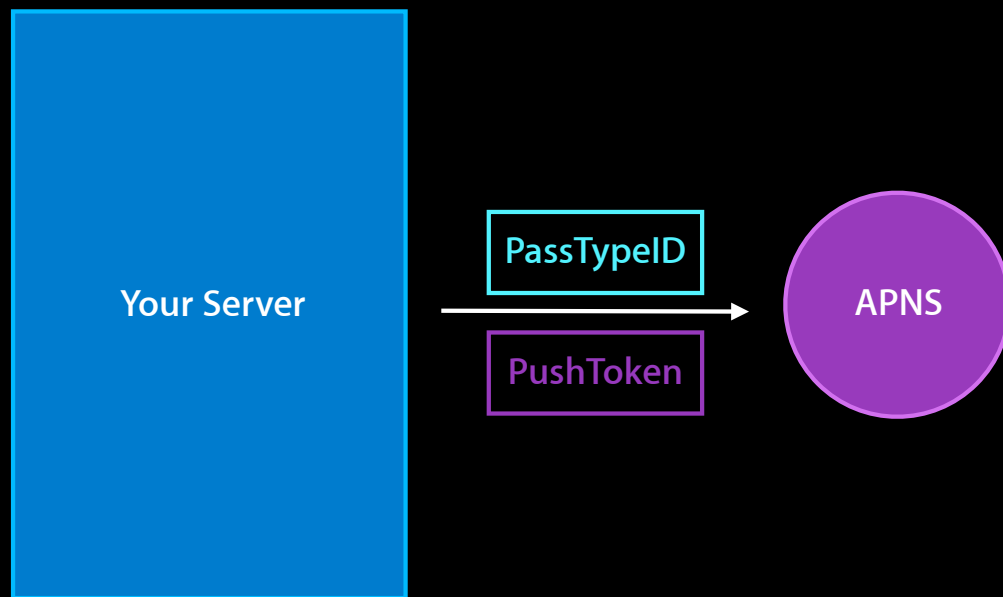
## Sending a push notification



Your Server

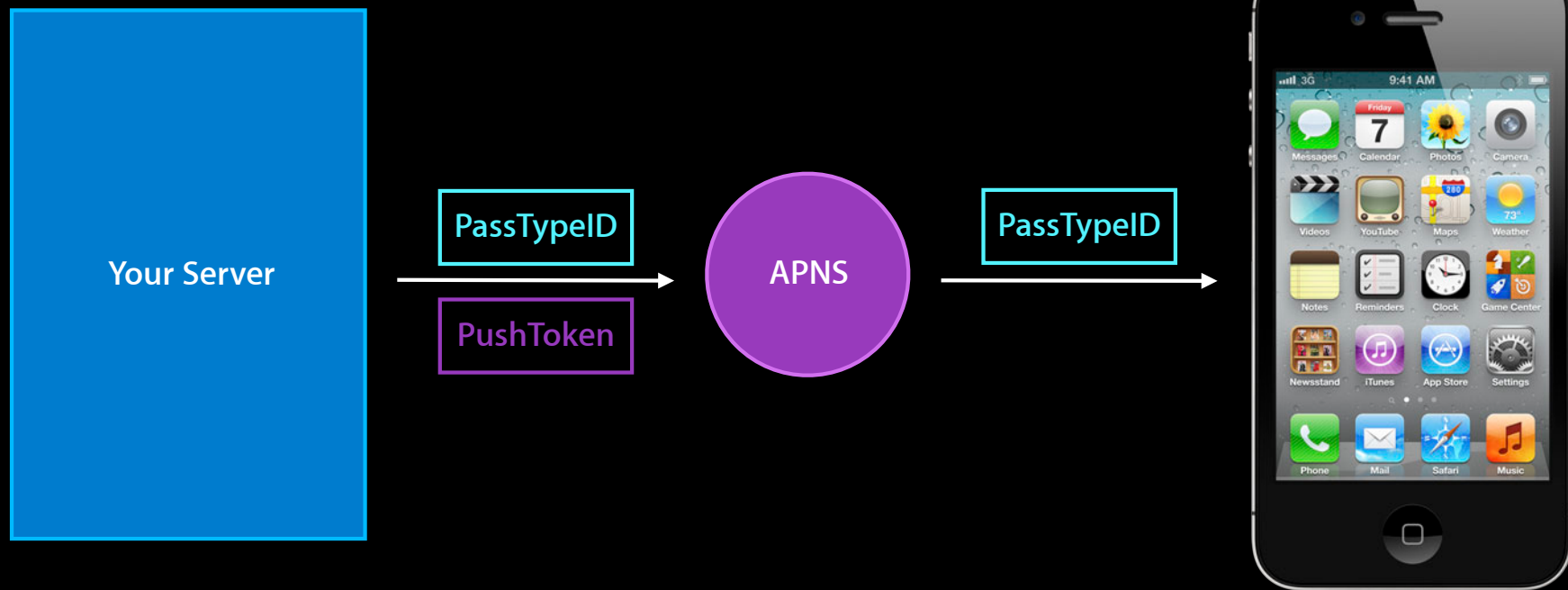
# Web Services

## Sending a push notification



# Web Services

## Sending a push notification



# Web Services

“What changed?”



PassTypeID

# Web Services

“What changed?”



PassTypeID



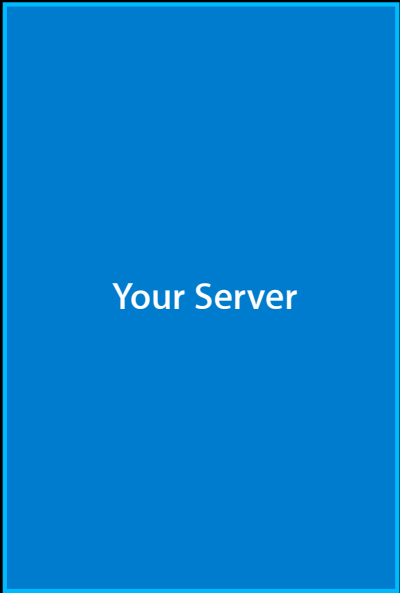
# Web Services

“What changed?”



PassTypeID

What serial numbers changed? →



Your Server

# Web Services

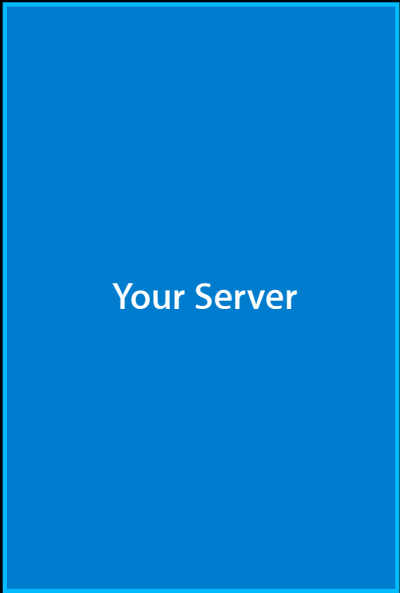
“What changed?”



What serial numbers changed? →

DeviceID

PassTypeID



Your Server

# Web Services

“What changed?”



What serial numbers changed?

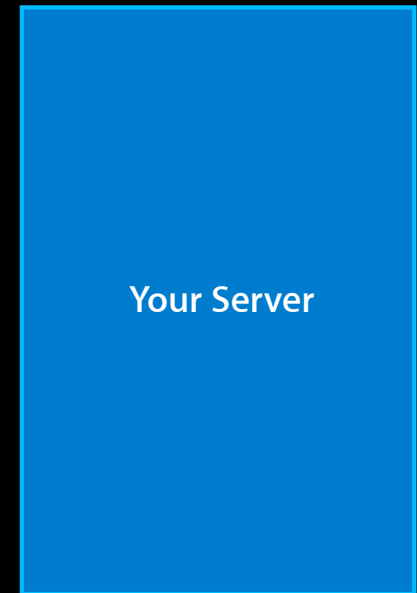
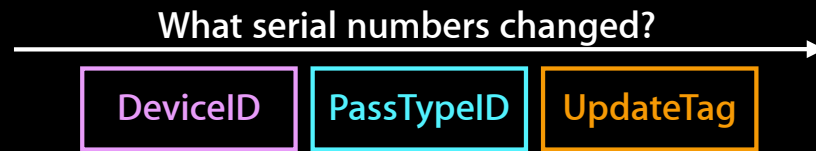
DeviceID

PassTypeID

Your Server

# Web Services

“What changed?”



# Web Services

“What changed?”



What serial numbers changed?

DeviceID

PassTypeID

UpdateTag

Your Server

SerialNo.

# Web Services

“What changed?”



What serial numbers changed?

DeviceID

PassTypeID

UpdateTag

Your Server

UpdateTag

SerialNo.

# Web Services

“What changed?”



What serial numbers changed?

DeviceID

PassTypeID

UpdateTag

Device A

pass.oceanic

9/12, 10am

Your Server

UpdateTag

SerialNo.

# Web Services

## Figuring out what changed

### Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

Device A pass.oceanic 9/12, 10am



# Web Services

## Figuring out what changed

### Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

Device A pass.oceanic 9/12, 10am

# Web Services

## Figuring out what changed

### Registrations

Device A	pass.oceanic	JA38
Device A	pass.oceanic	EK91
Device A	pass.oceanic	CL55
Device B	pass.oceanic	XD28
Device C	pass.oceanic	JA38

Device A pass.oceanic 9/12, 10am

# Web Services

## Figuring out what changed

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	SYD	PER	3A	...	9/18, 5pm
EK91	Hugo Reyes	9/21, 9am	OA26	PER	SYD	6F	...	9/12, 10am
XD28	Jack Shephard	9/22, 3pm	OA815	SYD	LAX	22D	...	8/22, 6pm
CL55	Hugo Reyes	9/22, 3pm	OA815	SYD	LAX	20G	...	9/1, 8pm

Device A pass.oceanic 9/12, 10am

# Web Services

## Figuring out what changed

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	SYD	PER	3A	...	9/18, 5pm
EK91	Hugo Reyes	9/21, 9am	OA26	PER	SYD	6F	...	9/12, 10am
XD28	Jack Shephard	9/22, 3pm	OA815	SYD	LAX	22D	...	8/22, 6pm
CL55	Hugo Reyes	9/22, 3pm	OA815	SYD	LAX	20G	...	9/1, 8pm

Device A pass.oceanic 9/12, 10am

# Web Services

## Figuring out what changed

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	SYD	PER	3A	...	9/18, 5pm
EK91	Hugo Reyes	9/21, 9am	OA26	PER	SYD	6F	...	9/12, 10am
XD28	Jack Shephard	9/22, 3pm	OA815	SYD	LAX	22D	...	8/22, 6pm
CL55	Hugo Reyes	9/22, 3pm	OA815	SYD	LAX	20G	...	9/1, 8pm

Device A pass.oceanic 9/12, 10am

# Web Services

## Figuring out what changed

### Boarding Passes

JA38	Hugo Reyes	9/18, 7pm	OA177	SYD	PER	3A	...	9/18, 5pm
EK91	Hugo Reyes	9/21, 9am	OA26	PER	SYD	6F	...	9/12, 10am
XD28	Jack Shephard	9/22, 3pm	OA815	SYD	LAX	22D	...	8/22, 6pm
CL55	Hugo Reyes	9/22, 3pm	OA815	SYD	LAX	20G	...	9/1, 8pm

Device A pass.oceanic 9/12, 10am

# Web Services

## Figuring out what changed

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Device A pass.oceanic 9/12, 10am

JA38 9/18, 5pm



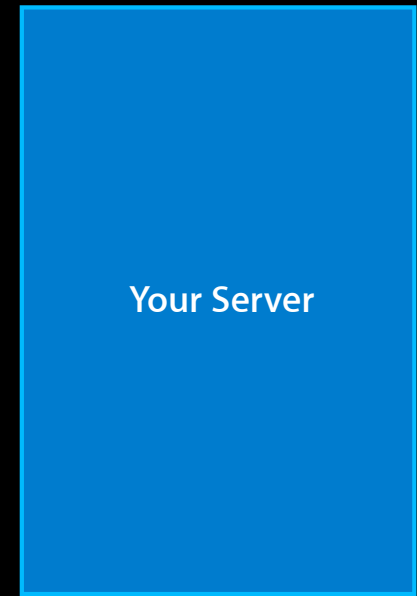
# Web Services

“What changed?”



What serial numbers changed? →

DeviceID	PassTypeID	UpdateTag
Device A	pass.oceanic	9/12, 10am



Your Server

JA38 9/18, 5pm

# Web Services

“What changed?”



What serial numbers changed?

DeviceID

PassTypeID

UpdateTag

Device A

pass.oceanic

9/12, 10am

Your Server

UpdateTag

SerialNo.

JA38 9/18, 5pm

# Web Services

“What changed?”



What serial numbers changed?

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PassTypeID

UpdateTag

Device A

pass.oceanic

9/12, 10am

UpdateTag

SerialNo.

9/18, 5pm

JA38

Your Server

# Web Services

“What changed?” endpoint

# Web Services

## “What changed?” endpoint

- GET

`/v1/devices/<deviceId>/registrations/<passTypeID>`

# Web Services

## “What changed?” endpoint

- GET

`/v1/devices/<deviceId>/registrations/<passTypeID>?passesUpdatedSince=<tag>`

# Web Services

## “What changed?” endpoint

- GET

```
/v1/devices/<deviceId>/registrations/<passTypeID>?passesUpdatedSince=<tag>
```

- Server responds with JSON payload

```
{  
  "serialNumbers" : [ <serialNo.>, <serialNo.>, ... ],  
  "lastUpdated"   : <tag>  
}
```

# Web Services

## “What changed?” endpoint

- GET

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/v1/devices/<deviceId>/registrations/<passTypeID>?passesUpdatedSince=<tag>
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“passesUpdatedSince” vs. “if-modified-since”

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# Web Services

“passesUpdatedSince” vs. “if-modified-since”

- “if-modified-since” applies to a **single resource**
  - Returns either the whole resource or 304 (not modified)
- “passesUpdatedSince” applies to a **collection**
  - Picks out the individual elements that have changed

# Web Services

Getting up-to-date pass



Your Server

# Web Services

## Getting up-to-date pass



Get pass

PassTypeID

SerialNo.

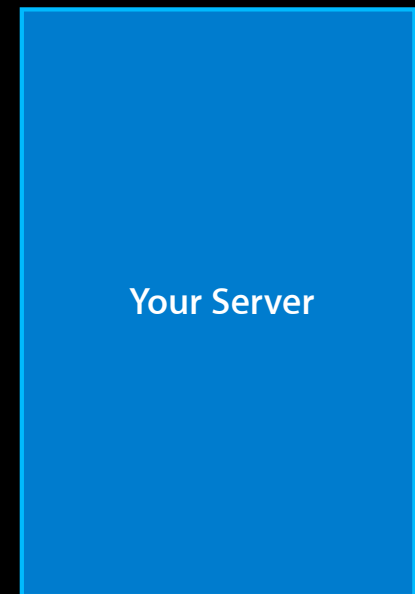
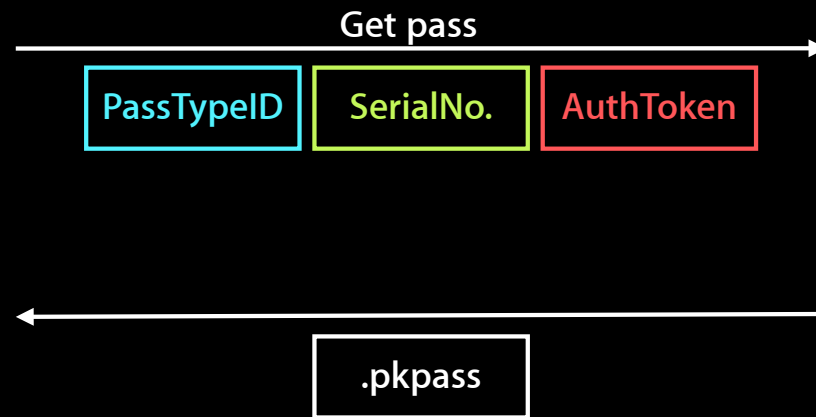
AuthToken

Your Server



# Web Services

## Getting up-to-date pass



# Web Services

Get pass endpoint

# Web Services

## Get pass endpoint

- GET

`/v1/passes/<passTypeID>/<serialNo.>`

# Web Services

## Get pass endpoint

- GET

`/v1/passes/<passTypeID>/<serialNo.>`

- In the HTTP header

`Authorization: ApplePass <authToken>`

# Web Services

## Get pass endpoint

- GET

`/v1/passes/<passTypeID>/<serialNo.>`

- In the HTTP header

`Authorization: ApplePass <authToken>`

- Server responds with signed, zipped .pkpass data

# Web Services

## Get pass endpoint

- GET

`/v1/passes/<passTypeID>/<serialNo.>`

- In the HTTP header

`Authorization: ApplePass <authToken>`

`If-modified-since: <timestamp>`

- Server responds with signed, zipped .pkpass data

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## Get pass endpoint

- GET

`/v1/passes/<passTypeID>/<serialNo.>`

- In the HTTP header

`Authorization: ApplePass <authToken>`

`If-modified-since: <timestamp>`

- Server responds with signed, zipped .pkpass data or 304

# Web Services

## Get pass endpoint

- GET

`/v1/passes/<passTypeID>/<serialNo.>`

- In the HTTP header

`Authorization: ApplePass <authToken>`

`If-modified-since: <timestamp>`

- Server responds with signed, zipped .pkpass data or 304

- In the response header

`Last-modified: <timestamp>`



# Web Services

Pass signing algorithm

# Web Services

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- Create a JSON dictionary and save it as `manifest.json`

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- Sign the manifest data with your cert; save the result as `signature`

# Web Services

## Pass signing algorithm

- Create a JSON dictionary and save it as `manifest.json`
  - Each key is a relative path in the pass directory
  - Each value is the SHA1 hash of the file data at that path, hex encoded
- Sign the manifest data with your cert; save the result as `signature`
- Zip the contents of the pass directory

*Demo*

Running the sample web service implementation

Ken Ferry

# Web Services

Rules of the road



# Web Services

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- Don't send unnecessary push notifications

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# Web Services

## Rules of the road

- Don't send unnecessary push notifications
  - Only send pushes when something has changed
  - Respect unregistration requests: Only send pushes for registered passes
- Verify authentication tokens
- Implement `passesUpdatedSince/lastUpdated` for the "what changed?" endpoint
- Implement `if-modified-since/last-modified` for the "get pass" endpoint

# Web Services

Enforcement and feedback

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## Enforcement and feedback

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## Enforcement and feedback

- Standard APNS feedback mechanism applies
  - If APNS bounces messages to a device, clear it from your database
- Passbook-specific feedback about Web Services API misuse
  - Additional “log” endpoint  
POST /v1/log

# Web Services

## Enforcement and feedback

- Standard APNS feedback mechanism applies
  - If APNS bounces messages to a device, clear it from your database
- Passbook-specific feedback about Web Services API misuse
  - Additional “log” endpoint
    - POST /v1/log
    - Payload: Human-readable description of the problem

# Web Services

## Enforcement and feedback

- Standard APNS feedback mechanism applies
  - If APNS bounces messages to a device, clear it from your database
- Passbook-specific feedback about Web Services API misuse
  - Additional “log” endpoint
    - POST /v1/log
    - Payload: Human-readable description of the problem
  - We may rate-limit your updates or tell APNS to stop delivering your pushes altogether

# Web Services

## Enforcement and feedback

- Standard APNS feedback mechanism applies
  - If APNS bounces messages to a device, clear it from your database
- Passbook-specific feedback about Web Services API misuse
  - Additional “log” endpoint
    - POST /v1/log
      - Payload: Human-readable description of the problem
    - We may rate-limit your updates or tell APNS to stop delivering your pushes altogether
    - **Angry phone call**

# Summing Up

- PassKit

- PKPass
- PKPassLibrary
- PKAddPassesViewController

- Web Services API

```
/v1/devices/<deviceID>/registrations/<passTypeID>/<serialNo.>  
/v1/devices/<deviceID>/registrations/<passTypeID>?passesUpdatedSince=<tag>  
/v1/passses/<passTypeID>/<serialNo.>  
/v1/log
```



# More Information

## Paul Marcos

Application Services Evangelist  
[pmarcos@apple.com](mailto:pmarcos@apple.com)

## Documentation

Pass Kit Programming Guide  
<http://developer.apple.com>

## Apple Developer Forums

<http://devforums.apple.com>

# Related Sessions

Introducing Passbook, Part 1

Presidio  
Wednesday 11:30AM

# Labs

Passbook Lab

App Services Lab B  
Friday 9:00AM

 **WWDC2012**