



Deploying iPhone for Clinical Communication and Nursing Care

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Summary

Overview

Within healthcare institutions, nurses need to be able to communicate quickly and efficiently with patients, families, doctors, and other care teams. They need to perform a range of tasks to support their patients, such as coordinating care, responding to alerts and alarms, ensuring compliance with medication administration regulations, and documenting patients' vitals. Deploying iPhone with third-party iOS apps can make it easier for nurses to accomplish these tasks, which helps them deliver the best care possible for their patients. Nurses can also use third-party apps to access clinical reference materials, deliver just-in-time education, and fulfill continuing education (CME/CE) requirements right from iPhone.

This document is intended to help hospital leadership teams understand the benefits of using iPhone with third-party iOS apps to support nursing care, along with technical deployment considerations.

Benefits

Using iPhone as a multipurpose device

Nurses are dedicated to delivering the best possible patient care. But interruptions in daily workflows can often prevent a nurse from focusing directly on patient care. Carrying several single-purpose devices—such as VoIP phones that deliver voice-only functionality—or rolling in a workstation on wheels for barcode scanning of medication can make it challenging to manage daily tasks.

With iPhone and iOS apps, nurses can accomplish much more than they can with a single-purpose device, including tasks like:

- **Secure communication.** Third-party messaging apps on iPhone combine secure messaging and VoIP calls to help nurses reach the care team, both inside the hospital and remotely, while maintaining confidentiality. These apps can integrate with the staff directory and schedules, so nurses are able to search for members of the care team by role, staff assignment, and current rounding location. Messaging apps can include contextual information from patient records as well.

- **Alert and alarm management.** Using apps on iPhone, nurses can receive instant alerts and alarms from patient monitoring systems. Alerts and alarms can be customized to the care unit and tailored to hospital initiatives and safety protocols. Approved third-party apps can override volume or mute settings with a Critical Alerts entitlement. This allows clinicians to get Critical Alerts even if their devices are set to silent mode or Do Not Disturb.
- **Medication administration.** To help ensure they're administering the right medication to the right patient at the right time, nurses can scan both the patient's wristband and the medication barcode using an app that leverages the iPhone camera. If a dose is being administered for the first time, an app can prompt the nurse to provide patient education, which increases compliance.
- **Specimen collection.** While collecting specimens, clinicians can use iOS apps on iPhone to receive orders, scan barcodes, print specimen labels, and document that the collection has been completed.
- **Mobile documentation.** Using a mobile app to document vitals and input/output (I/O) at the bedside can be more efficient, reduce opportunities for errors, and potentially give nurses more time to interact with patients.
- **Wound documentation.** Using the iPhone camera and a secure third-party nursing app, nurses can capture the progress of a wound by characterizing its type, size, color, and exudate, then document and send the images to the electronic medical record (EMR).

Leveraging iOS

iOS—the world's most advanced mobile operating system—powers every iPhone. It's the best platform for innovation because of its comprehensive security, integrated hardware and software, vast library of apps for healthcare, simple yet scalable deployment, and complete device management options.

Today's successful healthcare institutions view their mobile platforms as mission critical. Selecting the right platform is an essential enterprise decision. When you invest in iPhone and iOS, you're not only choosing the best devices for the current deployment, but also considering the potential for future innovation across multiple use cases.

Deployment Considerations

Successful deployments typically rely on strong executive sponsorship and a clear understanding of technology solution requirements. Once your organization is aligned on your mobile strategy, Apple can help you assemble a team of solution providers to assist you in setting up your infrastructure and help with your deployment models. This section highlights best practices and learnings from successful deployments.

Aligning key stakeholders

As you prepare to introduce iPhone as the core of your mobile nursing care strategy, it's critical to engage both clinical and IT leadership to develop a common vision for success. Many institutions find it helpful to assign a senior-level clinical sponsor, such as a nurse executive. This individual can keep your organization focused on end user needs while helping with change management and buy-in from nursing staff.

Once a sponsor is in place, you'll want to assemble a team of nurses, physicians, and IT infrastructure staff who are dedicated to bringing mobility to your organization. The team should also include members who work in other services—for example, pharmacy, lab, radiology, and transport.

Using Apple programs and MDM

Setting up and deploying iPhone throughout your hospital environment has never been easier. With the following key programs from Apple and a third-party mobile device management solution, your organization can easily deploy iPhone and content at scale.

- **Mobile device management (MDM)** allows you to configure and manage your devices. You can wirelessly distribute and manage your apps according to your enterprise security policies as well.
- **Apple Business Manager (ABM)** and **Apple School Manager (ASM)** are simple web-based portals that help IT administrators enroll devices to be set up automatically with MDM, buy apps and books, and distribute custom apps within your organization.

Creating a configuration

Once you've selected an MDM solution, you'll need to create a configuration specifically optimized for nursing that your MDM solution can install over the air. A configuration typically contains settings and restrictions that set up the device for nurses to use. These settings will streamline the nursing experience and disable features or services that could store personal data or might be unnecessary.

Restrictions

The following examples are restrictions you'll likely disable so that no personal information is left on the device.

Note: Descriptions may vary by MDM solution.

Device management: Disallow manual profile installation, disallow configuring of restrictions, disallow device name changing, disallow account modification, force Limit Ad Tracking, and disallow pairing with non-Configurator hosts.

Data management: Disallow documents from managed sources in unmanaged destinations, disallow documents from unmanaged sources in managed destinations, and enforce AirDrop as an unmanaged destination.

Media: Disallow use of Game Center, deselect force iTunes Store password entry, and restrict media content as needed.

Home screen layout, Lost Mode, and other settings

You can manage how apps, folders, and web clips are arranged on a supervised device's Home screen. Enable use of the camera while disabling the built-in Camera app so hospital staff can scan a patient's QR code using a secure patient app or add the patient's photo to an EMR app. To find a missing iPhone, make sure your MDM supports the features related to Lost Mode, such as a lost message, tracking the device's location, and reenabling Lost Mode after a reset or restore.

Note: Lost Mode allows an administrator to query the location of a lost device even if the user has disabled location services.

Automating device setup

ABM and ASM provide a fast, streamlined way to deploy hospital-owned iOS devices that were purchased directly from Apple or from participating Apple Authorized Resellers or carriers. These programs enable automatic MDM enrollment of nursing devices on activation. With ABM and ASM, devices are always supervised and MDM enrollment is mandatory.

You can manually enroll iOS devices in either program using Apple Configurator 2, regardless of how you purchased them. But if a device is enrolled in ABM or ASM using Apple Configurator 2, the user has a 30-day provisional period to remove the device from enrollment, supervision, and MDM.

Note: Descriptions and grouping may vary by MDM solution.

Assign apps to devices

For centralized storage deployments, you'll need to assign apps directly to devices using your MDM solution or Apple Configurator 2. Once an app is assigned to a device, MDM pushes it to that device—without requiring an Apple ID or iTunes account. Anyone who uses that device can access the app.

These programs and tools are covered in more detail in [iOS and iPadOS Deployment Overview](#), [Deployment Reference for iPhone and iPad](#), and [Mobile Device Management Settings](#).

Selecting a solution provider

Solution providers can help support key nursing tasks through targeted iOS app solutions and robust integration services.

Evaluate potential app solutions

A variety of iOS app solutions support tasks related to nursing, including secure communications, alert and alarm management, and medication administration. Companies that offer app solutions for nurses include PatientSafe Solutions, Epic, Voalté, Kainos, Mobile Heartbeat, Cerner, and System C.

In evaluating a potential app solution, consider the following:

- What specific tasks and workflows does each app solution support?
- Does the app support soft scanning, or does it require a hardware sled?
- Does the voice solution integrate with your communications platform and network?
- For new users, is the app intuitive and easy to learn?
- What's the recommended deployment model?
- Does the app solution leverage platform technologies like CallKit, App config, Critical Alerts, or Quality of Service (QoS)?

Sign up for integration services

Many solution providers can supply your hospital with a wide range of integration services, including project management, clinical leads, and technical oversight. They can offer live support options such as clinical process redesign, device integration, education planning, app configuration, troubleshooting, and upgrade management.

Planning your network infrastructure

Every iPhone is equipped with cellular data capability but can operate exclusively with advanced Wi-Fi technologies, if hospitals choose. To avoid cellular data charges, iPhone automatically sends and receives data using Wi-Fi when a Wi-Fi network is available. Having consistent and reliable Wi-Fi network connectivity in the hospital is essential for optimal iPhone functionality. Within the hospital environment, sensitive healthcare data also demands a secure Wi-Fi deployment that uses WPA2 or WPA3 authentication protocol with certificate-based authentication.

Nurses and other care team members are inherently mobile as they move from room to room. Ensuring that devices move seamlessly between access points on the same network while roaming is critical to delivering a good user experience, especially for voice and video communications. As you plan your network's coverage and capacity, take into consideration the physical layout of the hospital and the ways people interact in those spaces.

Assess your network performance

Your hospital's Wi-Fi network should be able to support multiple devices with simultaneous connections from all users throughout the entire facility. It's critical to assess your current WLAN environment's readiness for deploying iOS devices.

Where available, Apple Professional Services, in collaboration with your network integrator, can prepare an assessment of your wireless network. The assessment will indicate characteristics of your network that are ready for this mobile use case, list gaps that need to be addressed, and recommend next steps.

To learn more about recommended best practices on Cisco network performance, refer to [Enterprise Best Practices for iOS devices and Mac computers on Cisco Wireless LAN](#).

Enhance your Wi-Fi network for iOS devices

Having a consistent, dependable wireless network is critical for real-time data access. It's also essential for setting up and configuring iOS devices in your hospital. Apple and Cisco have optimized the network experience for institutions that use Cisco products running AireOS 8.3 or later and devices running iOS 10 or later. In addition, the Content Caching feature of macOS can speed up access to your hospital's most frequently requested apps and updates.

- **Optimized Wi-Fi connectivity.** Hospital wireless networks often need to support a high volume of traffic, and optimizing Wi-Fi can have a significant impact. As staff moves between patient rooms, iOS devices must be able to transition quickly between wireless access points without dropping their Wi-Fi connections, especially if they're making VoIP calls. iPhone must also have a reliable connection to the best available access points to provide staff with real-time access to critical data.

Cisco enterprise wireless networks can automatically recognize iOS devices, enabling intelligent and efficient roaming to deliver high performance. Devices running iOS 10 or later and Cisco wireless access points perform a unique "handshake" that allows the devices to intelligently choose access points to connect to and transition quickly between them.

If your institution uses Cisco products running AireOS 8.5 or later, IT can gain insight into how iOS devices operate in a given Wi-Fi environment. Analytics from Cisco DNA (Digital Network Architecture) and rich crowdsourced telemetry data from devices running iOS 11 or later allow a real-time client view of the network. This data can show how devices roam from one access point to another, as well as their performance throughout the environment.

- **Cisco Fast Lane.** By using iOS apps that developers have optimized with QoS tags implemented by Cisco, IT teams can prioritize mission-critical apps to ensure they get the optimal level of performance. Through app prioritization, critical health apps that nurses, doctors, and other caregivers use will get the best network resources to run optimally. For example, IT can give priority to a nursing VoIP app over a movie that a guest is streaming on the same network.

Talk to your Apple or Cisco representative to get the latest information about these networking features. To learn more, visit www.cisco.com/go/apple.

- **Content caching.** This macOS service helps reduce internet data usage and speed up software installation on Mac computers, iOS devices, and Apple TV. Content caching speeds up the downloading of Apple-distributed software by saving content that local Mac computers, iOS devices, and Apple TV devices have already downloaded. The saved content is stored in a content cache on a Mac and is available for other devices to retrieve without going out over the

internet. Content caching includes the tethered caching service, which allows a Mac to share its internet connection with many iOS devices connected by USB. IT teams can manage this feature with MDM.

Learn more about [content caching](#).

Working with your Apple Authorized Reseller

Selecting a solution provider that meets all your nursing communications needs is a key step in a successful deployment. Once you choose an iPhone model, your solution provider will help you select the appropriate accessories for your clinical and operational needs. An Apple Authorized Reseller can provide financing and support options from Apple and other companies.

Choosing the right iPhone for your clinical needs

When selecting an iPhone device for deployment, take into consideration the different technical specifications of the various models.

- **Wireless capabilities.** iPhone 7 or later supports MIMO (Multiple Input, Multiple Output) technology. MIMO allows iPhone devices to use multiple antennas for faster data rates, improving the reliability of the network connection. This is especially critical for VoIP, where interruptions in connectivity can result in dropped or missed calls. iPhone 7 and later models also support Cisco Wi-Fi Optimization and Cisco Wi-Fi Analytics.
- **Screen size.** Many screen sizes are available to choose from, starting with iPhone 11 and iPhone XR (6.1 inches diagonally), iPhone 8 (4.7 inches diagonally), or iPhone 8 Plus (5.5 inches diagonally). For comparison, single-purpose device for voice calls can weigh more, have a smaller screen, and lack the vast catalog of apps available for iPhone.
- **Processing power.** iPhone 11 is powered by the A13 Bionic chip—the smartest, most advanced chip in a smartphone, featuring our next-generation Neural Engine. iPhone XR uses the A12 Bionic chip, and iPhone 8 and iPhone 8 Plus leverage the A11 Bionic chip. For barcode medication administration, chips must have fast processing power.
- **Battery life.** If nurses are using iPhone during only a 12-hour shift, hospitals can deploy newer devices with longer battery life, like iPhone XR—reducing the need for an added battery pack. And iPhone XR has the capability of fast charge, which charges the device up to 50 percent in 30 minutes with an 18W adapter (sold separately).
- **NFC reader.** iPhone XS, iPhone XR, iPhone 11, and iPhone 11 Pro support native background tag scanning for reading NFC tags. This means that the system scans for and reads NFC data without requiring users to scan tags using an app. The system displays a pop-up notification each time it reads a new tag. After the user taps the notification, the system delivers the tag data to the appropriate app. If the iPhone is locked, the system prompts the user to unlock it before providing the tag data to the app.

- **Camera resolution.** All iPhone devices feature a 12-megapixel camera. Some app vendors—such as PatientSafe Solutions and Epic—use the native camera for soft scanning, enabling barcode medication administration without requiring a specialized sled.

Note: You'll need a medical barcode scanning license that integrates with the app-based solution.

Learn more about [iPhone technical specifications](#).

Select accessories for your iOS devices

Your iPhone deployment may include a battery case and storage accessories that provide charging and protection to support a 24-hour shift cycle.

- **Case.** This accessory houses iPhone to add additional device functionality. Basic cases, like the mophie juice pack and juice pack access, provide extended battery life and added protection. The AsReader case combines wireless charging and wired capabilities for iPhone.

Look for solution providers that support soft scanning using the built-in iPhone camera, which reduces cost by making a dedicated barcode scanner unnecessary.

- **Storage.** A storage unit serves a dual purpose—charging iPhone devices and cases, and securing them when not in use. Several products are available on the market today from manufacturers like Griffin Technologies, Cambionix and Datamation.

Establish a refresh cycle for your iOS devices

New versions of iOS support devices that were released several years ago, giving iPhone a huge advantage from a return-on-investment perspective. But, as many hospitals have learned, there are benefits to establishing refresh cycles for mobile devices—for instance, every two to three years. Regularly upgrading technology through leasing reduces compatibility issues and minimizes costs associated with using multiple generations of equipment. In addition, leasing equipment often means paying less over time than an initial cash purchase. It allows your institution to take advantage of the high residual value of iPhone.

If you're looking to finance new iPhone devices, Apple offers many flexible options. Learn more about [Apple Financing](#).

Sign up for AppleCare support

It's strongly recommended that healthcare institutions deploying iOS devices purchase 24/7 AppleCare for Enterprise support for their deployments. This ensures that Apple resources are available to assist with troubleshooting for mission-critical communications or in the absence of additional IT resources. AppleCare programs help protect iOS devices, deliver advanced support for IT, and allow companies to service devices onsite.

- **AppleCare for Enterprise.** From 24/7 phone support to priority onsite repairs, personalized assistance from experts can help you keep your IT operations running smoothly.
- **AppleCare+ for iPhone.** Every iPhone comes with one year of hardware repair coverage through its limited warranty and 90 days of complimentary tech support. AppleCare+ extends that coverage up to two years and gives you additional features, such as 24/7 tech support and accidental damage coverage.
- **AppleCare OS Support.** Get the IT department-level support you need when deploying macOS, iOS, or iPadOS in your organization. AppleCare OS Support delivers phone and email support for integration, migration, and advanced server operation issues.

Learn more about [AppleCare service and support](#).

Summary

With iPhone and iOS apps, nurses can provide care more easily and intuitively while staying focused on patient interactions—much more than they can with single-purpose or stationary devices. A successful iPhone deployment for nursing will include app selection, integration services, network evaluation, and device and accessory selection. Apple can support deployment through financing and enterprise support programs. By streamlining how nurses communicate with staff, access the EMR, receive alerts, administer medication, and receive ongoing training, iOS apps on iPhone can help reduce friction, increase productivity, and improve overall patient care.

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