



To Affiniti and Beyond!®

**Affiniti POS and other stuff
Peter Steele and Mike Vaughn**



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Peter Steele, VP Research & Development

- **Pinnacle founder**
- **GAME-fully employed since 1990**
- **Engaged in Research and Development**
- **Originator of Oasis (1990)**
- **Originator of Palm POS (1994)**
- **Originator of Oasis MWS (1996)**
- **Takes no claim or blame for Symphony (1999)**
- **Creator of Affiniti POS (2011)**
- **Creator of Affinti Cloud Platform (2015)**
- **Creator of Affiniti Go (2018)**

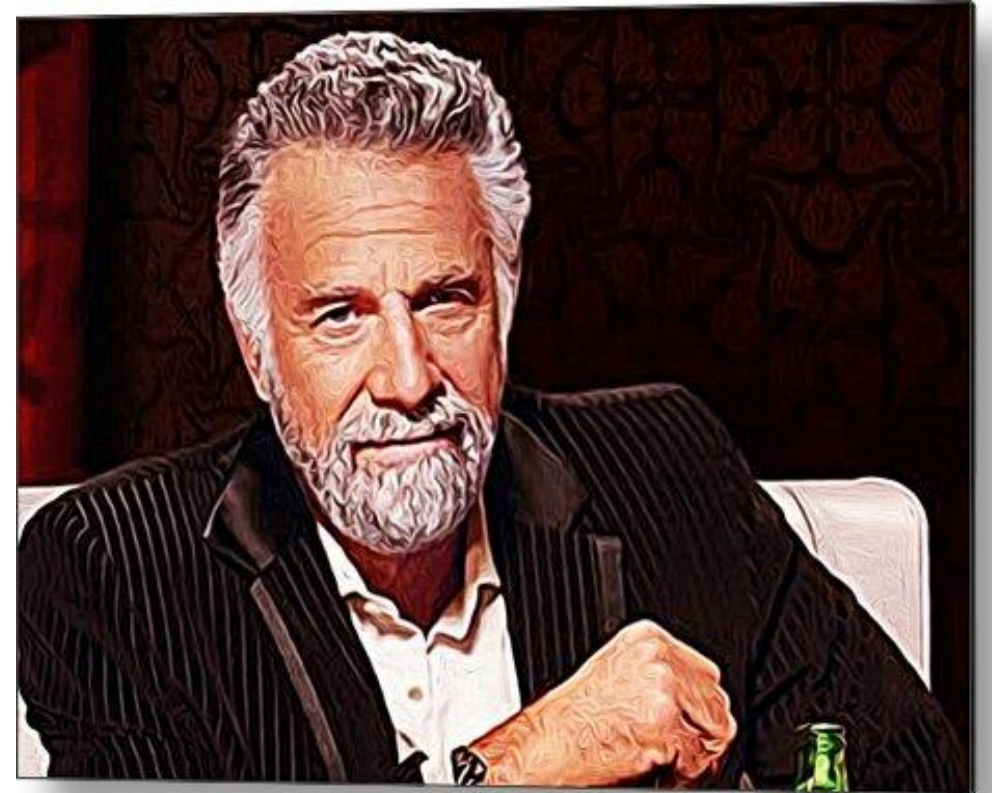
Pinnacle Summit 2019



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Hello, I'm Mike Vaughn

- 1. VP Software and Services at Pinnacle**
- 2. Almost 6 years here**
- 3. 37 years in the IT industry**
- 4. Played a lot of roles through the years**
 - a. Technical Support**
 - b. Professional Services**
 - c. Management**
 - d. Consulting**
 - e. Even wrote a sales brochure or two**
- 5. In short, “Jack of all trades”**



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Product Catalog

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Product Catalog

- ◆ **Provides item catalog and promotion information**
 - ◆ **product images, nutritional information, ingredients and other product recognition data**
- ◆ **Supports item maintenance via:**
 - ◆ **Connexus (NAXML)**
 - ◆ **Excel**
 - ◆ **csv**
 - ◆ **JSON**
- ◆ **Integration point for external retail price book applications (PDI Enterprise currently supported)**

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Common Product Catalog

All Affiniti Cloud™ solutions share a common source of item information.

The POS, self-scan, kiosk, consumer ordering, kitchen prep system, menu boards and others all share a common source of item and promotion information.

Making the change in one place effectively changes all consumers of item information.



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Product Catalog Highlights

- ◆ **Create layered menus for kiosk and mobile**
- ◆ **Flexible tax and discount configuration**
- ◆ **Immediate tax holiday implementation**
- ◆ **Immediate promotion implementation**
 - ◆ **Promotion features including:**
 - ◆ **mix / match,**
 - ◆ **Coupons,**
 - ◆ **combos, and**
 - ◆ **Amount and percent discounts**

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Does Cloud POS Make Sense?

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Trends

“We feel that the world wants POS to be OS and form-factor agnostic. In other words, they want to run on as many different devices as POS terminals, and possibly, within the same <location> have different OS and form factors.”

—VSR September 2014

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Key drivers for a change

- ◇ **Reduce total cost of POS ownership (TCO)**
- ◇ **Leverage existing hardware investments**
- ◇ **Make deployment easier**
- ◇ **Lower cost of maintenance / ownership**
 - ◇ **Enterprise manipulation of configuration and items**
- ◇ **Minimize training in high-turnover environment**
- ◇ **Readily available, reliable bandwidth (4G => 5G)**

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Key drivers for a change

- ◆ **Security**
 - ◆ **PA-DSS from the ground up, POS out of scope**
 - ◆ **Reduced security attack surface**
- ◆ **Convergence of points of service**
 - ◆ **Traditional (Affiniti POS)**
 - ◆ **Self-Checkout (Affiniti Go)**
 - ◆ **Place-based interactive (Affiniti Kiosk)**
 - ◆ **Mobile (Affiniti Mobile Ordering)**

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What if?

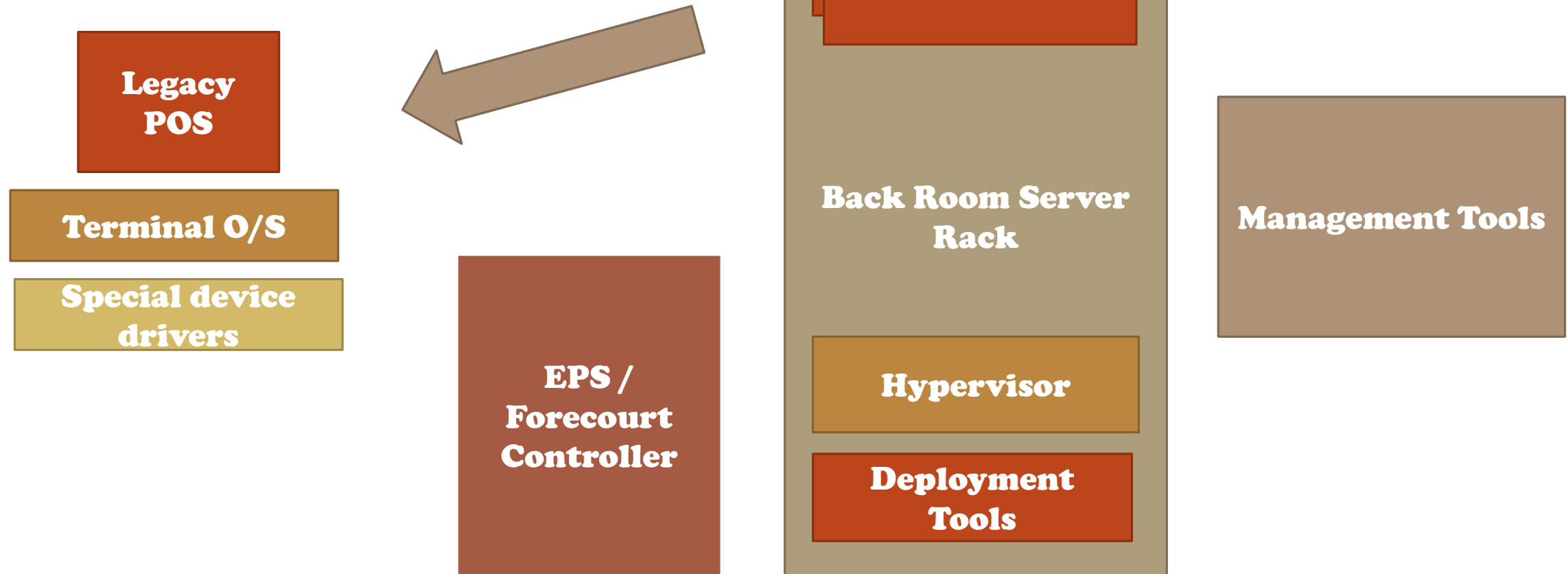
- ❖ **You could change item pricing and discounts at will, and have them go into affect immediately across all locations: front counter POS, kiosk, menu boards and mobile?**
- ❖ **All of your transaction data (from all points of service) was updated into a central database in real time?**
- ❖ **You could bring up a new POS for a special event in under one minute?**
- ❖ **You had control of your POS software with the ability to extend functionality through APIs?**
- ❖ **You reduced the footprint and operational cost of your in-store hardware?**

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Contrast with Virtualization Technology

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Virtualization technology



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Cloud POS



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Virtualized versus True Cloud

- ◆ **Performance**
- ◆ **Total Cost of Ownership**
- ◆ **Extensibility**
- ◆ **Integration**

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Performance

- ❖ **Through design and microservices, Affiniti POS is inherently fast, rather than throwing hardware at the POS application to speed it up.**
- ❖ **Redundancy of code implemented in each POS application provides a much higher load on hardware than a microservices architecture leveraged across all POS instances (and types).**
- ❖ **Designing toward TCP/IP connectivity from the ground up reduces the necessity for device adapters. It removes additional configuration for the adapters, as well as inherent performance problems.**
- ❖ **Ability to intelligently co-locate and distribute microservices (via containers) depending on requirements (bandwidth, etc.)**

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Total Cost of Ownership

- ❖ **Virtualization adds more hardware and software to the store location, rather than eliminating hardware and software.**
- ❖ **Existing POS hardware may be already toward end-of-life and need replacement anyway.**
- ❖ **Virtualization does not address sharing POS services across different points of purchase such as mobile, self-checkout, kiosk and traditional front counter.**
- ❖ **Affiniti POS allows running on much less expensive hardware (such as an Android tablet)**
- ❖ **With Affiniti POS, no need to distribute POS configuration to each POS VM.**
- ❖ **With Affiniti POS, no need to distribute “scan file” item information to each POS.**

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Extensibility

- ❖ **The POS application is still a sealed box under the control of the supplier. If it doesn't do something that is desirable, it probably never will; or at least, it will be expensive to develop custom software, and done on the supplier's timetable.**
- ❖ **New APIs provided by the virtualization technology exist only outside of the existing POS application, not within it. Therefore, functionality extensions cannot be injected into the transaction process.**

Integration

- ❖ **Cloud POS should provide APIs that allow integration with external modules or systems from third parties, encouraging dynamic adaptation to rapidly changing consumer expectations. These include:**
 - ❖ **mobile solutions such as ordering and, self-checkout,**
 - ❖ **dynamic real-time offers and coupons through loyalty providers and CPGs, including coalition programs,**
 - ❖ **ability of external systems to securely integrate with the POS transaction process “on the fly” in real time.**
- ❖ **Common, cloud-based product catalog with information necessary for today’s business, including product images, nutritional information, ingredients and other product recognition data, such as package size.**

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Affiniti POS®

- ◆ **Product Vision**
- ◆ **Architecture**
- ◆ **Device Manager**
- ◆ **Services and APIs**



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Affiniti POS Vision

A thin client, virtualized workstation with much lower cost of ownership that is based on standards.

- ◆ **Made to be cloud-hosted and centrally managed**
- ◆ **Microservices architecture**
- ◆ **Browser-based client**
- ◆ **Full, traditional POS functionality**
- ◆ **Minimal configuration**
- ◆ **Multi-tenant**



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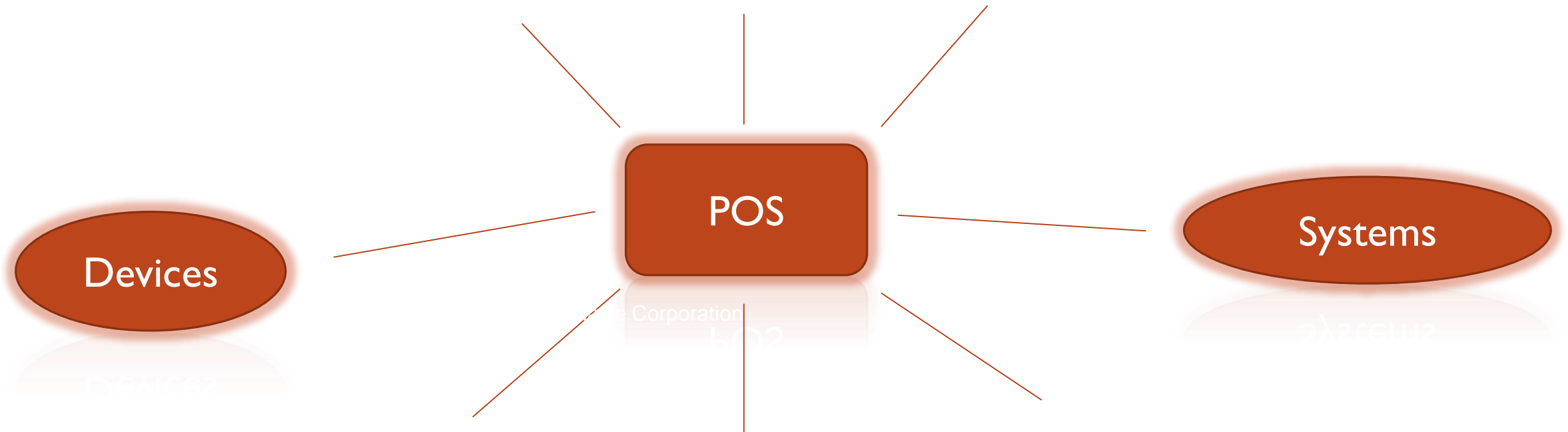
Affiniti POS® Vision

- ◆ **Based on Standards, built on standards ... from the ground up**
 - ◆ **SQL, ODATA**
 - ◆ **XML / JSON**
 - ◆ **TCP/IP / HTTPS**
 - ◆ **HTML5 / CSS3**
 - ◆ **Connexus (NAXML)**
 - ◆ **IFSF, IXRetail, PA-DSS**
 - ◆ **OAuth / OpenId**
- ◆ **Part of a unified, mobile-first suite**

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Traditional POS Architecture

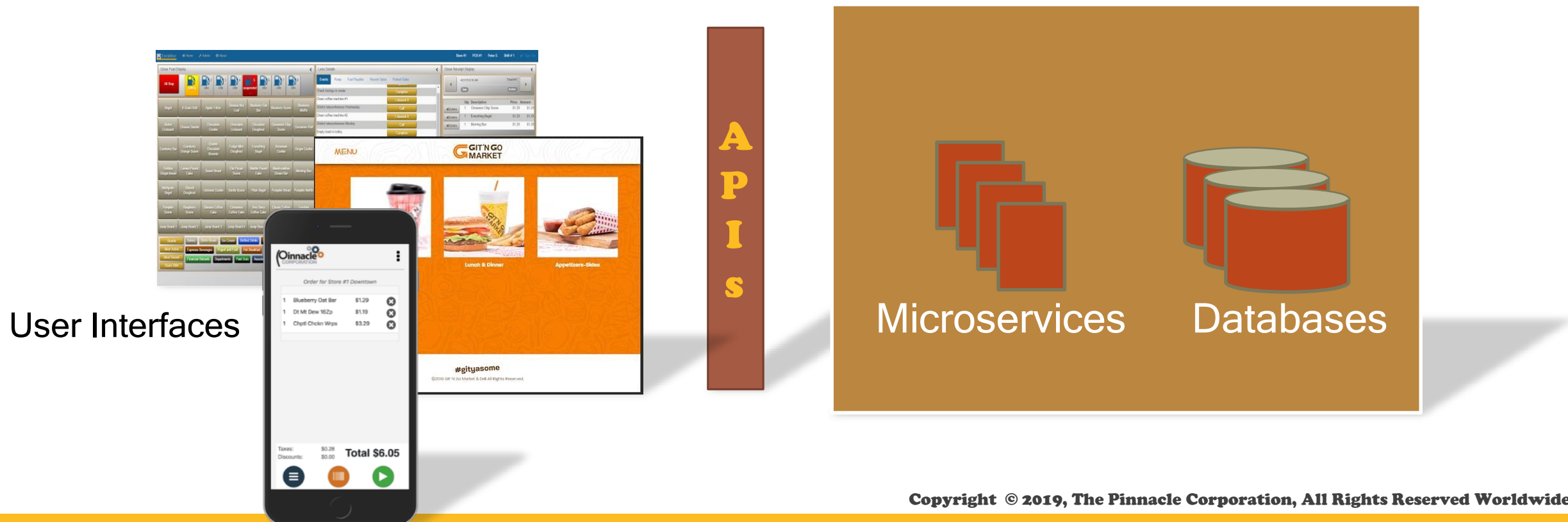
“The POS is essentially a desktop application. It considers itself the center of the world, and if it doesn’t do something, it probably won’t ever do it.”



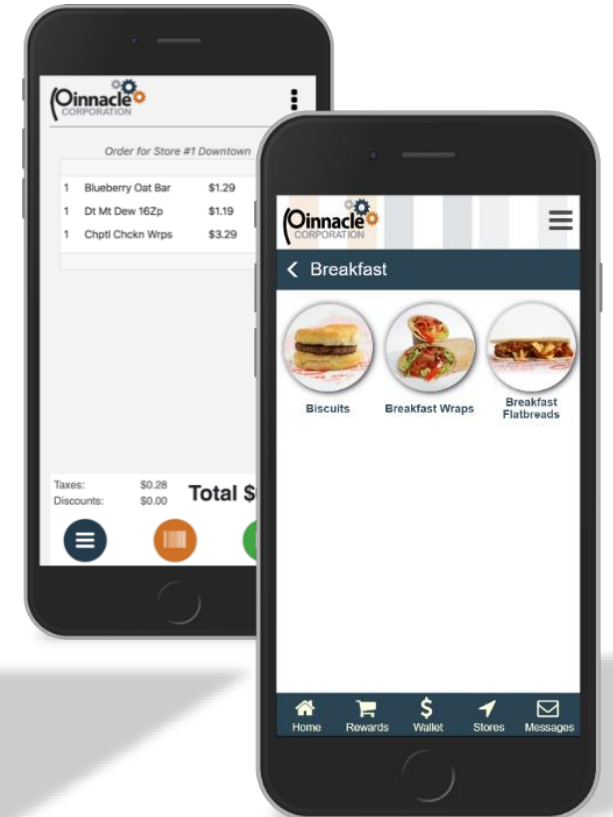
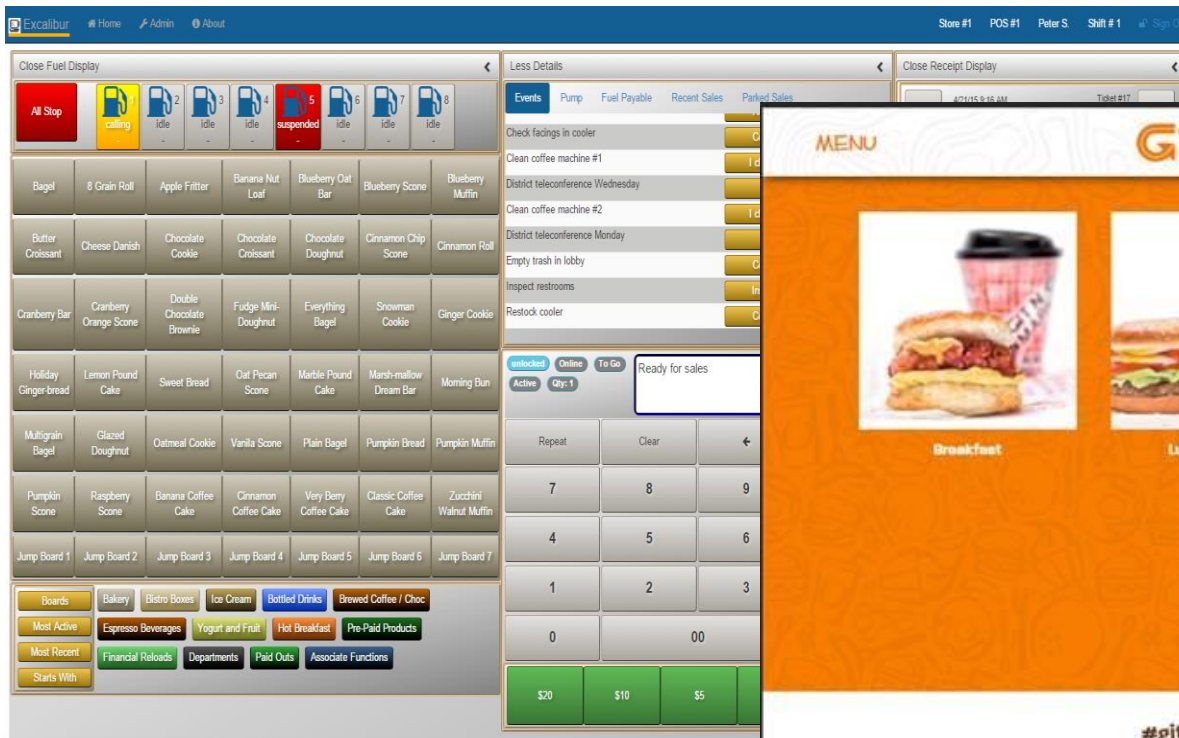
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Affiniti POS Architecture

“Virtually everything about the transaction / consumer interaction process flows through APIs, allowing extension points and retailer control of the sales process, extending it in ways that give the retailer a strategic advantage.”



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Not Your Traditional POS System

Many entry points for the retailer to access or enhance data sources

 **One database for configuration data and transactional data**

 **Accessed in an open way with web APIs and web hooks over https**

 **APIs are accessible to other systems with proper authentication using OAuth and OpenId standards**



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Extension Examples



- ◇ **Send notifications to POS cashiers at certain stores and on certain POS types (fuel desk only). Prompt a cashier to confirm something that happened.**
- ◇ **Extend the item lookup process to block recalled items or implement new product restrictions for CBD based on rules.**
- ◇ **Integrate new devices such as a customer display screen by tapping into the transaction feed.**

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Extension Examples



- ◇ Record transactions from a mobile device for integration with front-counter transactions
- ◇ Push sales from external systems into the POS transaction (such as lottery, fishing licenses, money orders, etc.)
- ◇ Push real-time transaction information to business intelligence / operations alerting systems

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Common Logging

A cloud logging service consolidates log information for all web services, mobile and web applications into a single repository.

The benefit: security monitoring and troubleshooting

**FRAUD
PREVENTION**

Cybersecurity

Identity
protection

30

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Hardware

- **Extremely reliable front-end terminal (think tablets)**
 - **Multi-touch, diskless, fan-less**
 - **16:9 aspect ratio supported and useful**
 - **Thin workstation minimal or no “PC”**
 - **Minimal connectivity required**
 - **Focus on TCP connectivity**
 - **No payment terminal connection**
 - **Mobile options for walk-about POS**
 - **Accommodates self-service through alternate UI**
 - **Kiosk**
 - **Mobile (consumer)**

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Write once, run anywhere!

Other solutions maintain three completely different versions for each platform written in three different languages requiring strong skillsets in each.

We're not writing the application three times (or more) for each popular mobile platform, so cost is reduced and time to market is rapid.

That means, the Affiniti Cloud™ platform app is very stable because the heart of the application functionality resides in the web app.

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Device Manager

**How the device manager works and facilitates
a cloud-based POS application**

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Device Manager -- Supportability

- ◆ **Multi-connectivity**

 - ◆ **TCP/IP**

 - ◆ **HTTPS**

 - ◆ **USB**

 - ◆ **STOMP / Websocket**

- ◆ **Auto Discovery**

- ◆ **Auto Failover**

- ◆ **Health monitoring**

 - ◆ **Device Diagnostics**

 - ◆ **Device information,
software versions,
models, capabilities to
Asset Watch**

 - ◆ **Heartbeat**

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Device Manager v2.0

- ◆ **Platform independent**

- ◆ **Run on an appliance or tablet**

- ◆ **Supported devices (IP)**

- ◆ **TCP/IP Epson TM series printers and standard cash drawer**

- ◆ **Partner-tech RP-600-E TCP/IP printer and cash drawer**

- ◆ **APG SmartTill**

- ◆ **Direct devices**

- ◆ **Datalogic Gryphon USB scanner / imager**

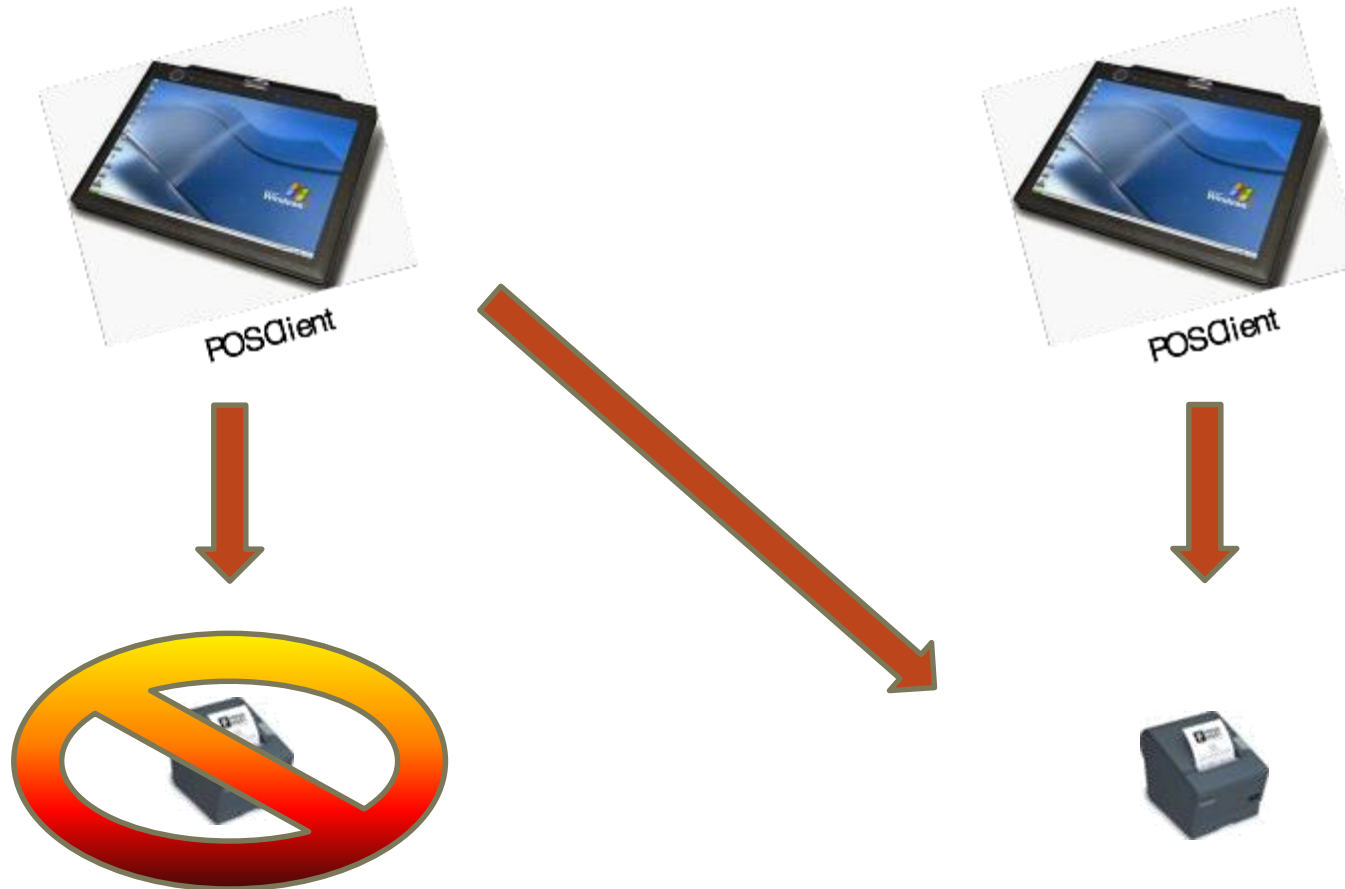
- ◆ **Platform scanners or compatible (device-integrated “camera” scanners)**

- ◆ **Real-time logging to cloud**

- ◆ **Template-driven receipt / report layout**

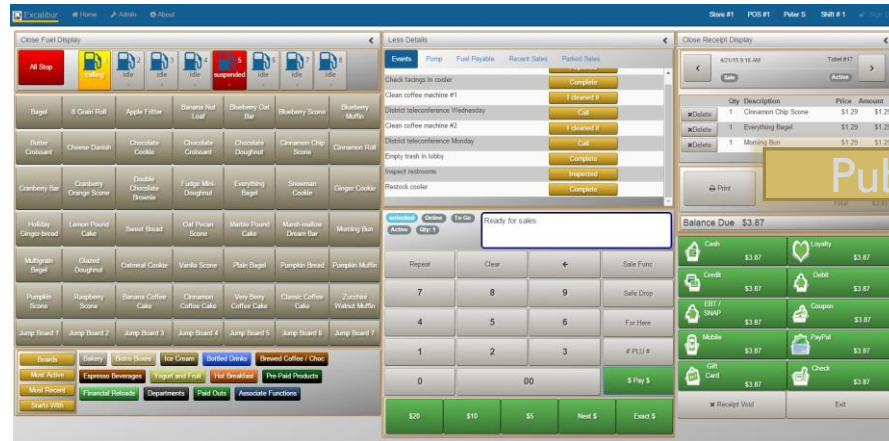
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Device Failover



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Device Manager – theory of operation

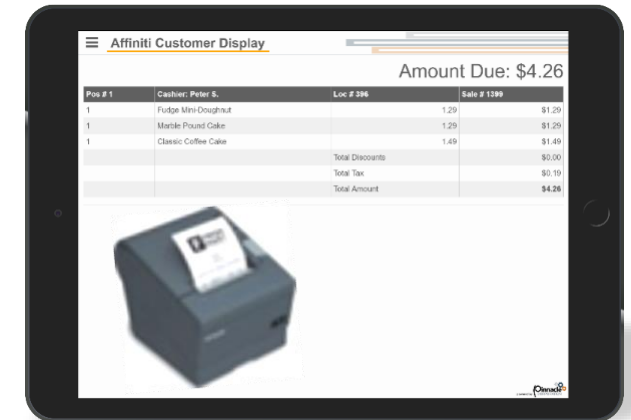


Affiniti Hub

Publish

Subscribe

Device Manager



How does it work?

Map
Translate
Route

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POS Architecture

- ◆ **Microservices Architecture**
- ◆ **Integrated with Identity Service**
- ◆ **POS “quick login” for cashier access**
- ◆ **Pinnacle Affiniti Hub**
 - ◆ **Publish / Subscribe model**
 - ◆ **Allows asynchronous communication with the client**
 - ◆ **Push notifications to the browser app**
 - ◆ **Local connectivity to device manager**
 - ◆ **STOMP / websockets**

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POS Client Architecture

- ◆ **HTML5 SPA (Single-Page Application)**

- ◆ **HTML5 / CSS3 SPA Benefits**

- ◆ **Reach — Responsive Design automatically adapts to form factor**

- ◆ **No page refreshes**

- ◆ **Deep linking (external navigation)**

- ◆ **IE, Chrome, Firefox, Safari supported on current versions**

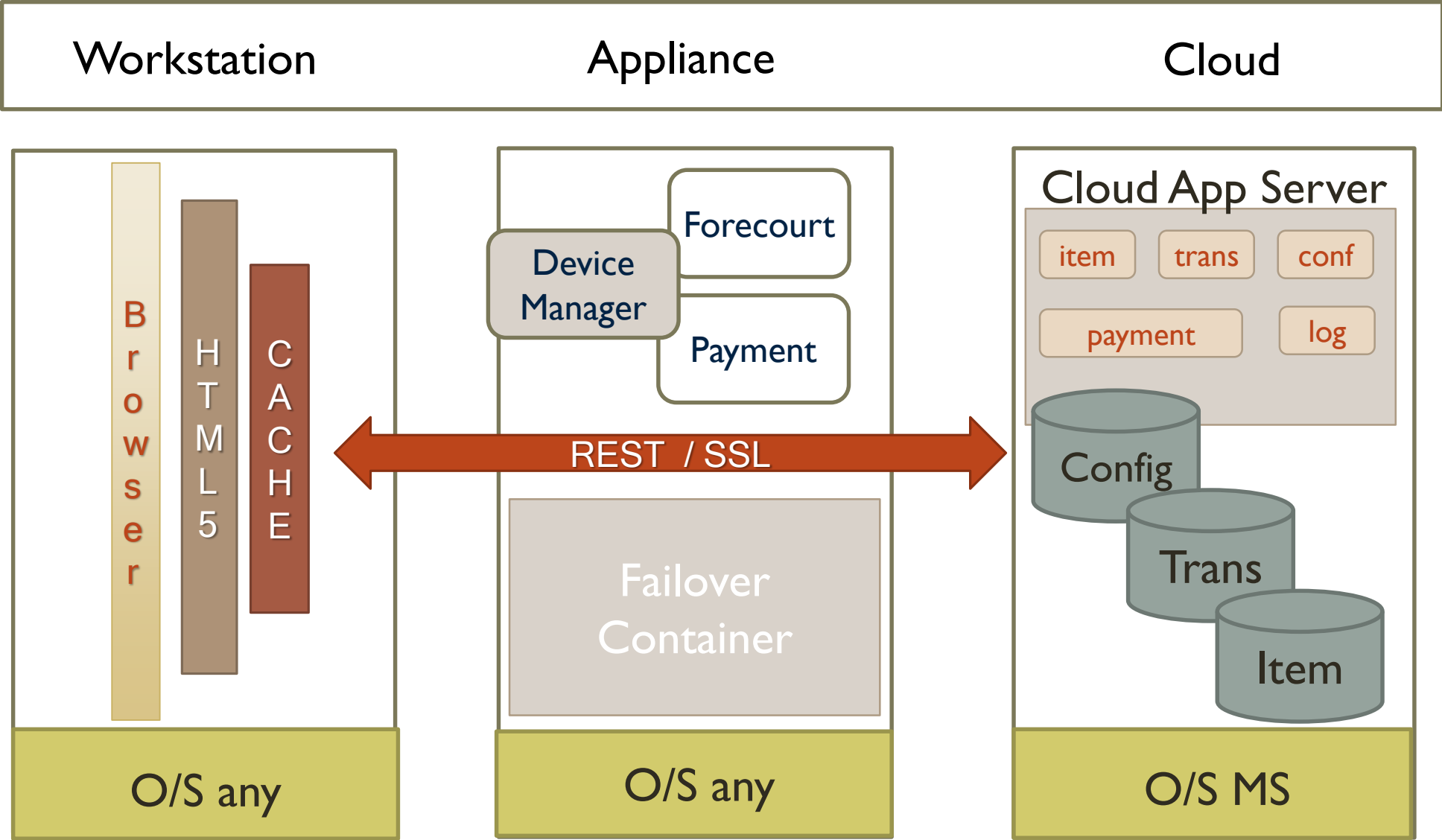
- ◆ **Natural APIs through REST services**

- ◆ **SQL Server databases**

- ◆ **Configuration**

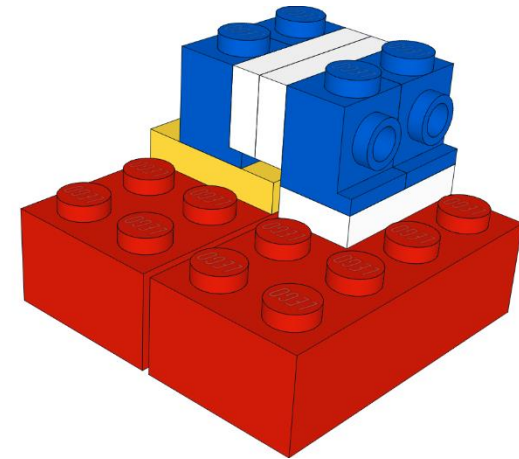
- ◆ **Detailed transaction and event journal**

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Notifications



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Message Service

- ◆ **Google Firebase**

- ◆ **Push notifications to iOS, Android and Browser clients**

- ◆ **SMS**

- ◆ **Email**

- ◆ **Example: send SMS notification to Affiniti Go shopper to visit the checkout for age-restricted purchases**

Notification Service

- ◇ **Cloud based**
- ◇ **Administers timed events for communication between apps**
- ◇ **Example: device manager sends a notification to front-counter POS clients that the Commander software needs to be upgraded.**
 - ◇ **When the store is ready, the POS launches a workflow to perform the upgrade**
- ◇ **Works with Affiniti Hub and STOMP server**
- ◇ **Ability to configure recurring notifications and tasks based on CRON**

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Anatomy of a notification

- ◇ **Target**
 - ◇ **Company**
 - ◇ **Location**
 - ◇ **Location group**
 - ◇ **User**
 - ◇ **User Role**
 - ◇ **Between**
- ◇ **Action**
- ◇ **Due time and Expiration**
- ◇ **CRON schedule**

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Affiniti GO!

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Affiniti GO!

- **Affiniti Go is a mobile app (module) that allows a consumer to enter their sales information on their own mobile device.**
- **Scan items or search for items**
- **Pay on mobile (CardConnect, MobileConnect, Zipline)**
- **Pay at POS checkout**
- **A compelling use case is to replay a prior order. For folks that come in to your store on a regular basis and get the same thing (a coffee and a paper) it will be extremely quick for them and they do not need to visit the checkout.**

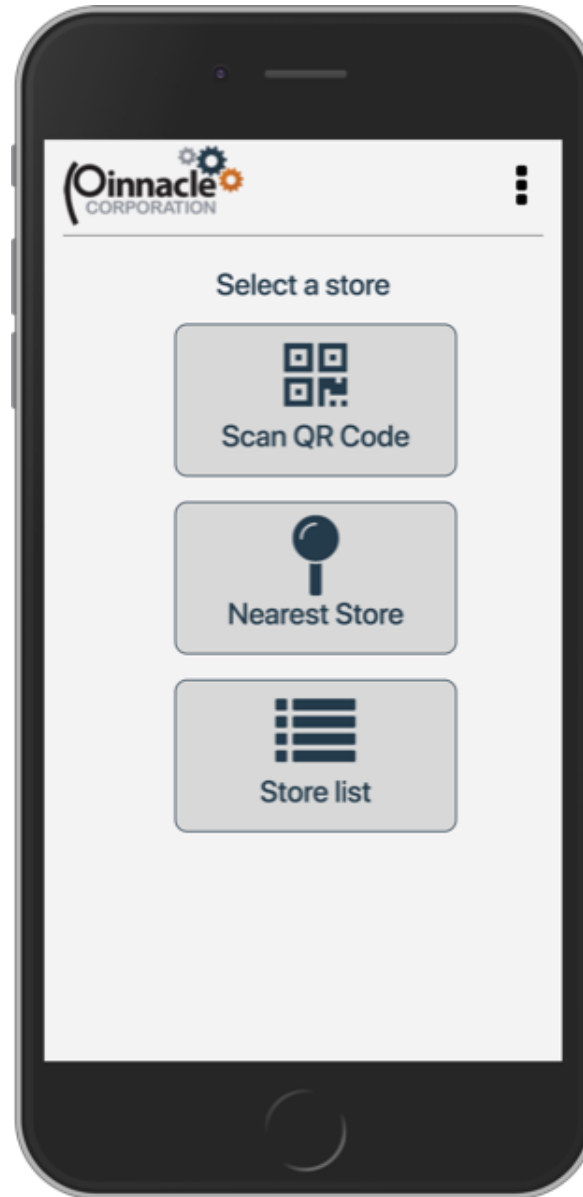
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Affiniti GO!

- ◆ **AffinitiGo takes advantage of AffinitiPOS infrastructure to create a “consumer POS”**
- ◆ **Location is selected by GPS, search or by scanning a special QR code that identifies the location**
 - ◆ **(to handle consumers with GPS turned off)**
- ◆ **Allows scanning or search for products using Affiniti Product Catalog**
- ◆ **Transaction journal stored to cloud as a “POS”**
 - ◆ **All mobile devices creating transactions for a store become a “POS” for easy integration of transactions into back office systems.**
 - ◆ **NAXML export of transaction data**

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Select Store

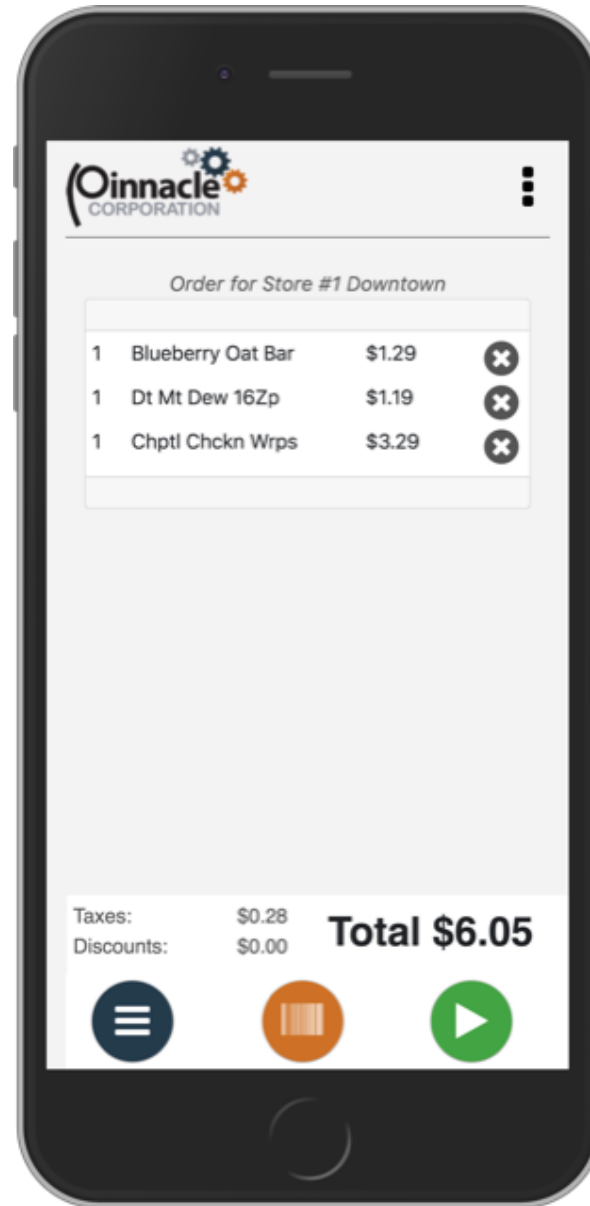


Open AffinitiGo
and scan this
code to start your
order!



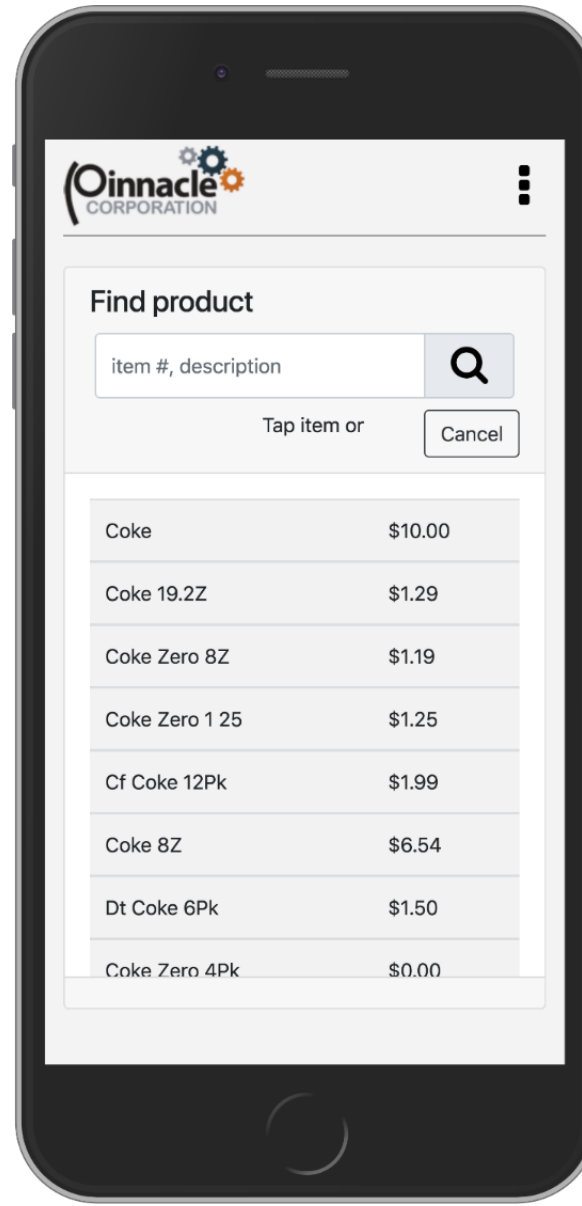
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Sales



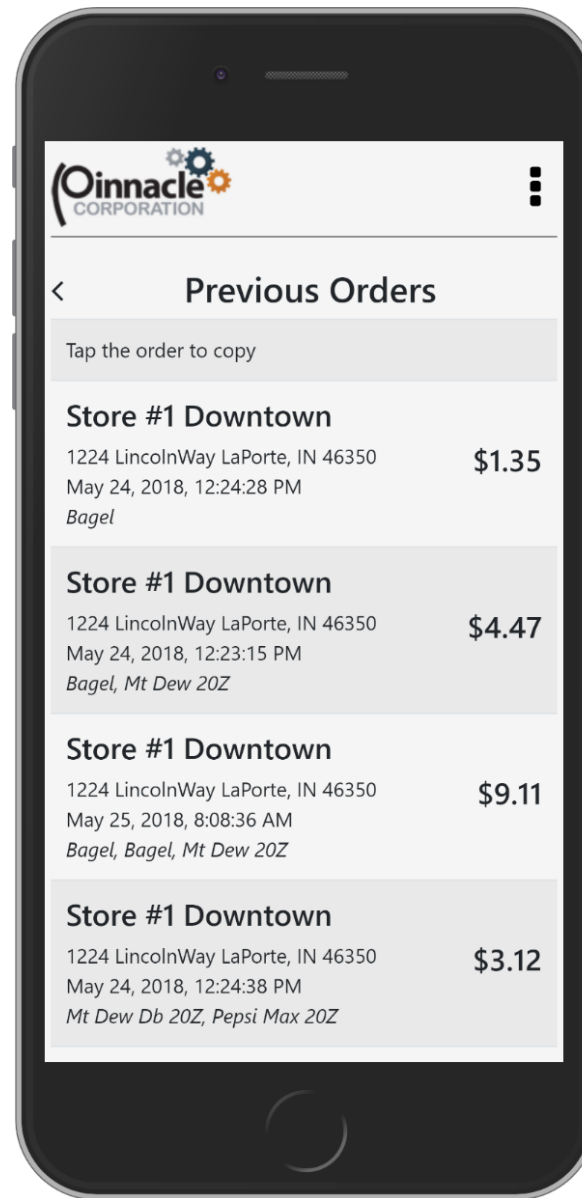
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Find item



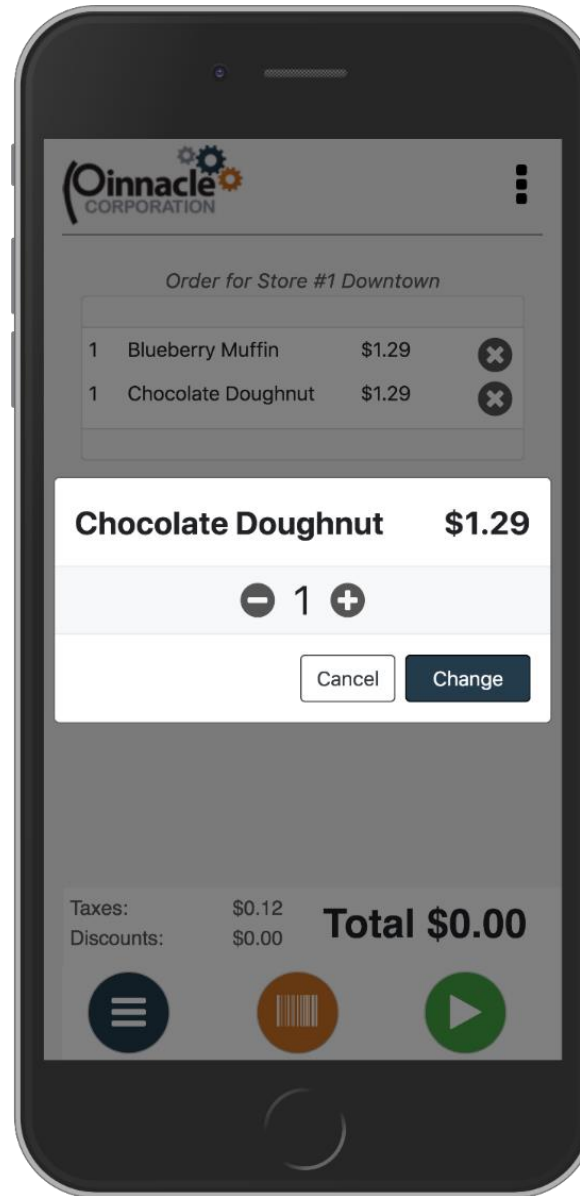
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Prior Sales



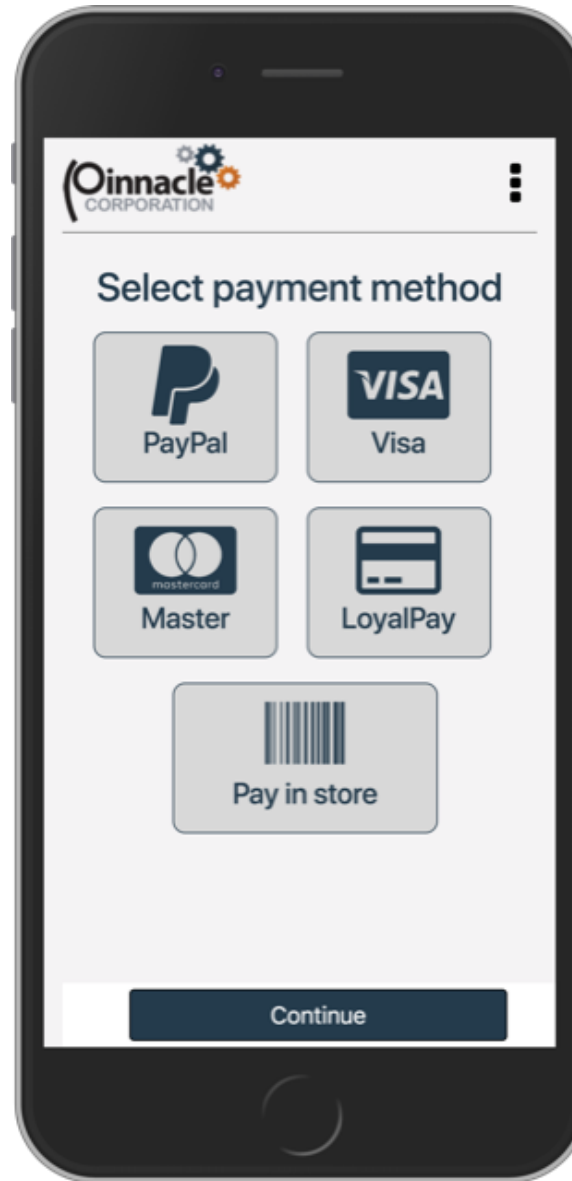
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Adjust Qty

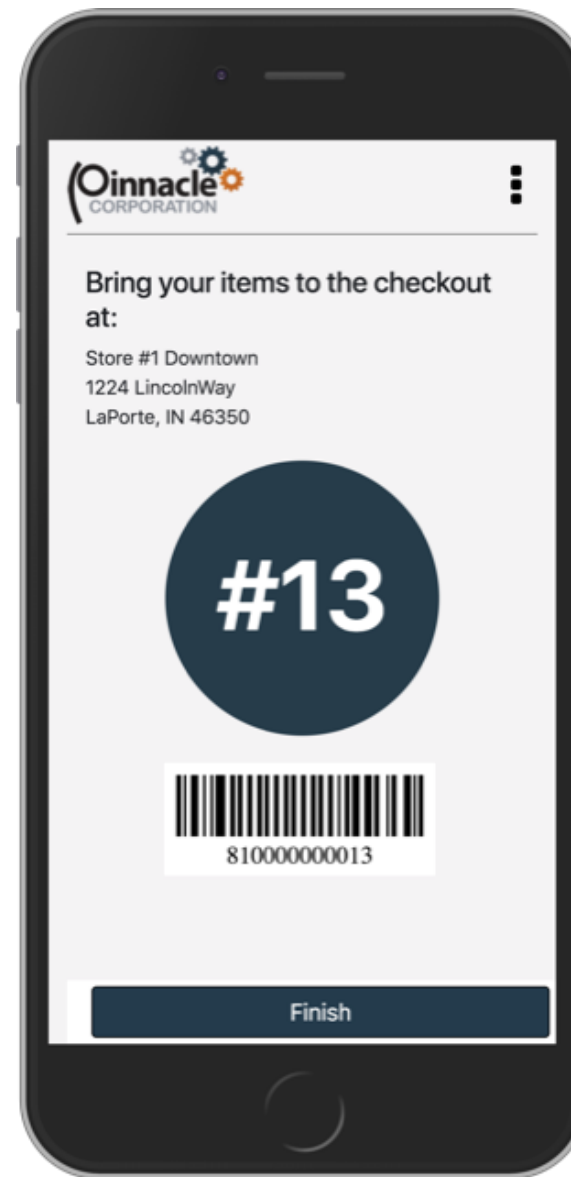
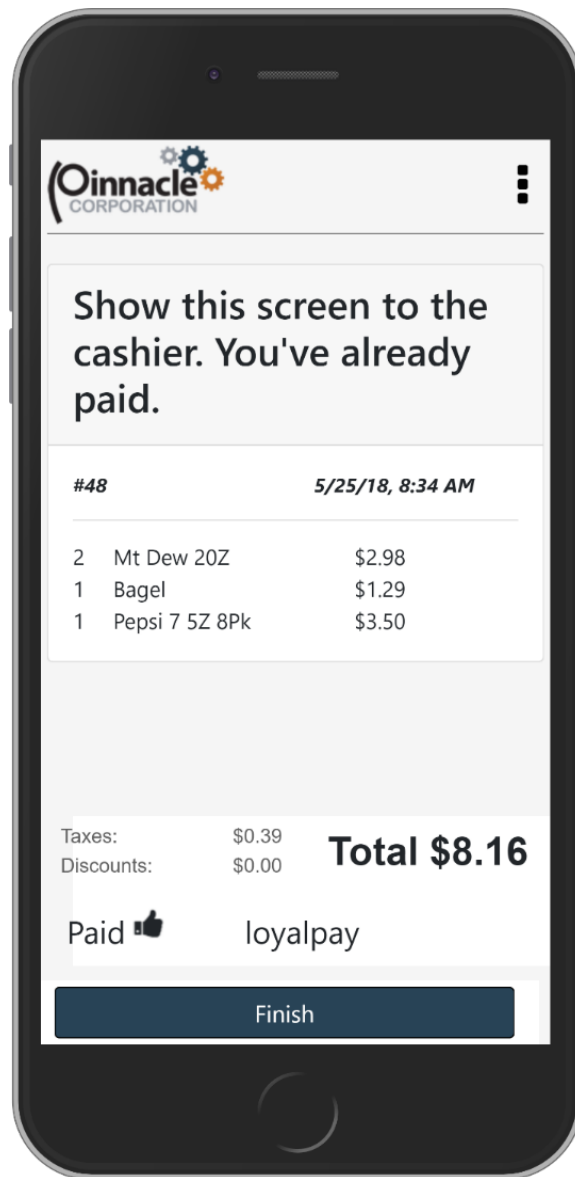


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Payment



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Affiniti GO! Monitor



Affiniti POS for The Pinnacle Corporation

Peter S. - Store # 396 - POS # 3 - Shift # 1

Home Go! Orders Admin Users Status About Log In

AFFINITI GO MONITOR

3 Go! SHOPPERS IN STORE

connected

#109
Wed 7/11 3:21:06PM
Wile Coyote
Active

1 Iced Caffe Mocha \$3.89

\$4.08

Message Clear

#110
Thu 7/12 3:11:29PM
Peter Steele
Active

1 Apple Fritter \$1.29

\$1.35

Message Clear

#87
Fri 7/27 11:03:44AM
Peter Steele
Stored

1 Bagel \$1.29

\$1.35

Message Clear Recall


Customers

Wile Coyote \$4.08

Peter Steele \$1.35

Peter Steele \$1.35

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Pinnacle
CORPORATION

Pinnacle Summit 2019

Southlake, TX

May 28-30, 2019

Research Projects

- ◆ **Commander Integration (EF)**
- ◆ **Mobile app, version 2**
- ◆ **Menu Boards**
- ◆ **Containers (software deployment)**
- ◆ **Identity enhancements**
- ◆ **Mobile payment (Venmo, Amazon, MPPA standard)**
- ◆ **BI**

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Get Ready!

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**NOT ALL CLOUDS
ARE CREATED
EQUAL**



Choose Affiniti Cloud™

***The technology
platform that grows
with you***



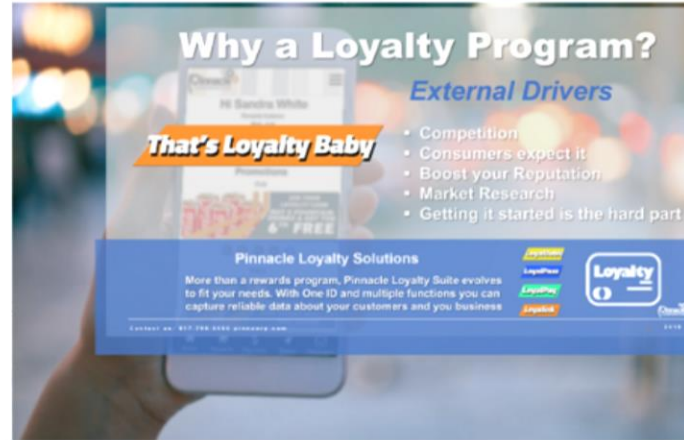
Palm

Fast.
Reliable.
Secure.

Cloud POS System

A thin client, virtualized
workstation with much
lower cost of ownership
that is based on standards.

**Affiniti
POS**



**Affiniti
QSR**



Mobile Ordering

**Affiniti
PickUp
& GO!**



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Affiniti Cloud Web Apps



Extremely lightweight native app

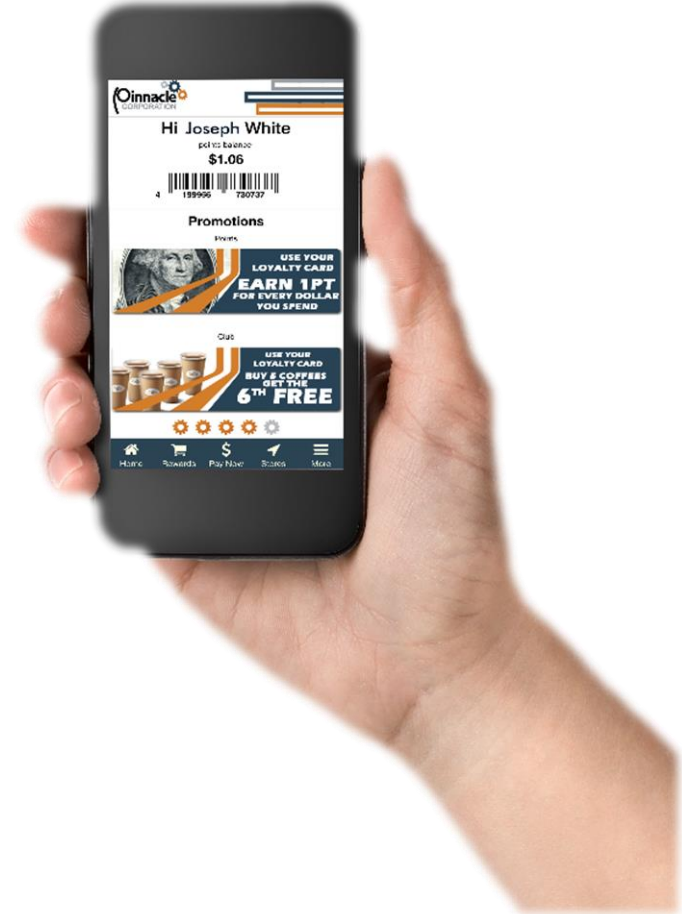


Access to Native OS (Android, Apple)



Capabilities such as BLE and scanning

Applications = Web Apps
(also known as browser-based apps)



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Affiniti Cloud™ Platform

Introduces significant strategic advantages to the convenience retailer




That are difficult or *impossible* to achieve on other platforms

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Thank you!

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All Stop

 1


idle

 2


idle

 3

idle

 4


idle

 5


idle

 6

idle

 7

idle

 8

idle

Bagel

8 Grain Roll

Apple Fritter

Banana Nut Loaf

Blueberry Oat Bar

Blueberry Scone

Blueberry Muffin

Butter Croissant

Cheese Danish

Chocolate Cookie

Chocolate Croissant

Chocolate Doughnut

Cinnamon Chip Scone

Cinnamon Roll

Cranberry Bar

Cranberry Orange Scone

Double Chocolate Brownie

Fudge Mini-Doughnut

Everything Bagel

Snowman Cookie

Ginger Cookie

Holiday Ginger-bread

Lemon Pound Cake

Sweet Bread

Oat Pecan Scone

Marble Pound Cake

Marsh-mallow Dream Bar

Morning Bun

Multigrain Bagel

Glazed Doughnut

Oatmeal Cookie

Vanila Scone

Plain Bagel

Pumpkin Bread

Pumpkin Muffin

Pumpkin Scone

Raspberry Scone

Banana Coffee Cake

Cinnamon Coffee Cake

Very Berry Coffee Cake

Classic Coffee Cake

Zucchini Walnut Muffin

Jump Board 1

Jump Board 2

Jump Board 3

Jump Board 4

Jump Board 5

Jump Board 6

Jump Board 7

Alerts

Fuel

Payable

Transactions

Stored

District teleconference Monday

Call

Empty trash in lobby

Complete

Printer is low on paper

Replaced

Clean coffee machine #1

I cleaned it

District teleconference Wednesday

Call

Inspect restrooms

Inspected

Restock cooler

Complete

<

7/30/2018, 10:24 AM

10

Complete

>

Sale

Qty	Description	Price	Amount
1	Chocolate Croissant	\$1.29	\$1.29
1	Everything Bagel	\$1.29	\$1.29

Print

Subtotal

\$2.58

Tax

\$0.00

Discounts

\$0.00

Total

\$2.58

No Change Due

Payment	Amount
cash	\$2.58

unlocked

To Go

Qty: 1

Ready for sales

Repeat

Clear

<

More Functions

7

8

9

Safe Drop

4

5

6

No Sale

1

2

3

Price Check

0

00

Sign In


\$20


\$10


\$5


Next \$


Exact \$


 cash


 mobile


 loyalty


 PayPal

 credit


 gift card

 debit

 check

 ebt / snap

✕ Receipt Void

 coupon

Exit

Category

Bakery

Bistro Boxes

Ice Cream

Bottled Drinks

Brewed Coffee / Choc

Popular

Espresso Beverages

Yogurt and Fruit

Hot Breakfast

Pre-Paid Products

Most Recent

Financial Reloads

Departments

Paid Outs

Associate Functions

Starts With