

# Deploying AirPrint in Enterprise

Session 725

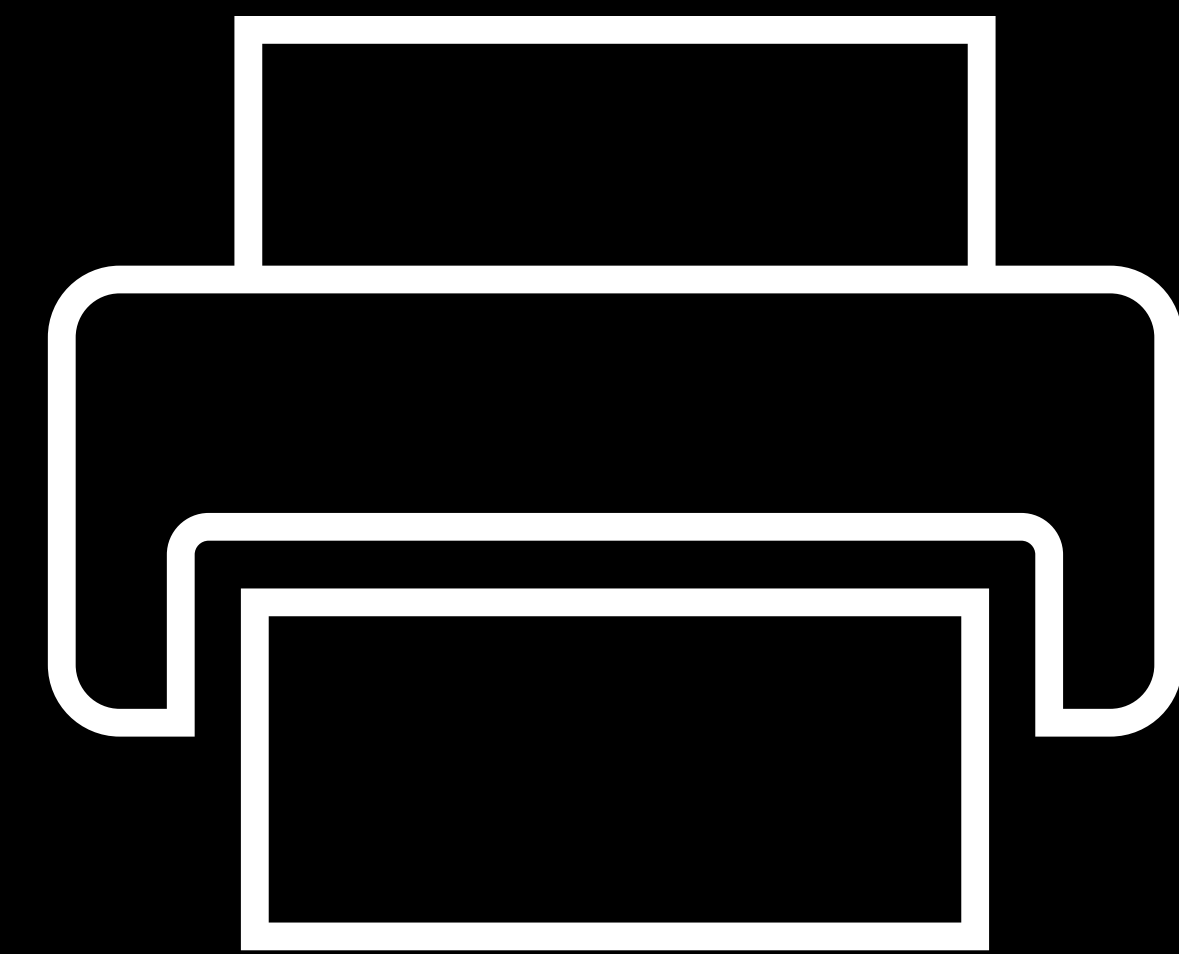
Todd Ritland AirPrint Engineer

# AirPrint

AirPrint is an Apple technology that helps users create full-quality printed output without the need to download or install drivers

To add printing to your app:  
[developer.apple.com/airprint](https://developer.apple.com/airprint)

Printer manufacturers or print server developers: [airprint@apple.com](mailto:airprint@apple.com)

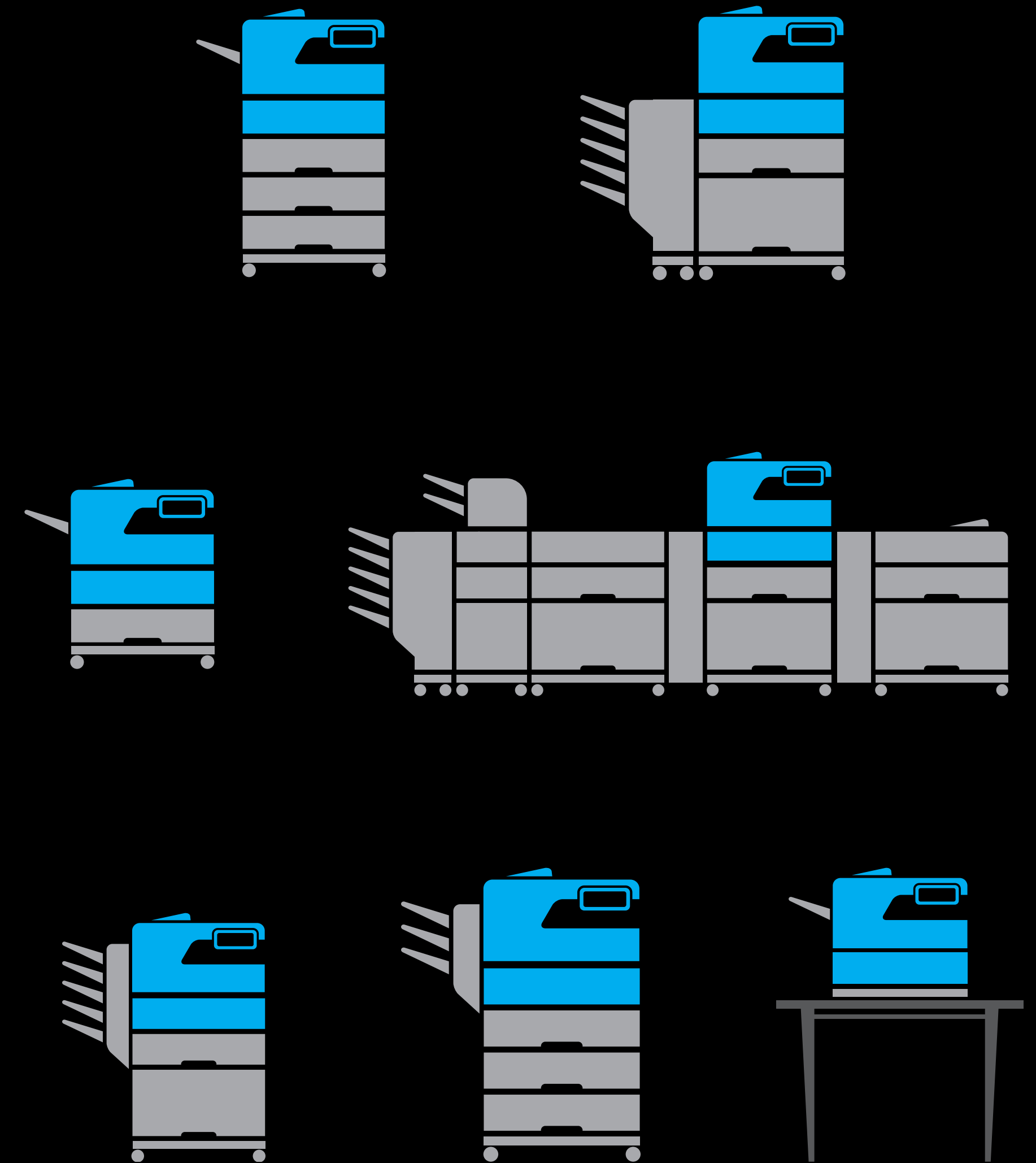


# AirPrint

# Printing in Enterprise

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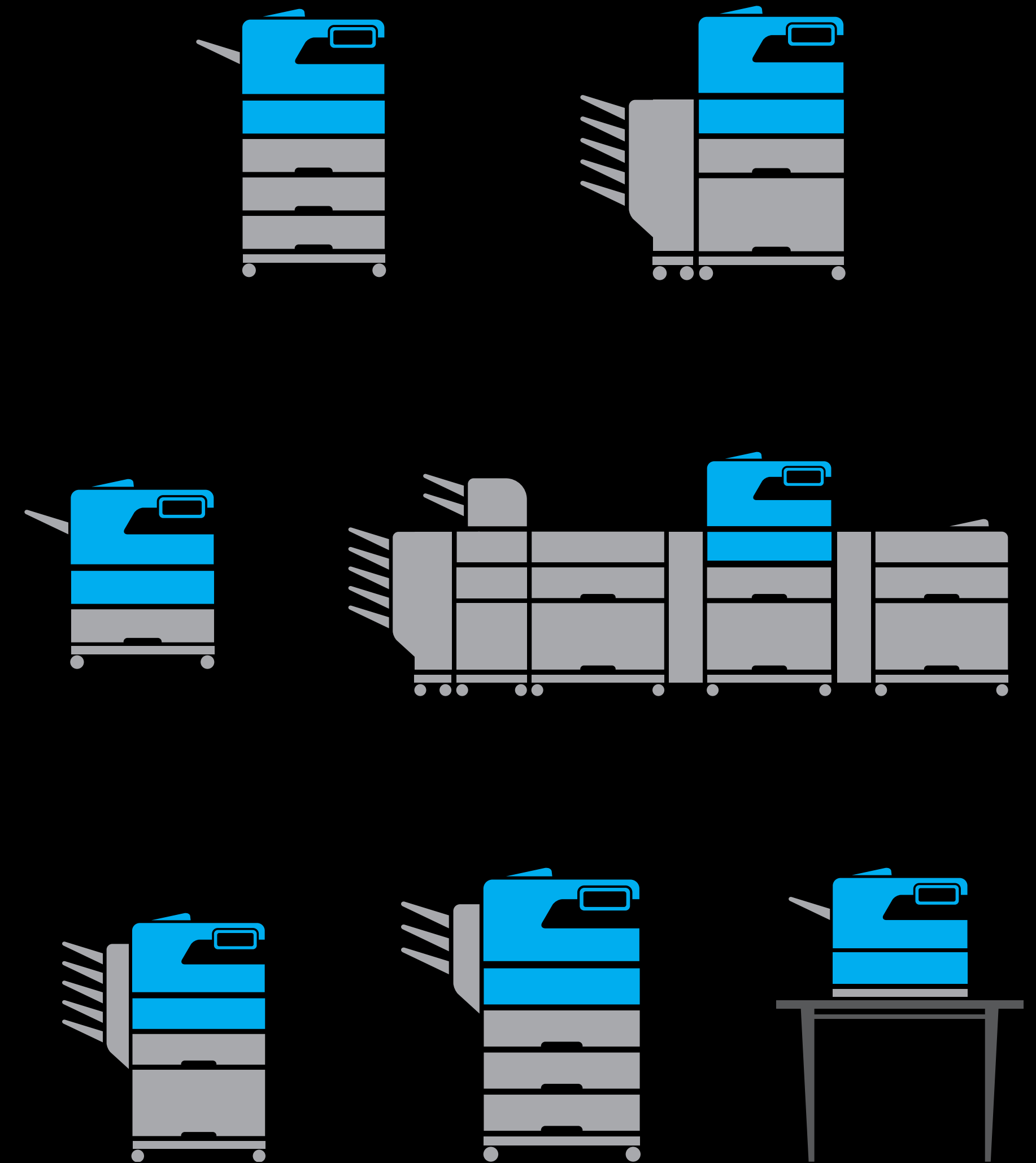
Fleet of printers across floors/buildings



# Printing in Enterprise

Fleet of printers across floors/buildings

Complex network infrastructure

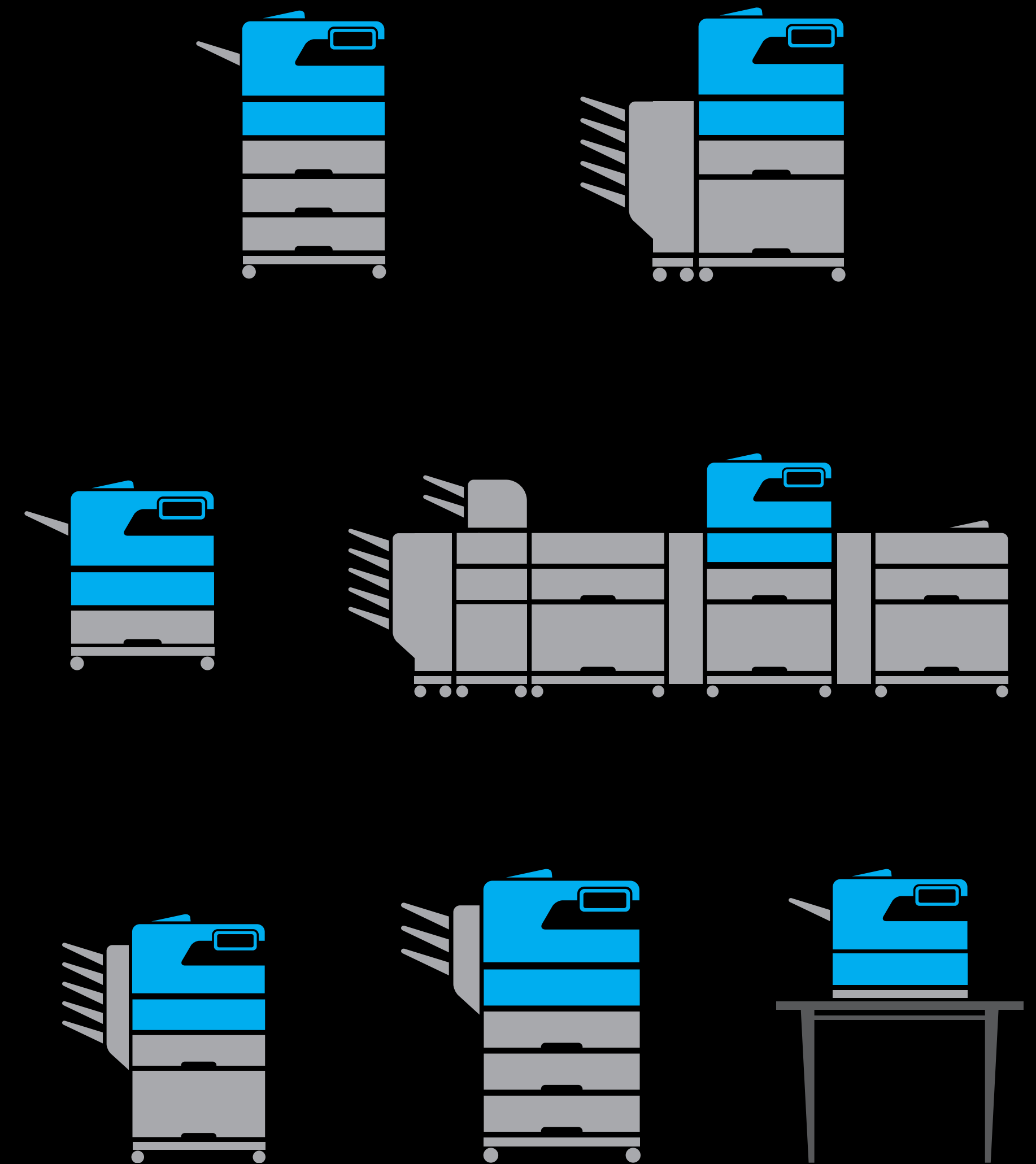


# Printing in Enterprise

Fleet of printers across floors/buildings

Complex network infrastructure

- Wireless and wired clients

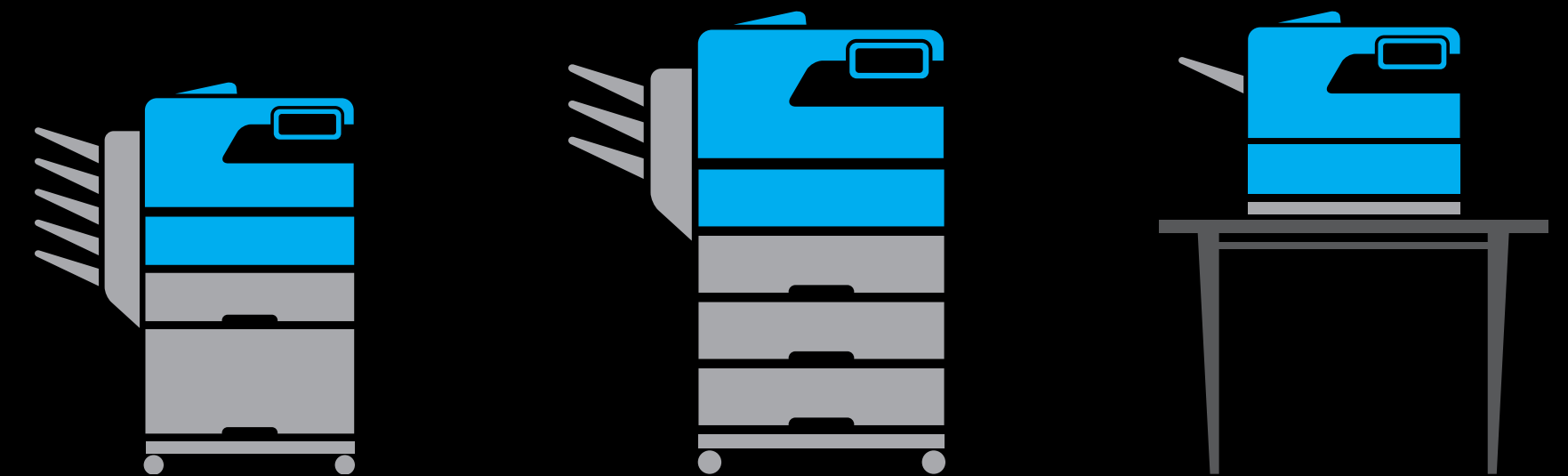
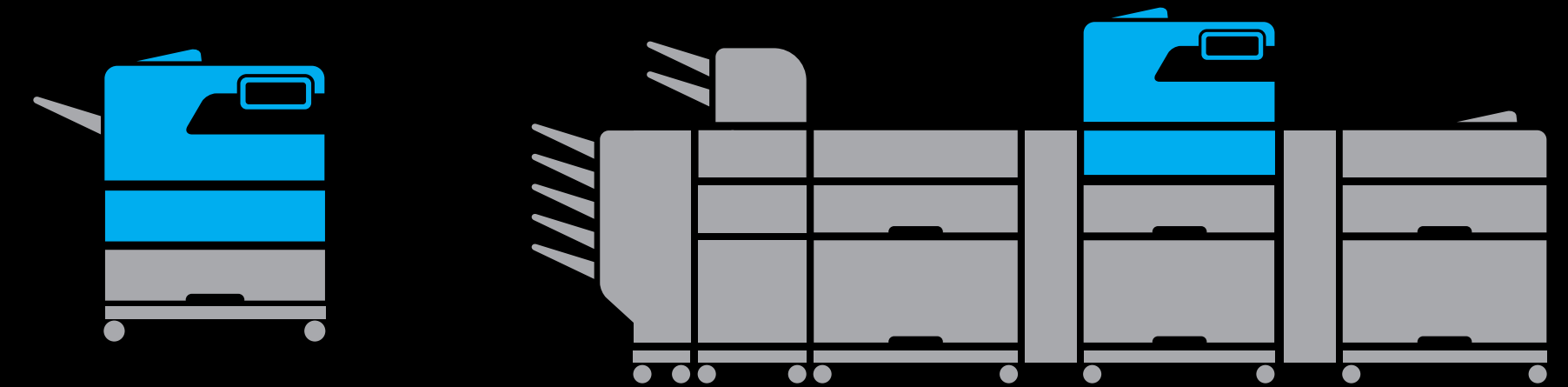
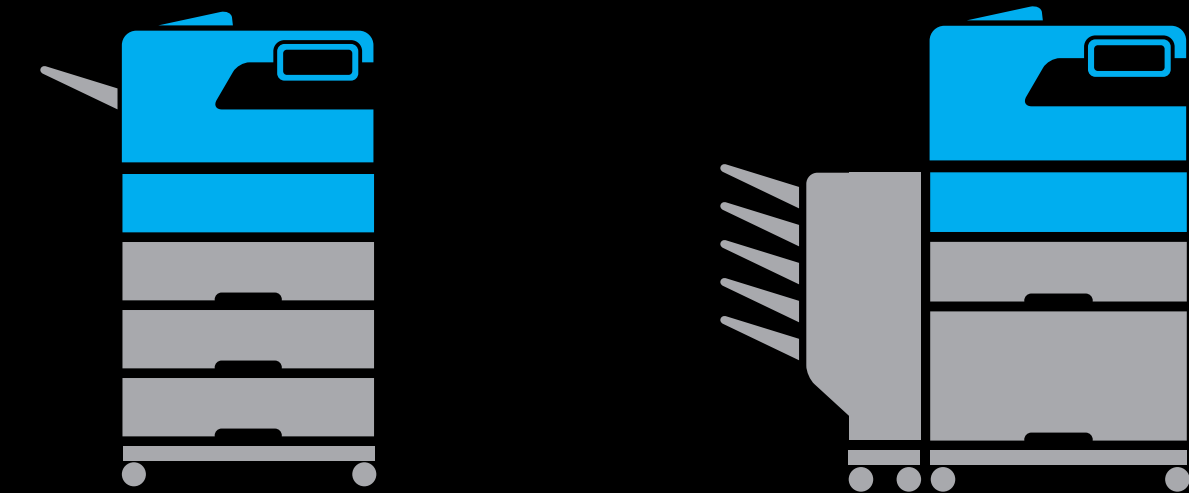


# Printing in Enterprise

Fleet of printers across floors/buildings

Complex network infrastructure

- Wireless and wired clients
- Physical location in building may not be related to structure of the network

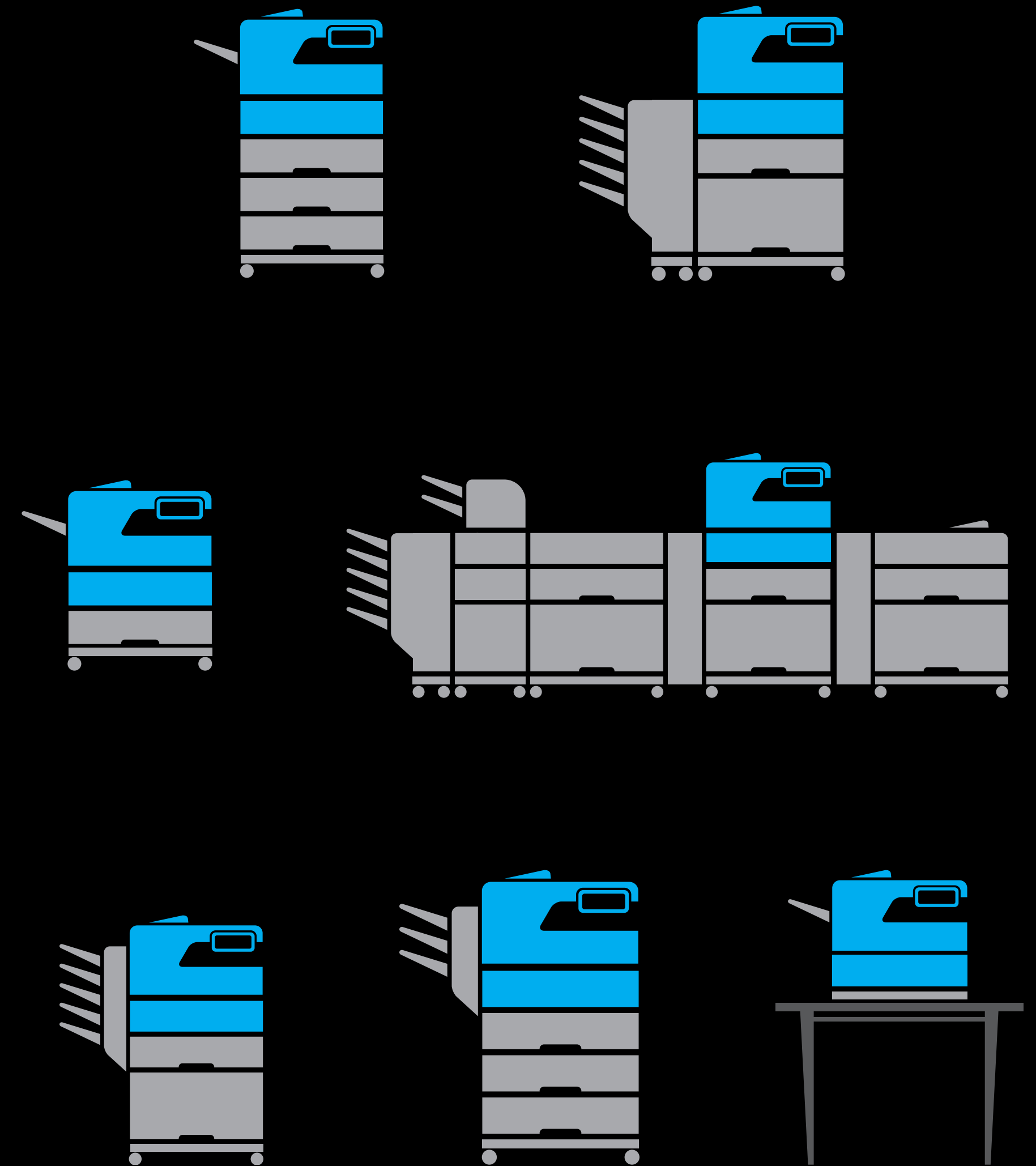


# Printing in Enterprise

Fleet of printers across floors/buildings

Complex network infrastructure

- Wireless and wired clients
- Physical location in building may not be related to structure of the network
- Network requirements vary  
(no software update, no multicast packets, ports blocked)





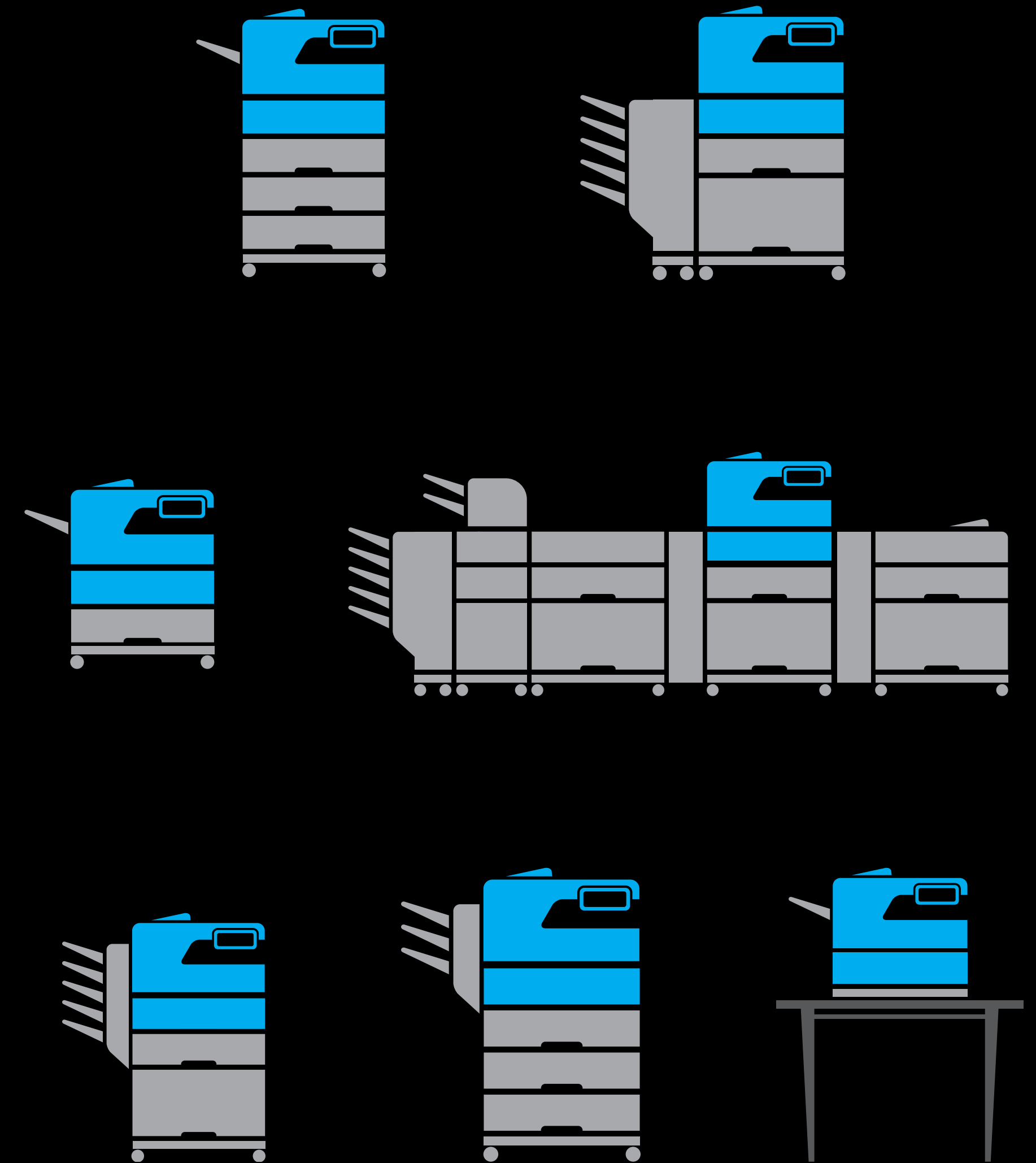
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Accounting requirements



# Printing in Enterprise

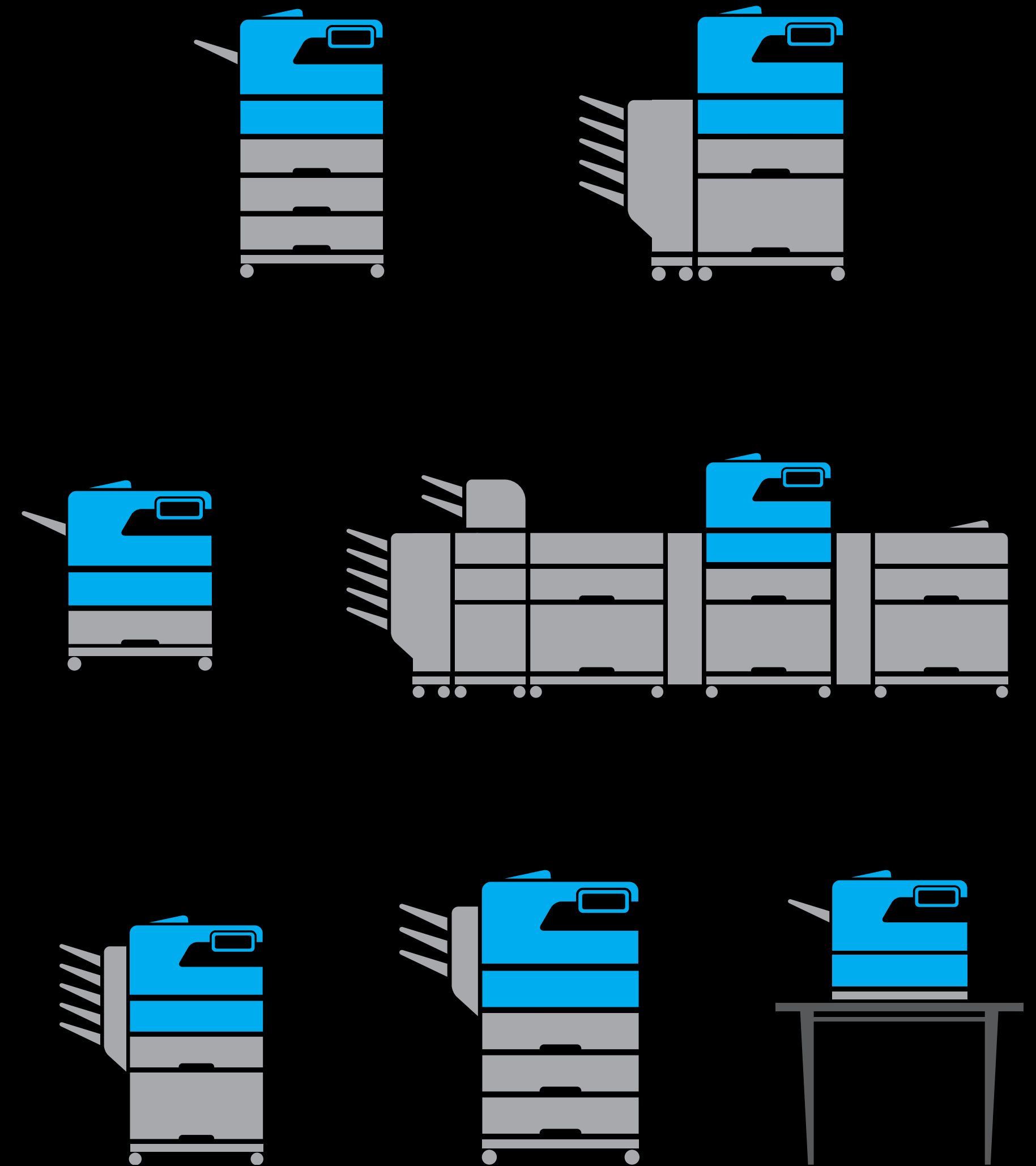
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Complex network infrastructure

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Accounting requirements

Security requirements



# Top Requests from Enterprise

# Top Requests from Enterprise

Create PDF

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Security

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Access Control and Accounting

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Better Discovery

NEW

*Demo*

Create PDF

NEW

iPad 9:41 AM 100%

Apple Inc.

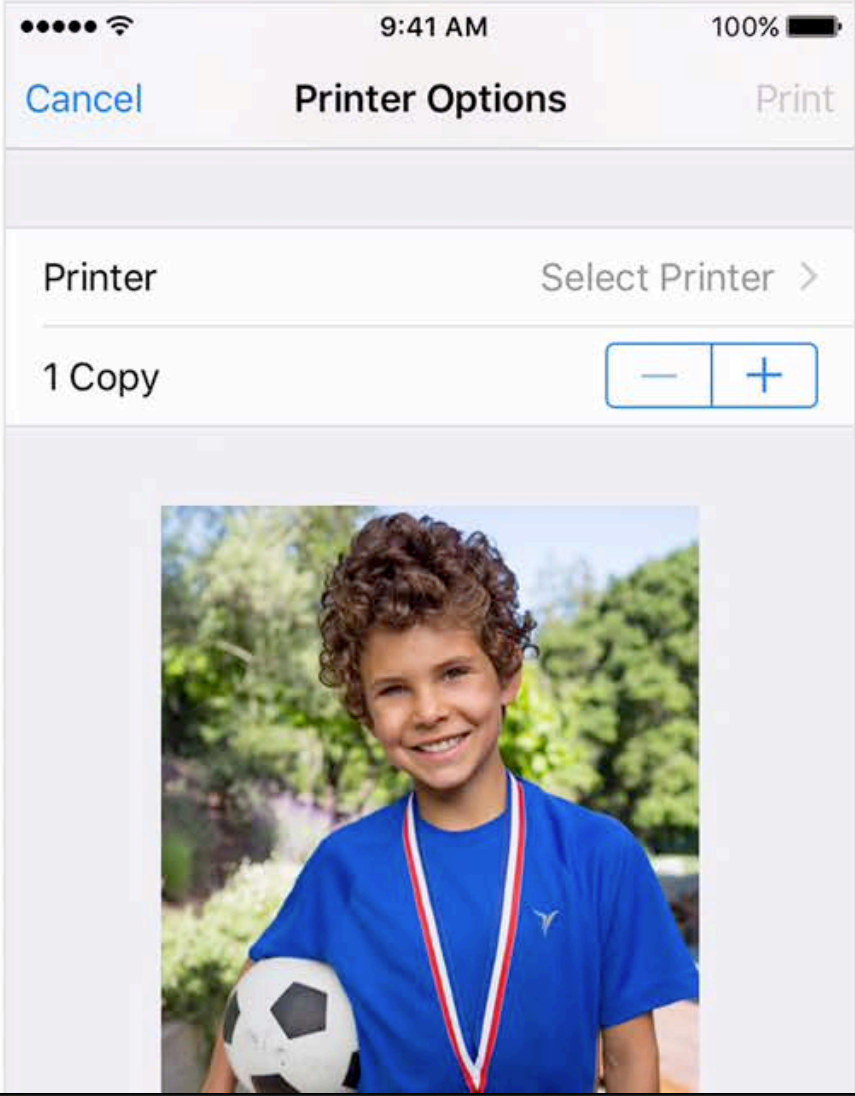
Mac iPad iPhone Watch TV Music Support

## Use AirPrint to print from your iPhone, iPad, or iPod touch

Learn how to print from your iPhone, iPad, or iPod touch to an AirPrint-enabled printer.

You can print from your iOS device to any [AirPrint-enabled printer](#):


1. Open the app you want to print from. Find the print option by tapping the app's share icon (↪ or ↗) or settings icon (⚙️ or ⚙️). If you can't find the print option, check the app's User Guide or Help section. Not all apps support AirPrint.
2. Tap 🖨️ or Print.
3. Choose an [AirPrint-enabled printer](#).
4. Choose the number of copies.
5. Tap Print.



Cancel Printer Options Print

Printer Select Printer >

1 Copy - +



NEW

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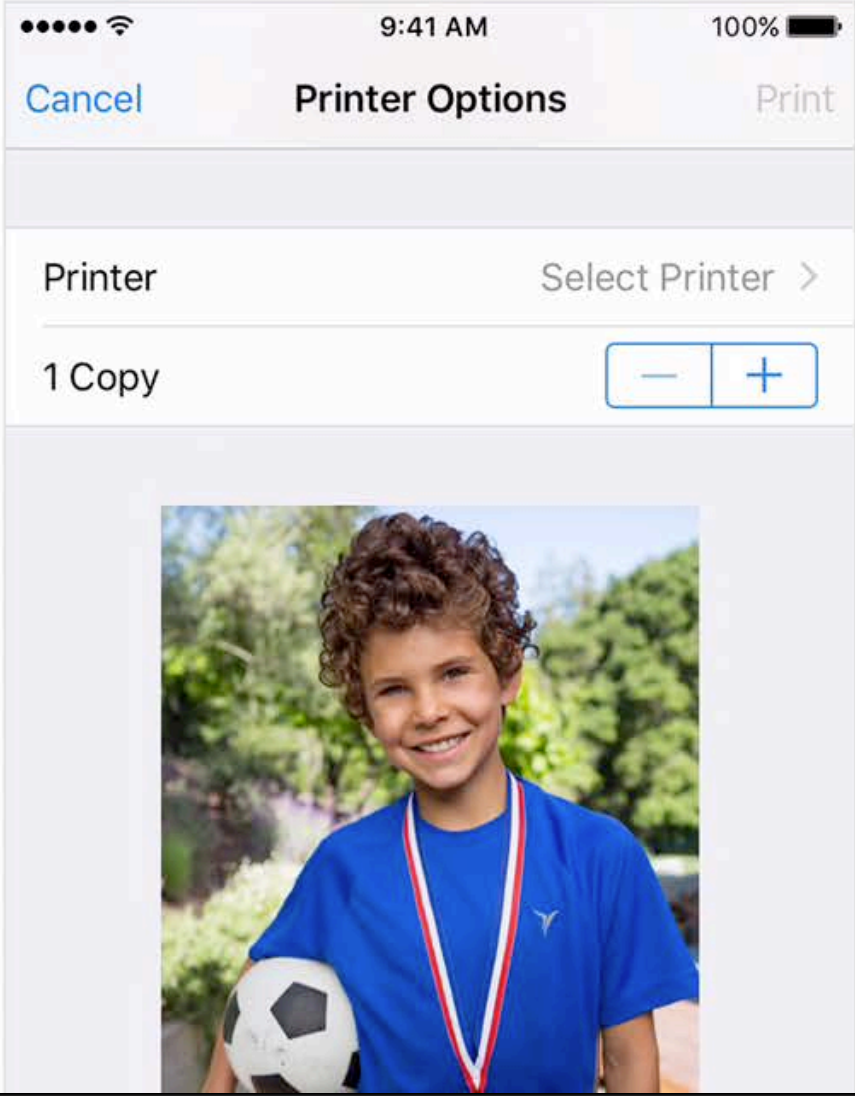
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Cancel Printer Options Print

Printer Select Printer >

1 Copy - +





Security

# End to End Encryption

Industry standard TLS encryption

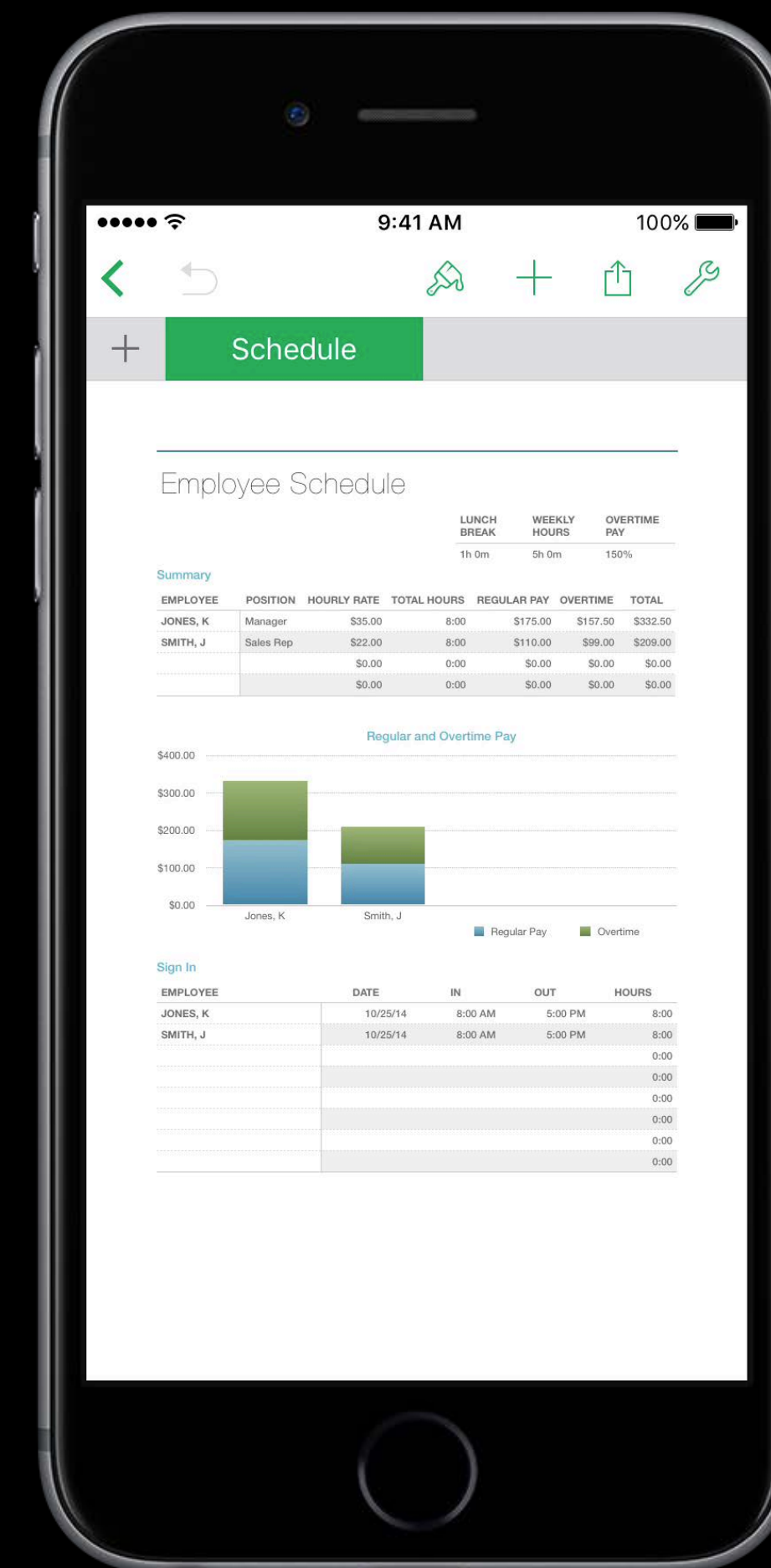
Encrypted from device to printer

Requirement for all new AirPrint printers  
and servers



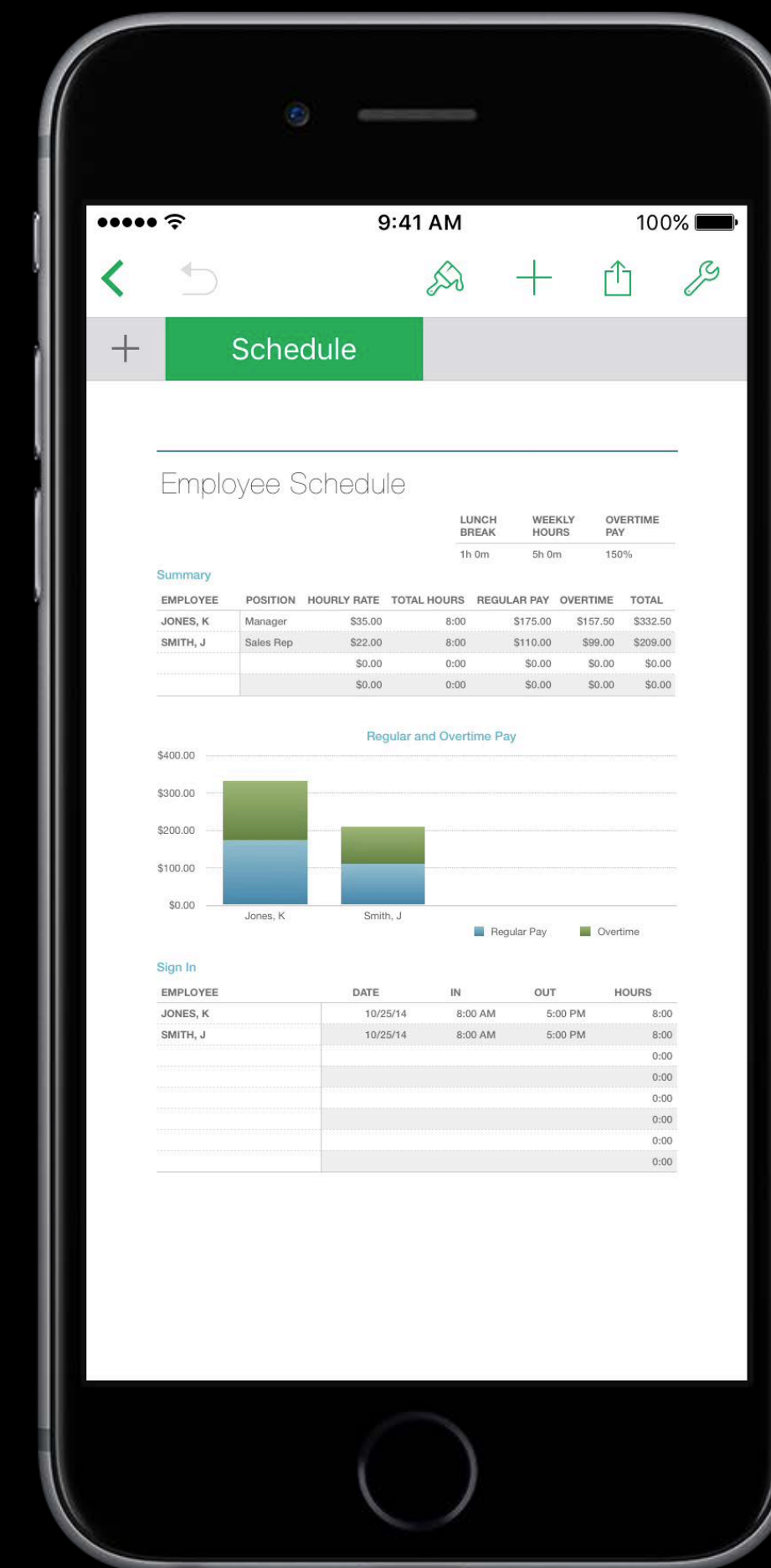
# PIN Release Printing

iOS and Mac OS support PIN release for secure environments



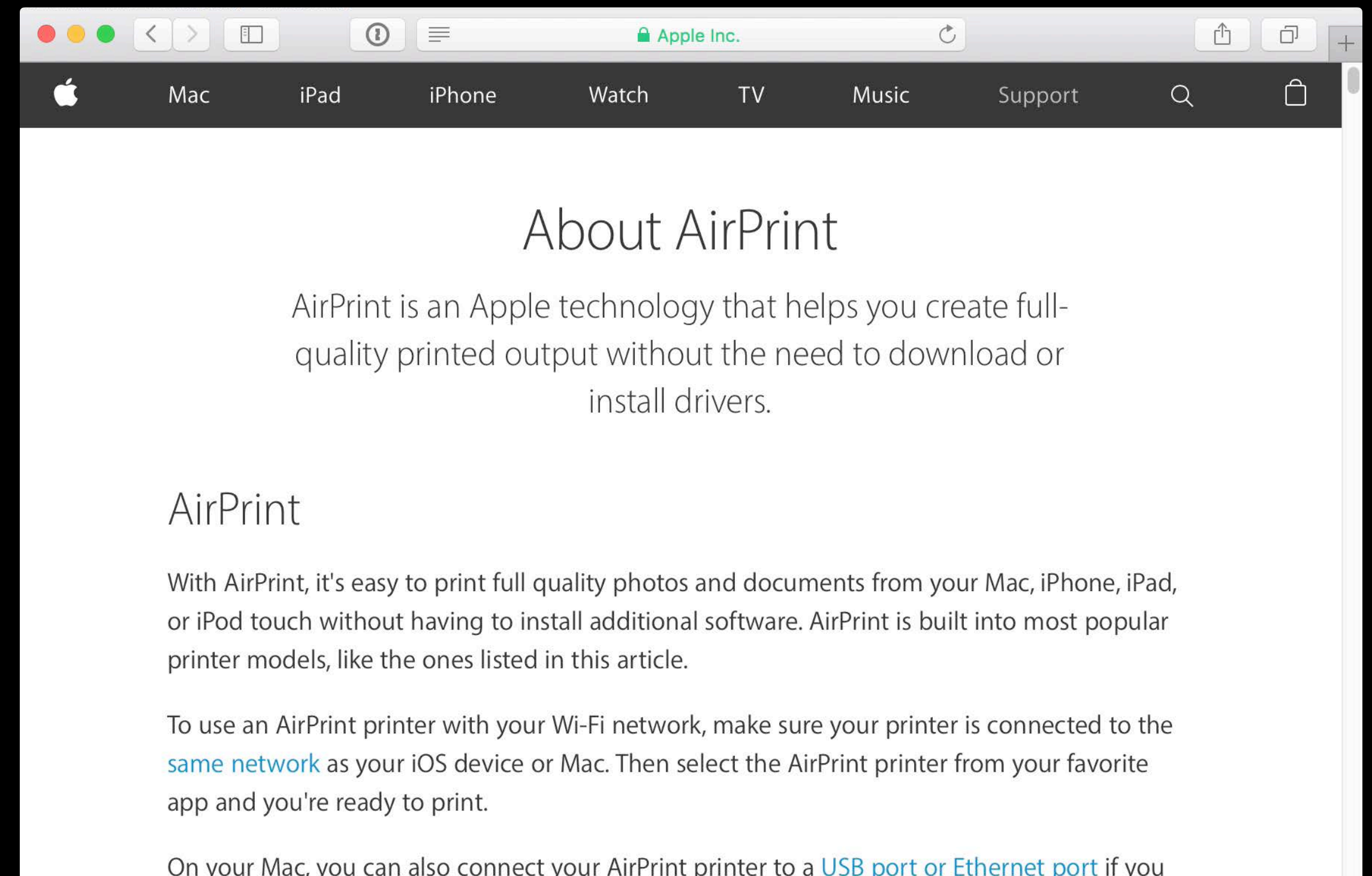
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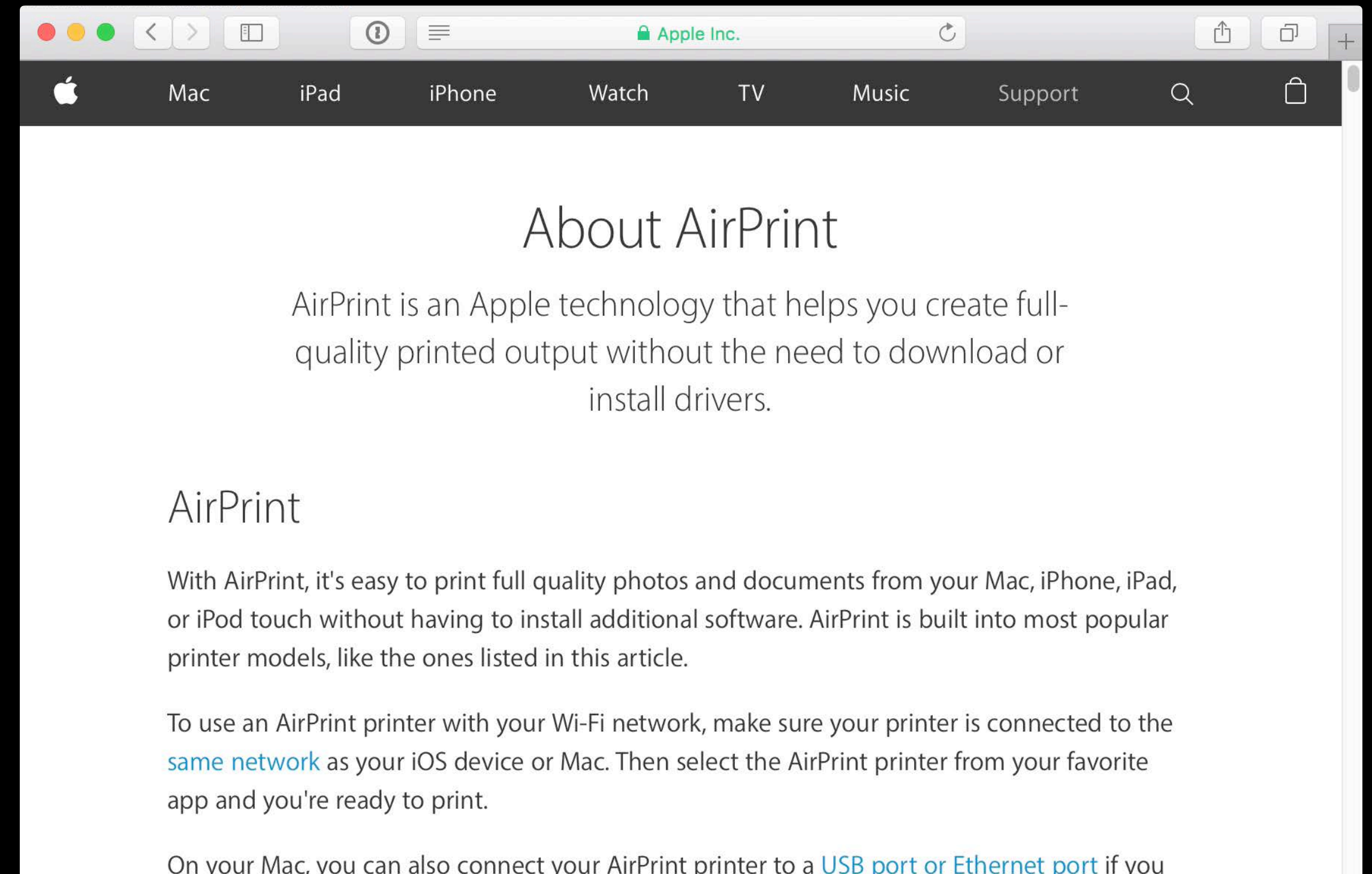
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# Access Control and Accounting

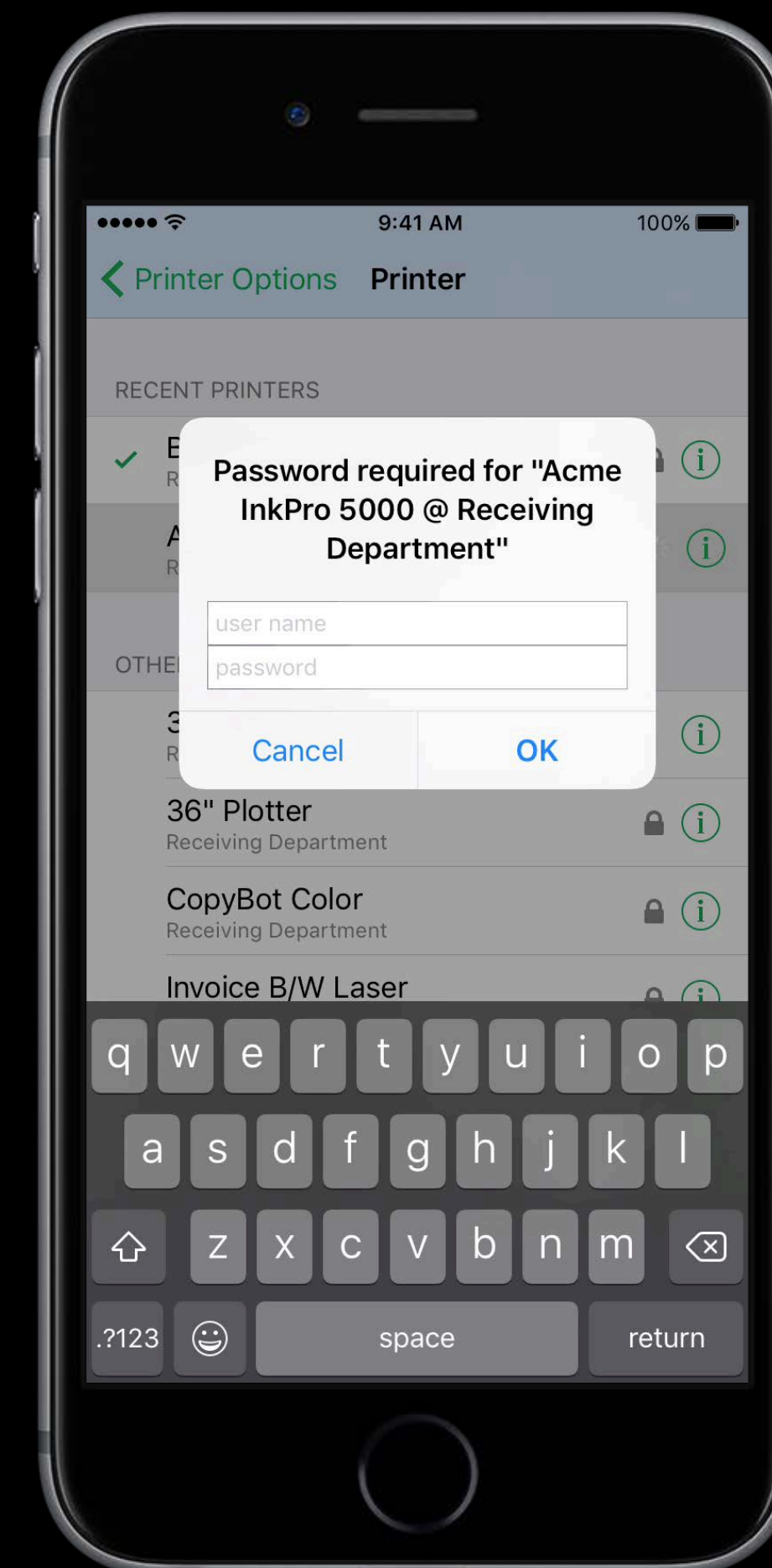
# Sign In

AirPrint has always supported username and password to print

Username and password stored in keychain

iOS 10 now supports multiple sign ins for printing

iOS 10 and Mac OS now also support password only





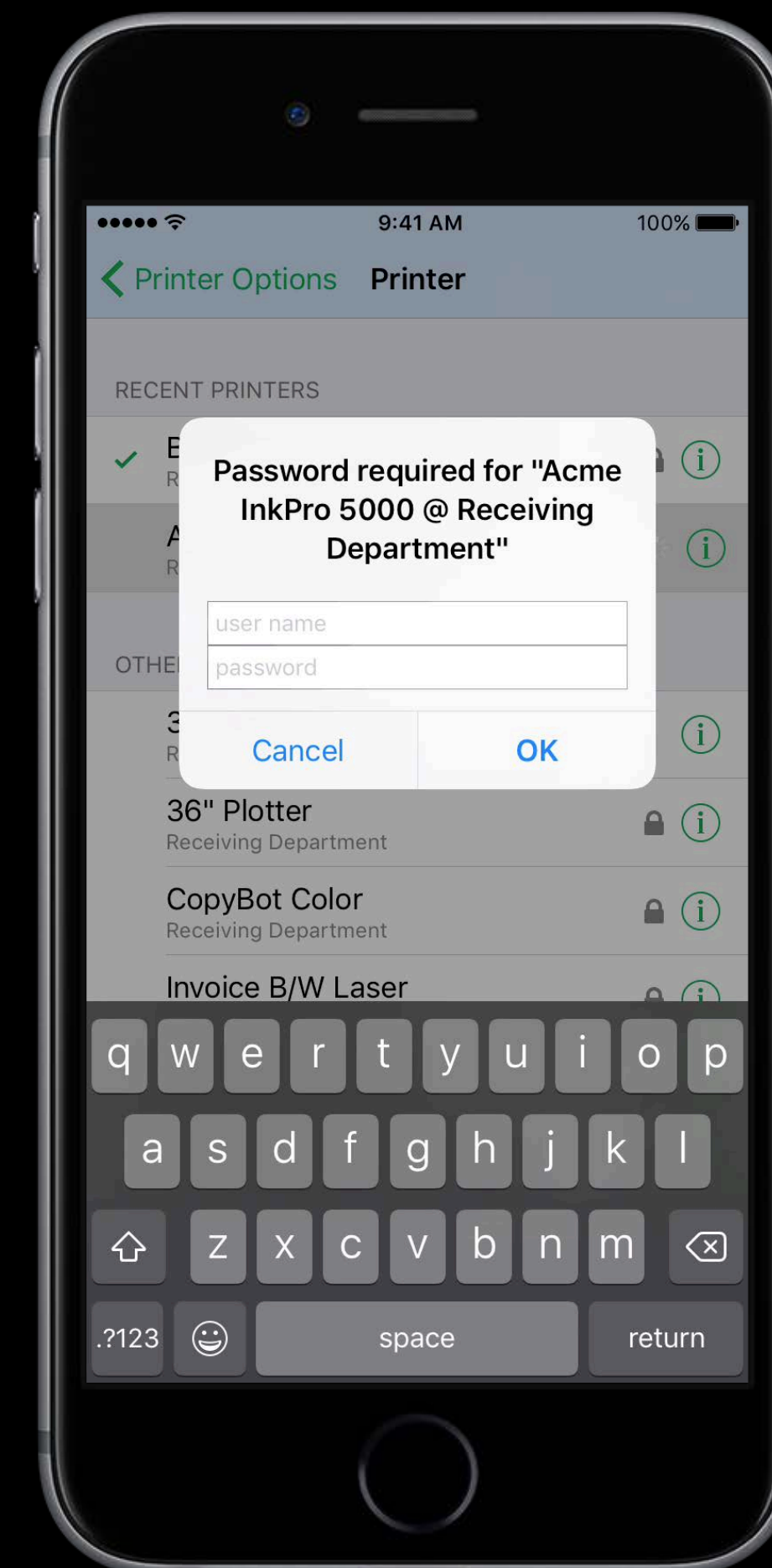
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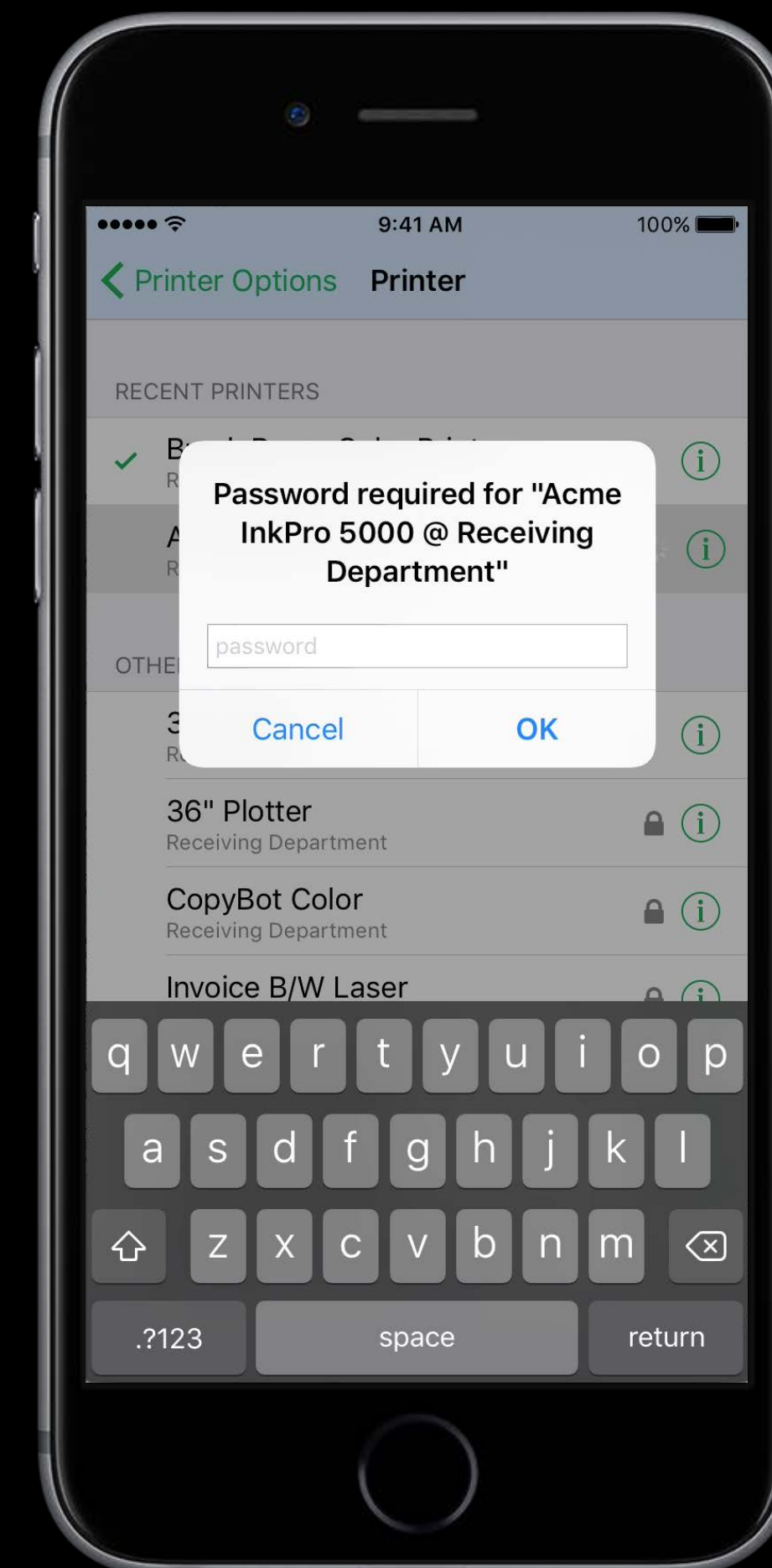
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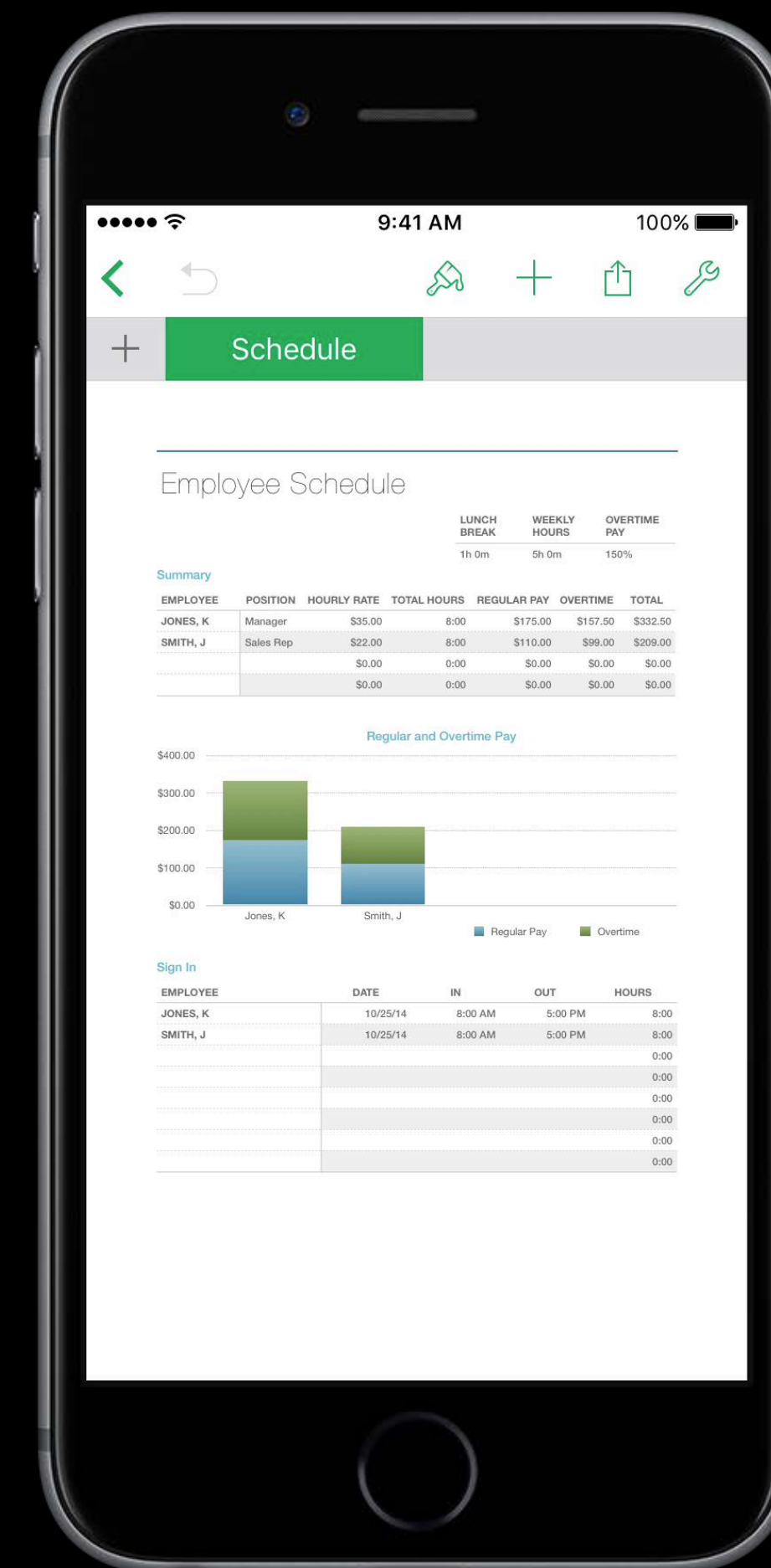
iOS 10 and Mac OS now also support password only



# Accounting

Billing pages to an account

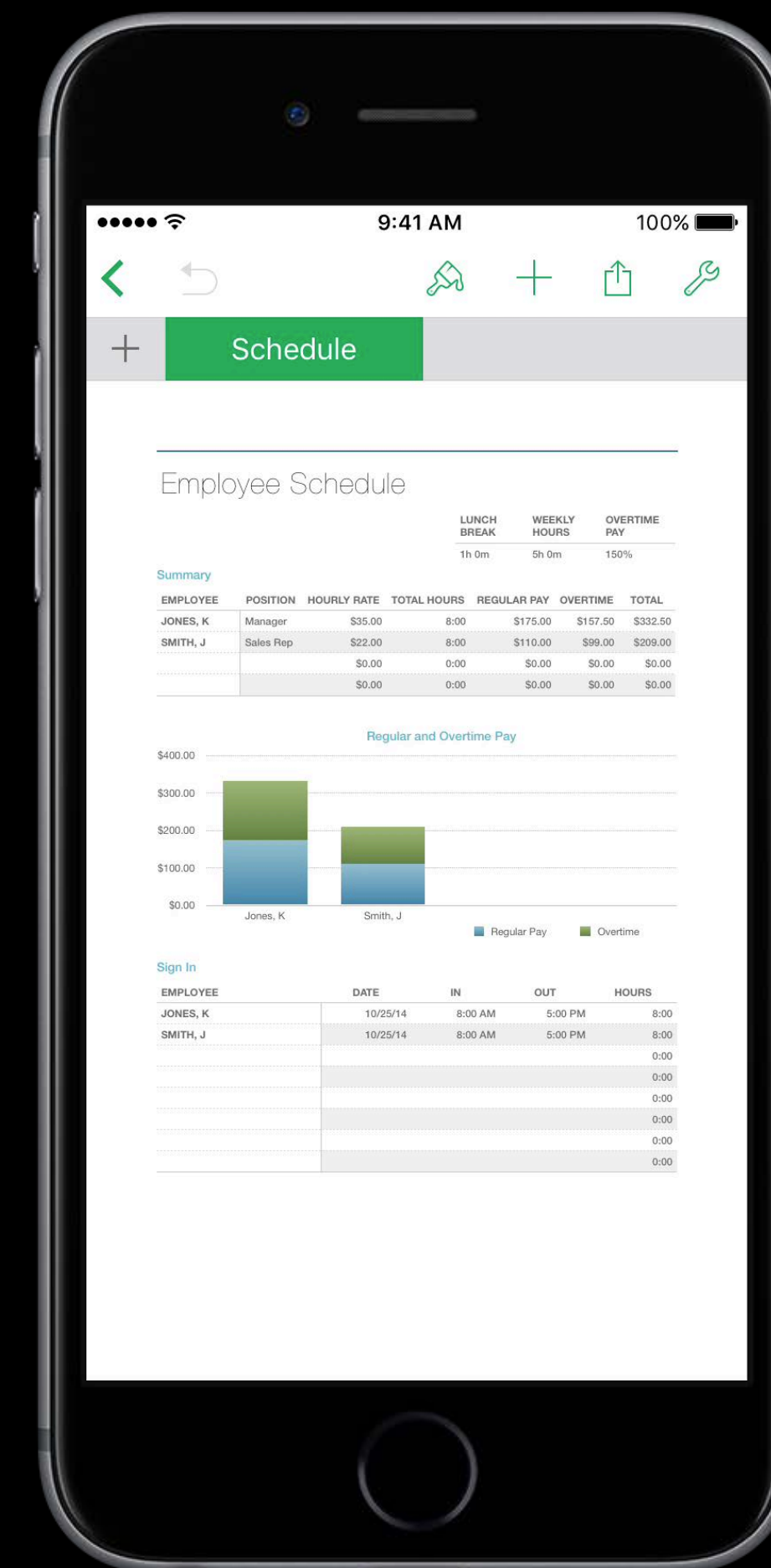
iOS and Mac OS support either optional account ID or required account ID for each print job



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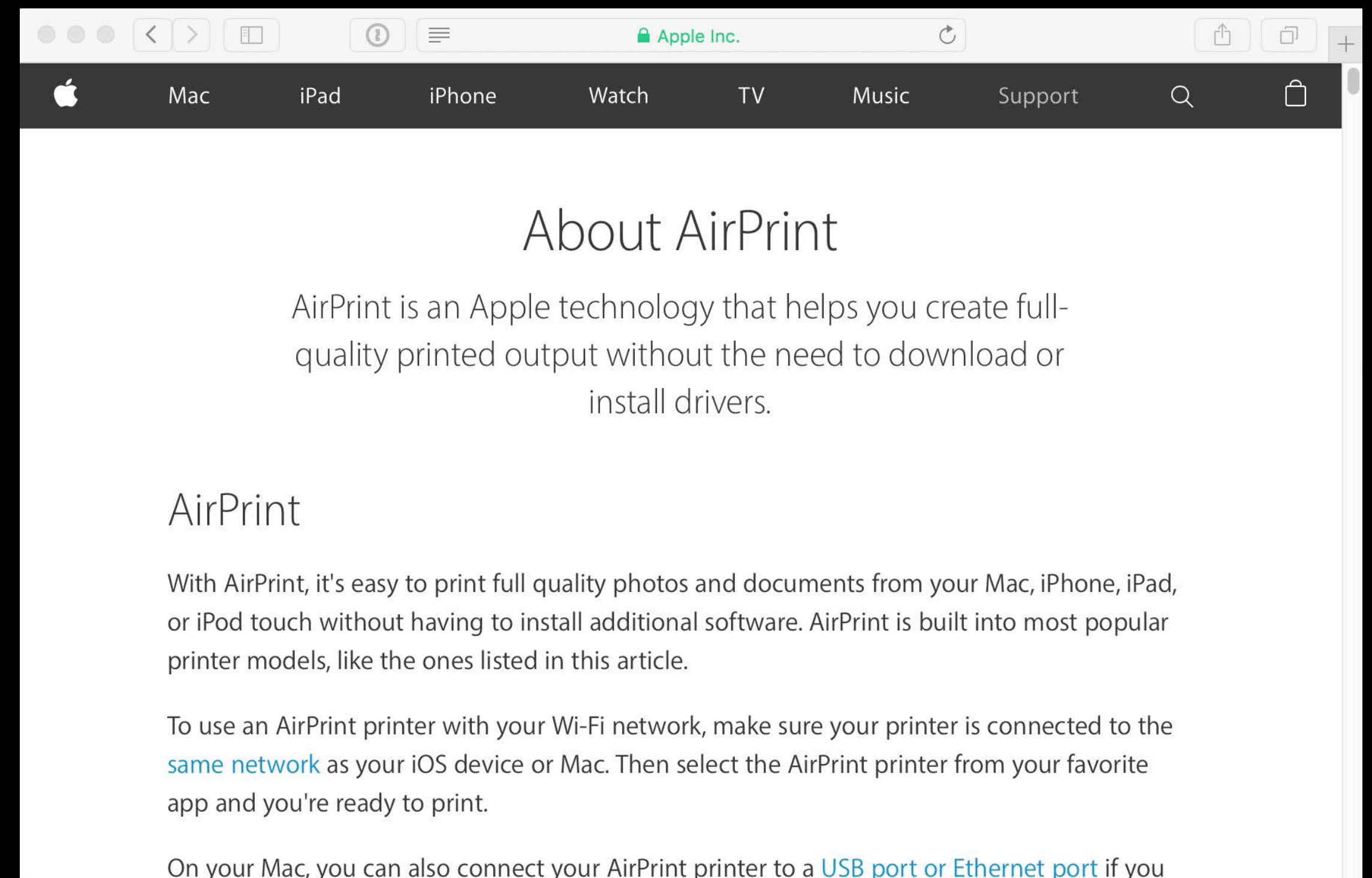
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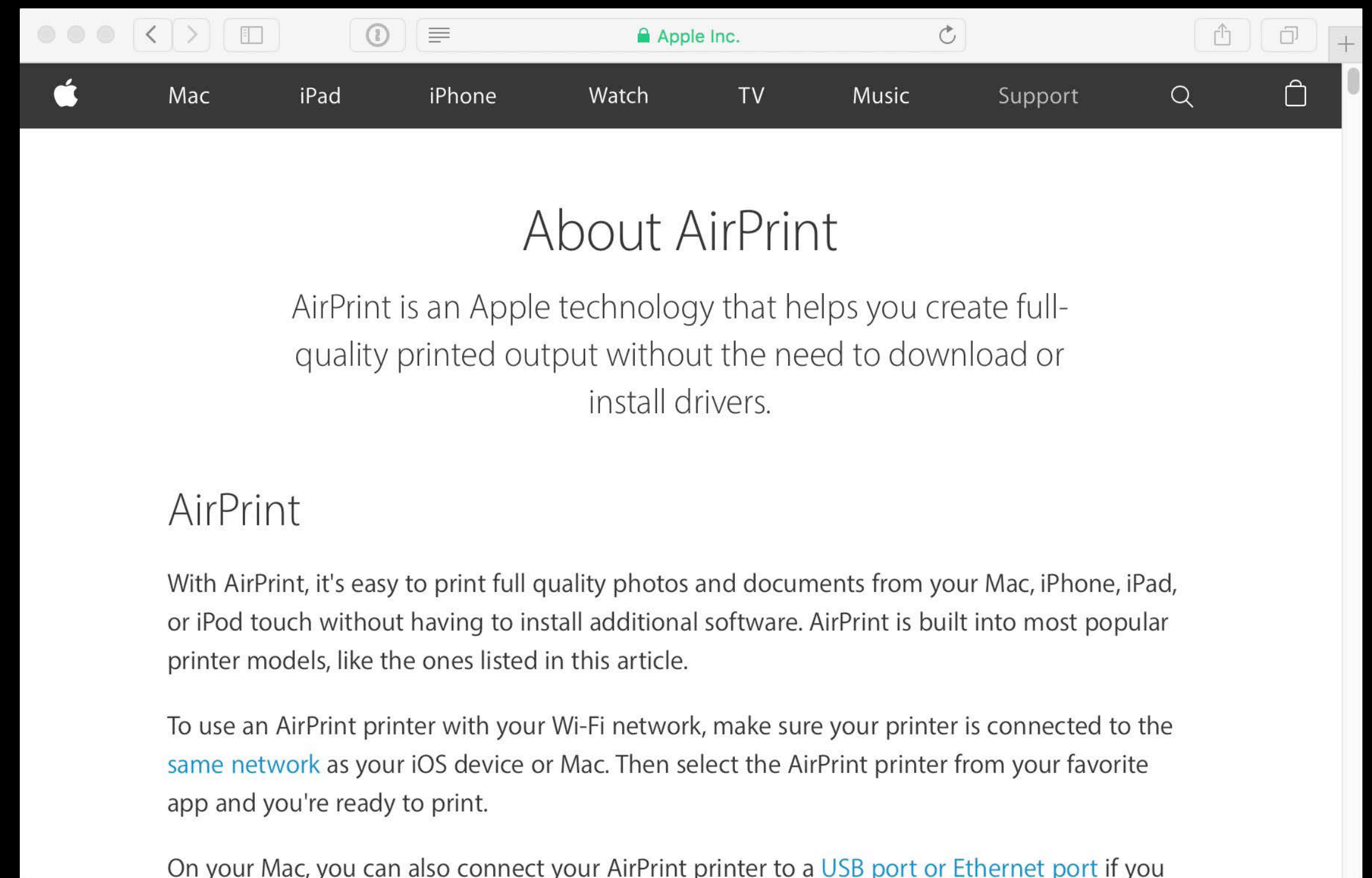
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Better Discovery

# Supported Discovery Methods



# Supported Discovery Methods

Local Bonjour

# Supported Discovery Methods

Local Bonjour

Wide-Area Bonjour

# Supported Discovery Methods

Local Bonjour

Wide-Area Bonjour

Mobile Device Management (MDM) Profiles

# Supported Discovery Methods

Local Bonjour

Wide-Area Bonjour

Mobile Device Management (MDM) Profiles

AirPrint Bluetooth Beacons—New in iOS 10

# Configuring a DNS Server

## DNS-SD

iOS Devices and Macs can have search domains and DNS Servers using DHCP or MDM profiles

A or AAAA Record for the printer (and a static IP address)

PTR Record

- One PTR record for `_ipps._tcp` and one additional PTR Record with `_universal._sub`

SRV Record

TXT Record

```
// Using dns-sd Command Line
```

```
dns-sd -Z _tcp._ipps. local
```

```
_ipps._tcp PTR Office\032Printer._ipps._tcp
```

```
Office\032Printer._ipps._tcp SRV 0 0 443 AcmePrinter.local. ; Replace with unicast FQDN  
of target host
```

```
Office\032Printer._ipps._tcp TXT "txtvers=1" "qtotal=1" "rp=ipp/print" "ty=Acme Printer"  
"adminurl=http://AcmePrinter.local/administration" "kind=photo,document" "note=Second Floor"  
"PaperMax=>isoC-A2" "priority=0" "product=(Acme Printer)" "Color=T" "Duplex=F" "Staple=F"  
"Copies=T" "Collate=F" "Punch=0" "Bind=F" "Sort=F" "Scan=F" "Fax=F" "pdl=image/urf,image/  
jpeg" "URF=W8,SRGB24,CP255,FN3-11,IS9,IFU0,MT1-2,OB10,PQ3-4-5,RS300-600,V1.4" "UUID=2193e070-  
c558-3ce4-53bd-4d8c54755dcf" "TLS=1.2"
```

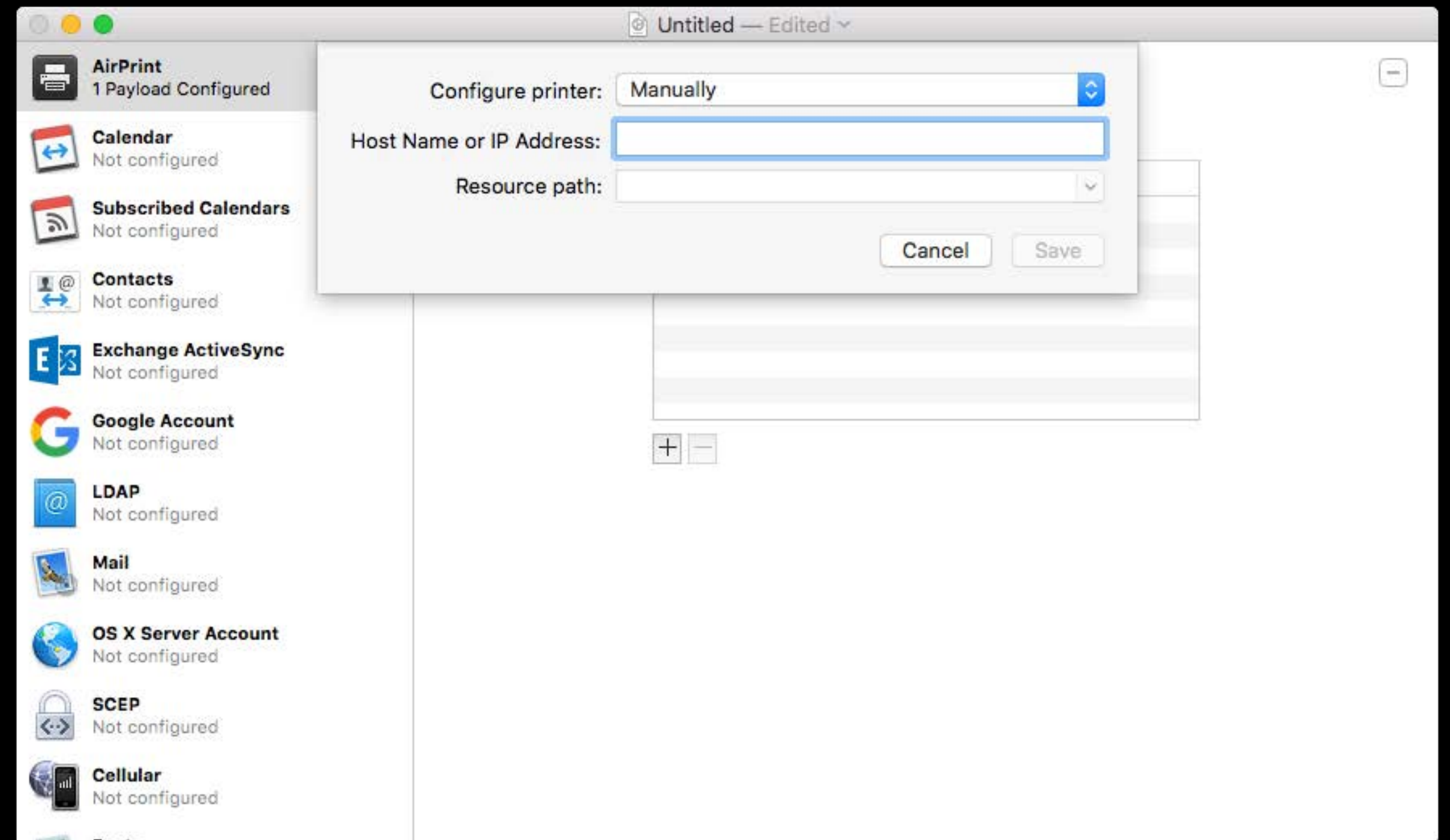
```
// Using dns-sd Command Line
```

```
_ipp._tcp PTR Office\032Printer._ipp._tcp
_universal._sub._ipp._tcp PTR Office\032Printer._ipp._tcp
Office\032Printer._ipp._tcp SRV 0 0 443 printer1.company.com
Office\032Printer._ipp._tcp TXT "txtvers=1" "qtotal=1" "rp=ipp/print" "ty=Acme Printer"
"adminurl=http://printer1.company.com/administration" "kind=photo,document" "note=Second Floor"
"PaperMax=>isoC-A2" "priority=0" "product=(Acme Printer)" "Color=T" "Duplex=F" "Staple=F"
"Copies=T" "Collate=F" "Punch=0" "Bind=F" "Sort=F" "Scan=F" "Fax=F" "pdl=image/urf,image/
jpeg" "URF=W8,SRGB24,CP255,FN3-11,IS9,IFU0,MT1-2,OB10,PQ3-4-5,RS300-600,V1.4" "UUID=2193e070-
c558-3ce4-53bd-4d8c54755dcf" "TLS=1.2"
```

# MDM Profiles

AirPrint Payload has two parts

- Host or IP address
- Resource Path
- Resource Path is “ipp/print” for modern AirPrint printers
- If host is a server, the resource path will be the queue





NEW

# AirPrint Bluetooth Beacon

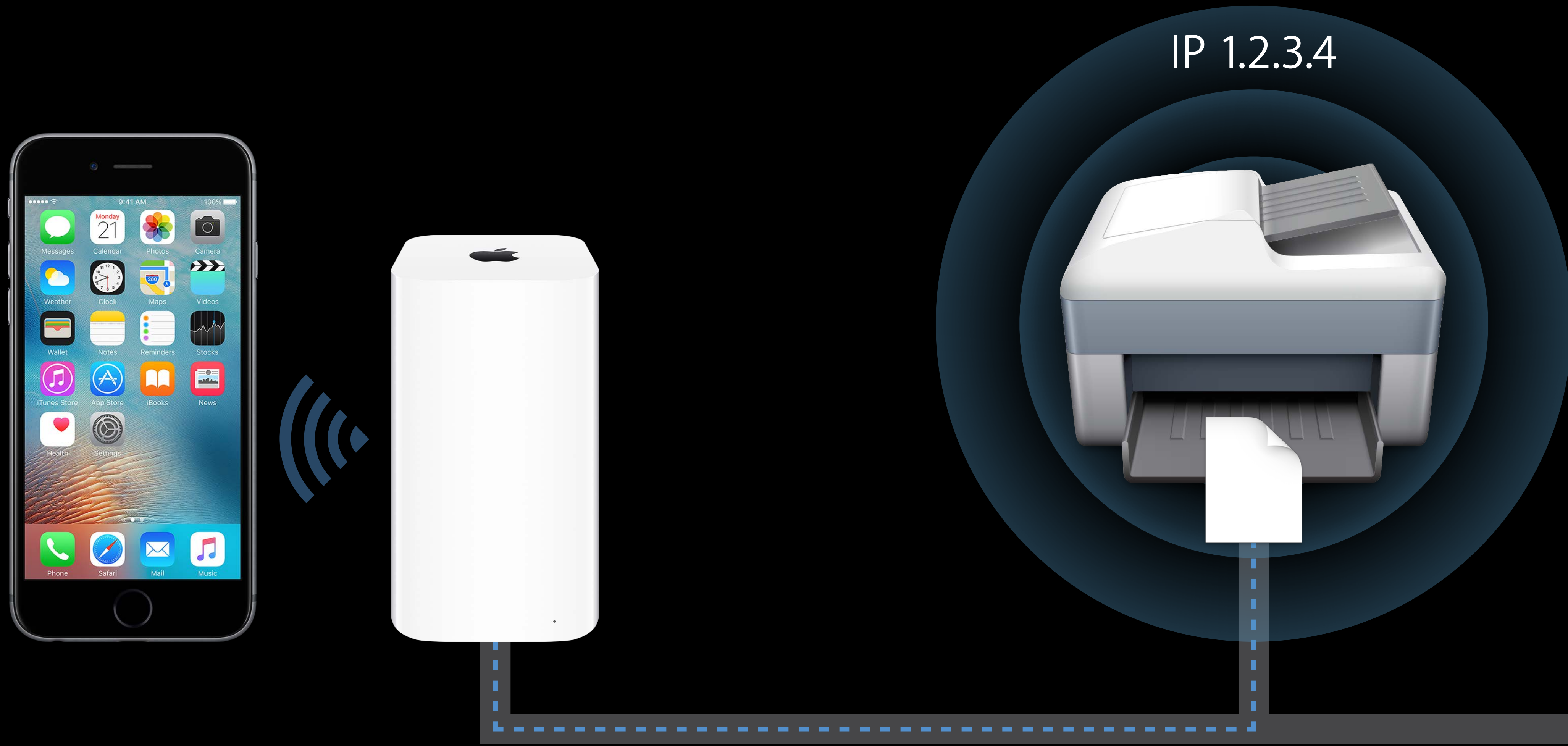
# How the AirPrint Bluetooth Beacon Works



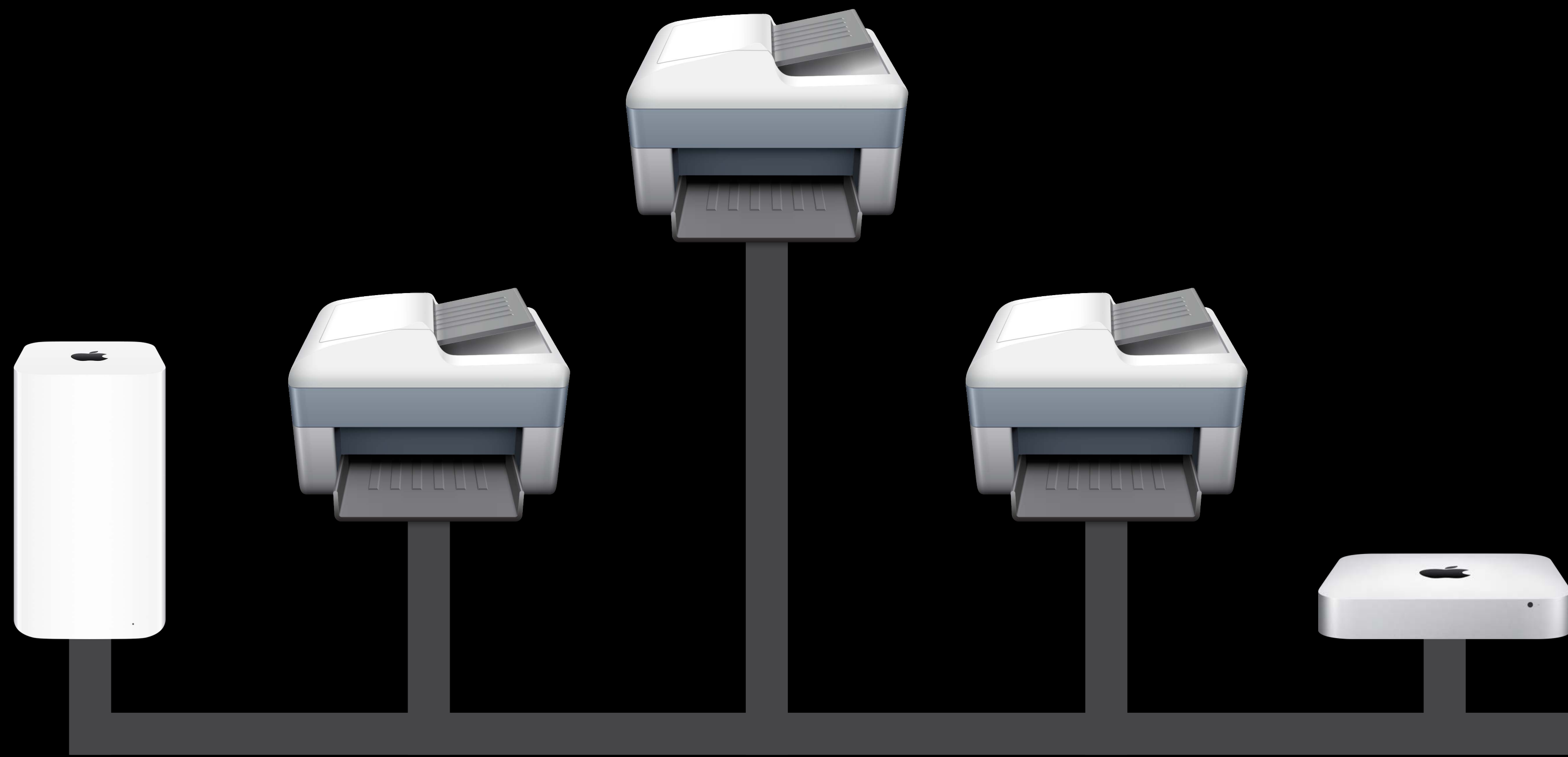
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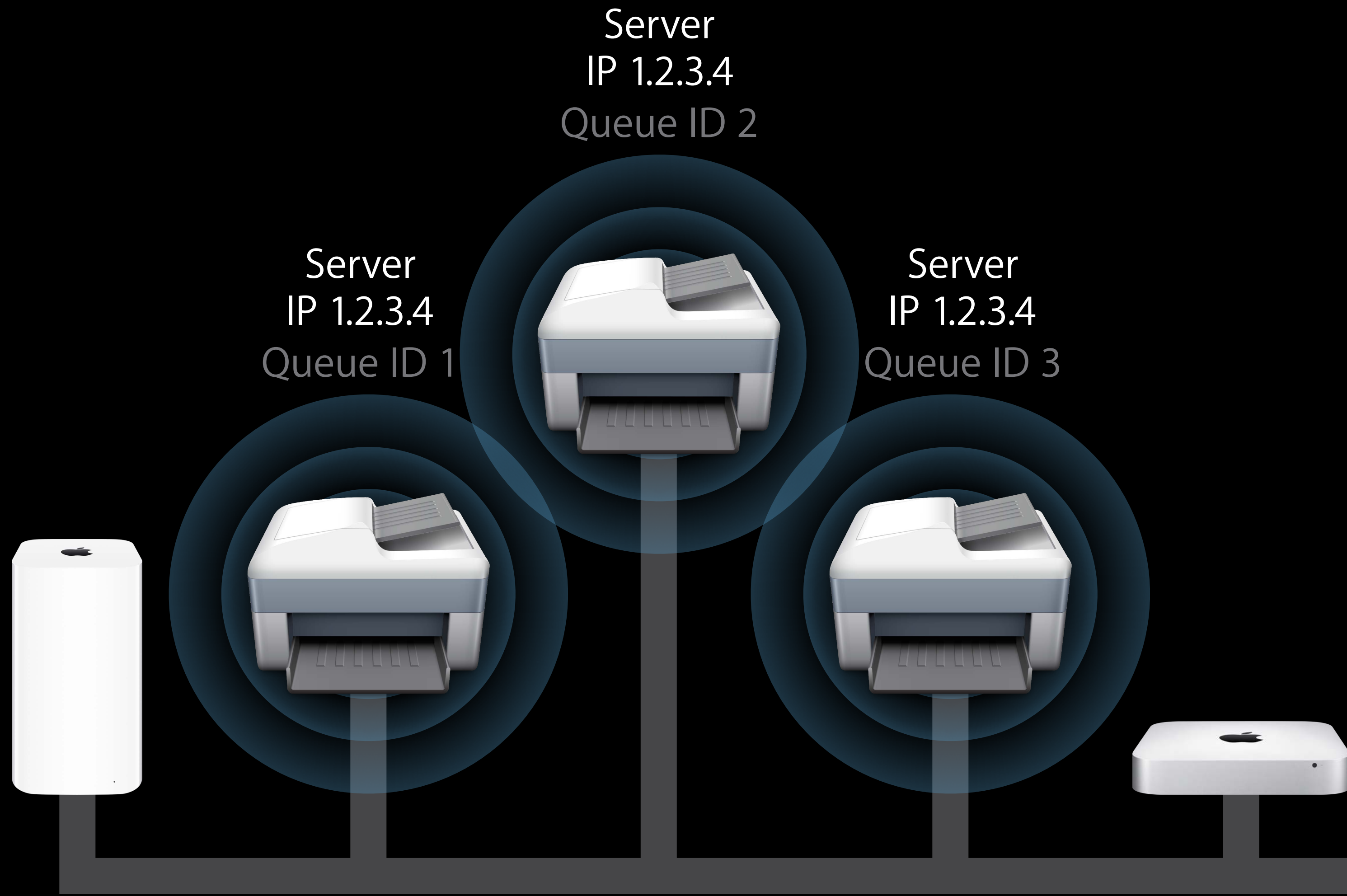
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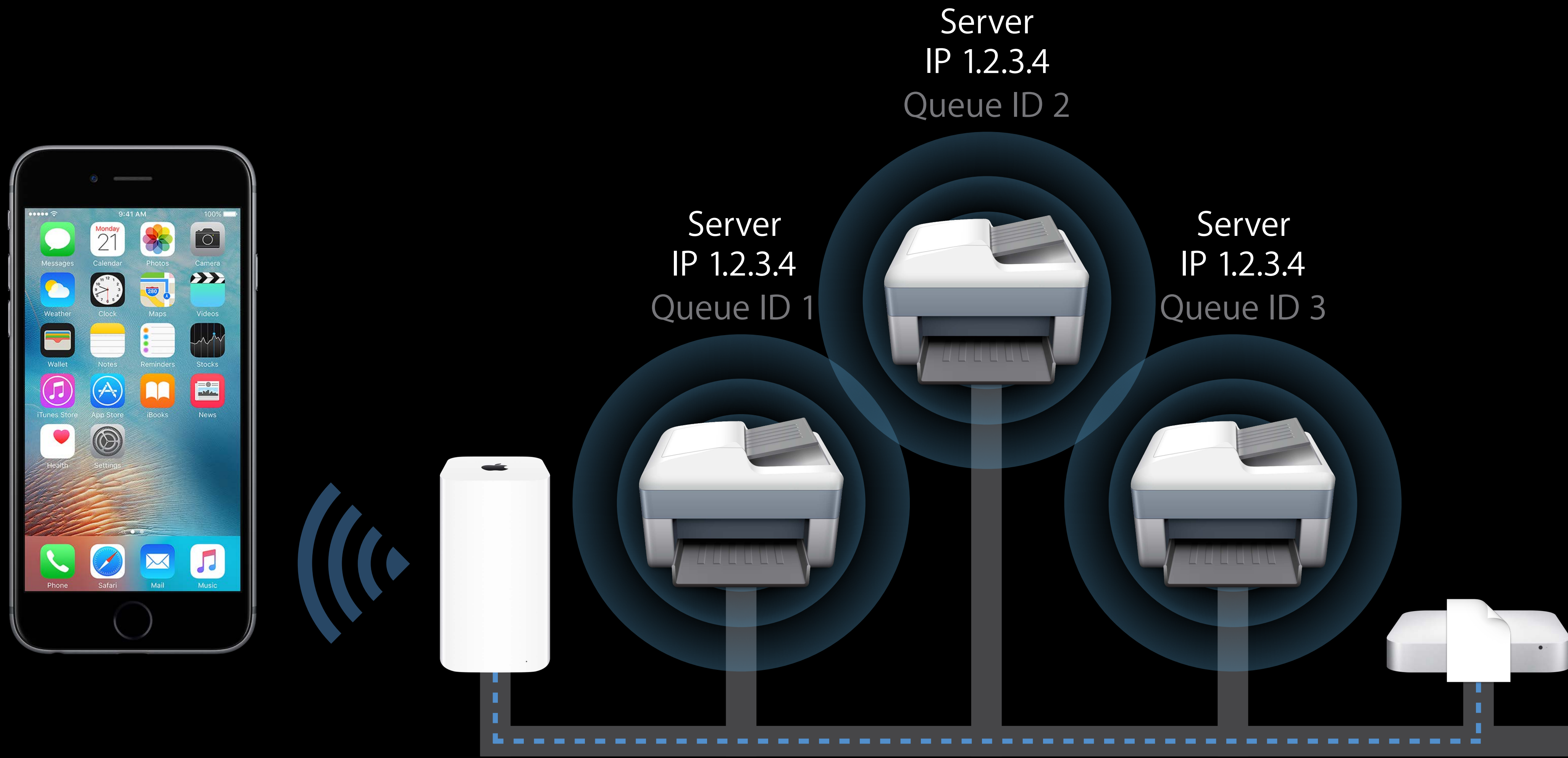
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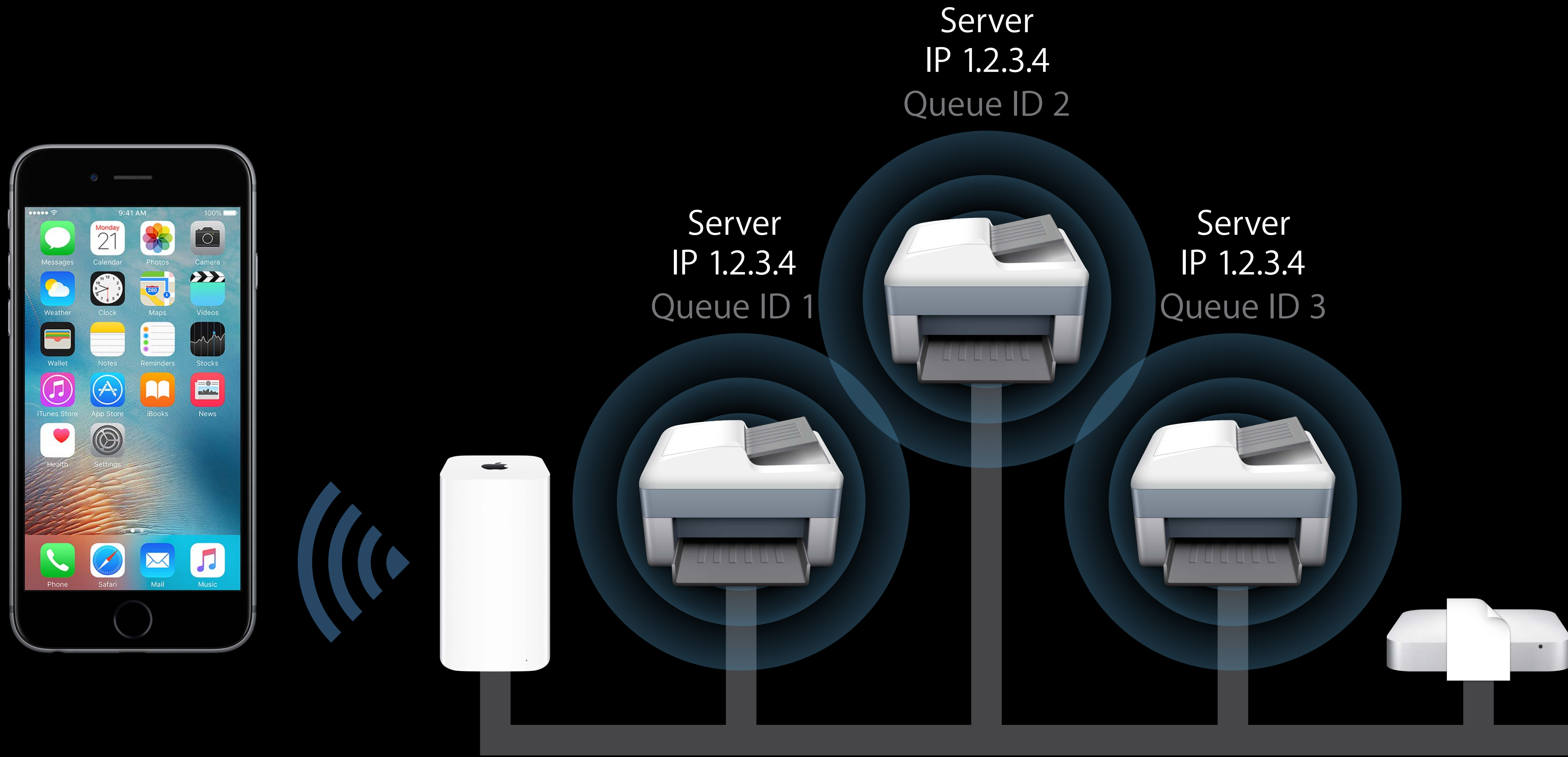
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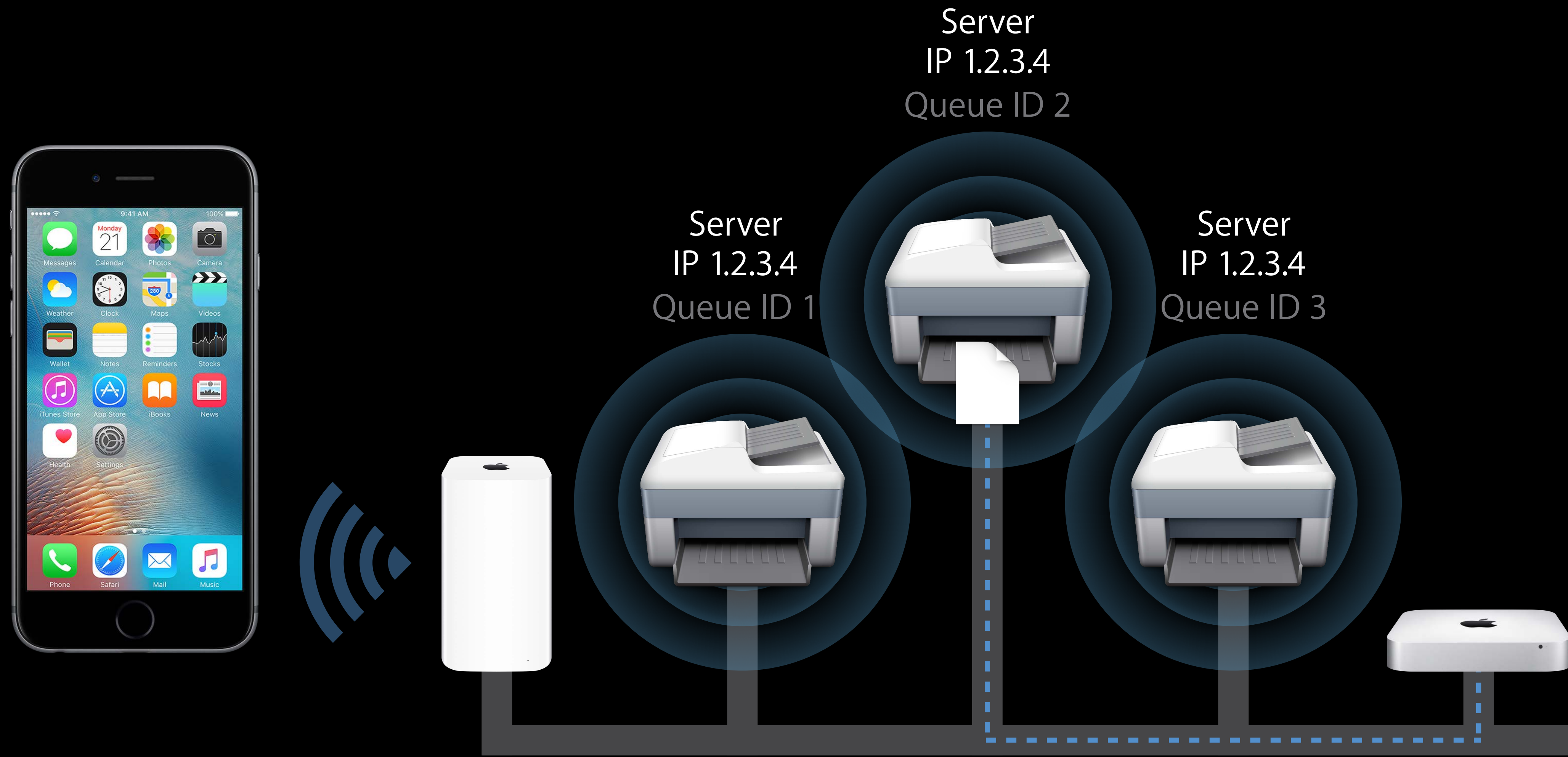


# How the AirPrint Bluetooth Beacon Works





# How the AirPrint Bluetooth Beacon Works



# AirPrint Bluetooth Beacon Format



# AirPrint Bluetooth Beacon Format



Header

The same for every AirPrint Bluetooth Beacon

# AirPrint Bluetooth Beacon Format

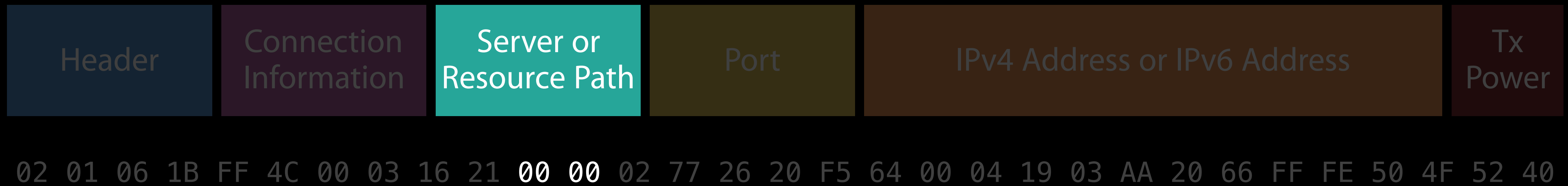


Whether IP address is an IPv4 or IPv6 Address

Whether this is a server or a standard printer

Whether Secure AirPrint (TLS encrypted connection) always on or not

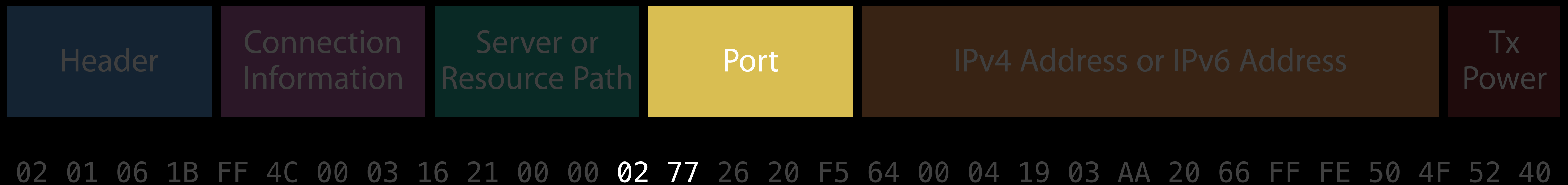
# AirPrint Bluetooth Beacon Format



A numeric printer ID for a server (server must support AirPrint Bluetooth Beacon)

A resource path index

# AirPrint Bluetooth Beacon Format

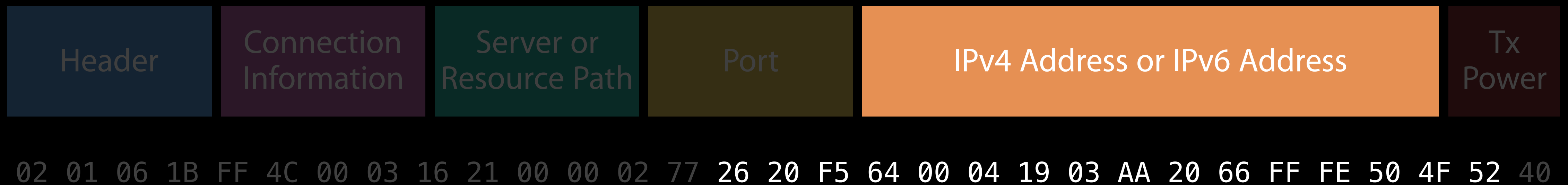


Port of printer/server

631 is standard

443 is typical for TLS Connections

# AirPrint Bluetooth Beacon Format



IP Address of the printer or server

If using non-updatable external beacon hardware, make sure printer has a static IP

# AirPrint Bluetooth Beacon Format



Measured signal strength at 1 meter

Same methodology as Apple iBeacon Measured Power

Gives iOS Device better information about physical distance to printer



# Similar to iBeacon

AirPrint Bluetooth Beacon Example

02 01 06 1B FF 4C 00 03 16 21 00 00 02 77 26 20 F5 64 00 04 19 03 AA 20 66 FF FE 50 4F 52 40

# Similar to iBeacon

## AirPrint Bluetooth Beacon Example

02 01 06 1B FF 4C 00 03 16 21 00 00 02 77 26 20 F5 64 00 04 19 03 AA 20 66 FF FE 50 4F 52 40

## iBeacon Example

02 01 06 1B FF 4C 00 02 15 92 AF 3B C8 76 14 0A 05 64 B8 91 6D 31 E6 16 95 00 01 00 14 40

# Summary

PDF

Security

Access Control and Accounting

Discovery

Let us know what your enterprise needs are:

[www.apple.com/feedback](http://www.apple.com/feedback)

More Information

<https://developer.apple.com/wwdc16/725>

# Related Sessions

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What's New in Apple Device Management

Nob Hill

Wednesday 11:00AM

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Taking Core Location Indoors

Marina

Wednesday 3:15PM

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# Labs

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AirPrint Lab

Frameworks  
Lab D

Wednesday 12:00PM

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WWDC 16 