

# How Nokia deployed AirWatch MDM for Nokia Lumia

## Case Study

Version 3.0

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# 1 Challenge

Mobile devices like smartphones and tablets are increasingly important — even replacing PCs and laptops in many aspects of working life. The challenge is how to manage mobile devices, ensure security, and provide excellent end user experience in a world where managers and employees want to do as much as possible on the go.

Nokia strives to meet both corporate and end user needs across the mobile device and application life-cycle, from enrolment to use to retirement. Mobile device and application management (commonly known as MDM) provides the means to improve productivity by helping mobile device users maximize the business potential of their devices while also granting the high levels of security demanded by corporate IT departments.

MDM is an evolving set of technologies and there is still work to do to meet industry demands for mobile device and application management including:

- Providing full MDM support for Windows Phone 8 and Windows Runtime (WinRT)
- Improving enrolment processes by making it quick and easy for employees to take MDM into use
- Taking full advantage of application distribution and management capabilities
- Taking advantage of content management capabilities
- Focusing on end user experience
- Continuing to develop and enhance security features and settings

Nokia has been working alongside AirWatch towards developing their MDM software into a mature, attractive solution for both end users and enterprises with a focus on the Windows platform.

## Related Links

[Mobile Device Management and Windows Phone 8](#)

[Enterprise Mobility: The next step in the consumerisation of IT](#)

## 1.1 AirWatch MDM pilot

In early 2013, Nokia piloted the AirWatch MDM solution globally with over 500 Nokia employees using primarily Nokia Lumia Windows Phone 8 smartphones. Based on the global, company-wide pilot, Nokia and AirWatch were able to gather direct feedback from end users on key features and user experience and develop the solution to the next level.

The pilot solution improved security by providing both a comprehensive solution that addressed corporate security risks and an advanced solution for application distribution. This included options

such as defined requirements for power-on password controls, password policy enforcement, and multiple levels of theft-loss protection by utilising enterprise and device wipe features.

During the MDM pilot, Nokia IT used end user surveys and internal social media channels to collect feedback on features, to identify bugs, and to innovate new features.

End users enrolled corporate mobile devices themselves, or even provided their own (BYOD). Pilot features addressed end user needs and experience across the mobile device lifecycle:

1. On enrolment, end users had easy and secure corporate access to key, internally developed applications, such as Nokia Meet or Nokia News & Views.
2. When using a managed device, end users could be confident the device was configured properly, adhered to corporate security policies, and had key software applications.

End users could choose to install internally developed Company Apps from the internal company hub. Group-specific application distribution was also available.

3. Troubleshooting was simplified with automated notifications and application management tools.
4. On retirement, end-users could easily wipe old devices and get started with new ones.

IT administrator responsibilities were streamlined by, for example, real-time mobile device visibility and the ability to analyse and report critical mobile device information and tools for administering policies and enforcing enterprise security and compliance.

#### Related Links

[How Nokia piloted AirWatch MDM for Nokia Lumia](#)

## 1.2 Challenge of full MDM deployment

Following the success of the co-development work and the pilot, the next step was to plan and perform a full scale deployment with a focus on Windows Phone 8. Successfully deploying the MDM solution to up to 20 000 internal Nokia employees and external workers meant meeting the following challenges:

- Focus on end user needs by, for example, making enrolment as simple as possible, creating an attractive and logical UI, and providing supporting guidelines and instructional videos.
- Evaluate and learn from the pilot in order to identify key features for the first phase of full deployment.
- Mitigate any remaining gaps in the solution and plan for future improvements .

MDM, especially with Windows Phone, is still evolving. Even before planning full deployment, Nokia knew that the deployment solution would not be fully mature and would require ongoing development.

- Enrol up to 20 000 end user devices in MDM.

Successfully enrolling up to 20 000 internal and external employees in MDM would require changing the culture around the use of mobile devices through change management and communication throughout the company and by making the solution attractive and user friendly. Campaigns would include, for example, info sessions and making the MDM team available on-line for questions and troubleshooting.

## 2 Preparing for deployment

In order to prepare scaling the Nokia AirWatch solution to up to 20 000 employees, Nokia had to define:

- Preconditions for full deployment based on a detailed understanding of the current mobile device fleet and focus on providing MDM for Windows Phone 8.
- New features and improvements to include in the first phase of full deployment.

Deciding how best to move forward was based on a combination of lessons learned in the pilot as well as understanding broader industry needs and what the current technology could and could not offer.

In addition, it was important to strike a balance between unique Nokia needs and broader industry goals. In general, the goal was to prefer developing broader market features over unique, Nokia-specific features. For example, UIs must follow Microsoft Design Guidelines as well as Nokia internal UI guidelines, combined with AirWatch's own plans.

### Related Links

[User Experience Design Guidelines for Windows Phone](#)

### 2.1 Lessons learned from the pilot

Nokia's surveys of end users who participated in the MDM pilot provided valuable insights into the strengths and weaknesses of the pilot solution, which highlighted a number of areas for improvement.

#### Enrolment

The biggest usability issue faced by end users during the pilot was the initially cumbersome enrolment processes. Development efforts had to include plans for simpler and more user-friendly enrolment.

At the same time, training and support videos were very successful in helping users enrol and start using managed applications, and this model should continue in future.

#### Applications

When considering MDM, end users look primarily at how the solution adds value to their daily work — the most important added value is in easy access to key applications. With this in mind, application accessibility and variety should be enhanced with emphasis on:

- Enabling key applications to be set up automatically and streamlining the installation processes for other applications.
- Expanding and developing the available application portfolio to be more comprehensive and categorized. Furthermore, instead of simply listing applications, the Company Hub should mimic the Store experience by, for example, adding application descriptions, rating possibilities, and reviews.

- Developing end user confidence in application installation by, for example, providing information about installation progress and success.
- Setting-up adequate SLAs (service level agreements) for application management and distribution.

## UI

The application UI should be more attractive and more in line with the look and feel of other Nokia applications. On a functional level, push messages should be more visible in the UI to ensure that end users can find and read the messages.

## 2.2 Preconditions for full deployment

As a part of planning process, Nokia identified a number of essential preconditions for successful mass deployment across the mobile device lifecycle, from enrolment to use to retirement:

### Global mobile phone policy

Nokia's global mobile phone policy defines the security elements, responsibilities, and best practices for mobile phone use.

The goal is to support the required the cultural change in mobile phone use from the end user point of view. On a practical level, this policy describes:

- Benefits of MDM for end users.
- Why they should enrol in MDM.
- For what purposes the mobile phone is to be used.
- How to use a phone in compliance with the policy.
- Required security elements.
- What actions must be taken if a mobile phone is lost or stolen.

### Deployment features

Nokia and AirWatch needed to build upon the foundations of the pilot by selecting enhancements based on:

- End user feedback and lessons learned in the pilot.
- Nokia MDM renewal team program requirements.

### Security and privacy assessment

- Privacy assessment of how employee-related data is handled, information on what and how employee data is utilised, and do these processes adhere to company rules and employee laws.
- Privacy supplement, that is, the terms of use the end user must accept to be able to enrol, in place.

### Support and development

Essential mechanisms for supporting end users and adding further enhancements include:

- Service delivery preparations for supporting MDM. In particular, end user e-learning material covering the entire mobile device life-cycle: MDM enrolment, privacy, security, using applications, and day-to-day end user support and troubleshooting practices. The emphasis is to guide end users towards self-help and peer-to-peer support via internal social media.
- Communications and change management processes for building awareness, gathering user experiences, and identifying targets for improvement and development.
- Direct on-line channel to the MDM team responsible for MDM solution, deployment, and support.

## 3 AirWatch MDM solution for Nokia

AirWatch's MDM solution for Nokia covers the whole mobile device lifecycle, from enrolment, to use, to retirement. The solution allows Nokia to manage Windows Phone 8, Windows Phone 7.x, Symbian, iOS, and Android phones and to deploy and manage a suite of Nokia Company Apps.

### 3.1 Feature development

As the following table illustrates, during the first phase of mass deployment AirWatch and Nokia continued to use an Agile development model to build on the strong foundation of the pilot.

**Table 1: Nokia AirWatch MDM mass deployment, phase 1 features**

Feature area	Pilot features	Deployment features
Application management	<ul style="list-style-type: none"> <li>Deploy and promote enterprise applications.</li> <li>Secure email access.</li> </ul>	<ul style="list-style-type: none"> <li>Policies that prompt users to install mandatory or highly recommended applications.</li> <li>Applications can be enabled for some user groups and blocked for others.</li> <li>Support for app reinstallation.</li> <li>Installed apps dashboard for use in tracking and planning.</li> <li>Short-list of recommended public applications available in the Store.</li> </ul>
Communication	Send support messages based on various criteria (push or email).	Send push notification messages to users according to criteria such as region, country, or location.
Device management	<ul style="list-style-type: none"> <li>Update configuration profiles on demand, re-provision devices automatically.</li> <li>Cross-platform actions for groups of devices.</li> </ul>	Device dashboard for use in tracking and planning.
Device wipe	Send information requests or lock / wipe commands to devices on demand.	<ul style="list-style-type: none"> <li>User-requested remote wipe by IT admin if, for example, the phone is lost or stolen.</li> <li>Remote enterprise wipe for users leaving the company based on a status change in the corporate Active Directory.</li> </ul>

Feature area	Pilot features	Deployment features
Enrolment	Support use cases in enrolment, use, and retirement phases.	Streamline the enrolment process to improve usability. Support for unenrolment and re-enrolment.
Security policies	Add value for end-users while ensuring device and email security.	<ul style="list-style-type: none"> <li>Automated installation of security policies.</li> <li>Define consequences if the phone is not compliant with MDM policies such as blocking connectivity.</li> <li>Define requirements for passcode length and lockdown times.</li> <li>Device encryption.</li> </ul>
Scale	Manage over 500 Windows Phone 8 users using multiple mobile devices. Note: The pilot did not implement or test features not supported by Windows Phone 8.	Manage up to 20 000 employees using Nokia Lumia Windows Phone as well as Nokia Symbian, Android, and iOS devices.
Usability		<ul style="list-style-type: none"> <li>Simplified enrolment processes.</li> <li>UI improvements to enhance appearance and usability.</li> </ul>

## 3.2 MDM enrolment

Enrolment comprises configuring devices to securely communicate with the MDM server. When preparing for full deployment, development efforts included creating a simpler and more user-friendly enrolment process.

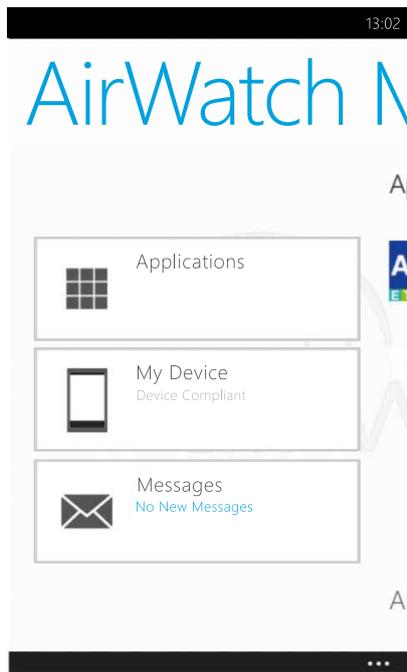


**Figure 1: AirWatch client icon**

End users enrol mobile devices through a built-in option available under **Settings > Company Apps**. Enrolment is complete once the AirWatch client is installed and the end user has accepted the defined privacy terms.

## 3.3 MDM use

Once enrolled, end users can securely use Nokia enterprise applications free of complex security processes while still protected by Nokia security policies. Many configurations are automatic.



**Figure 2: AirWatch MDM application**

### 3.3.1 Application management

Application distribution and management is increasingly a central component to any MDM solution. The MDM solution's Company Hub provides a user-friendly installation channel, which enables deployment and promotion of internal enterprise applications developed or recommended by Nokia. The MDM server recognizes installed applications and includes them in monitoring and management activities. IT administration-led application distribution is also available.

In the Nokia AirWatch solution, optimised, internally developed applications can be distributed securely without the risk of leaking the installation file outside the company.

#### Related Links

[Application Management in Nokia: Getting the most from Company Apps](#)

### 3.3.2 Applications

In early 2012, Nokia conducted an extensive, global employee survey to learn what Nokia's employees wanted or needed most. Rather than follow a traditional IT-led approach, Nokia let the 5800 survey

responses be guides in selecting and designing 4 new Company Apps to develop from scratch over the next 6 months:

Application	Description
Nokia Meet	Enables employees arrange meetings and reserve meeting rooms both in very immediate (I want the closest meeting room available now) to advance meeting reservations with several participants.
Nokia News and Views	Mobilizes internal news by enabling reading, commenting on, and discussing news items on Nokia Lumia.
Nokia Approve	Reminds managers when they have new HR or Travel approvals waiting and allows them to approve or reject them while on move.
Nokia Report	Brings up-to-date information to those in need, being it how many devices we have produced in a factory during the day, how many devices we have sold through a specific outlet or globally or how many tickets a specific IT service has received and solved during the past hour, day or week.

Nokia can use this same method to distribute 3rd party applications, after establishing exclusive deals with the application vendor and receiving the application binary files without a licences key. This allows the company to:

- Securely distribute the application client to employees
- Utilize company wipe if needed to remove the application
- Manage licensing

The MDM solution also provides tools for short-listing public Store applications in the Company Hub. This list of recommended applications means that end users spend less time searching for useful applications while the company can promote value adding applications and business solutions beneficial to employees.

#### Related Links

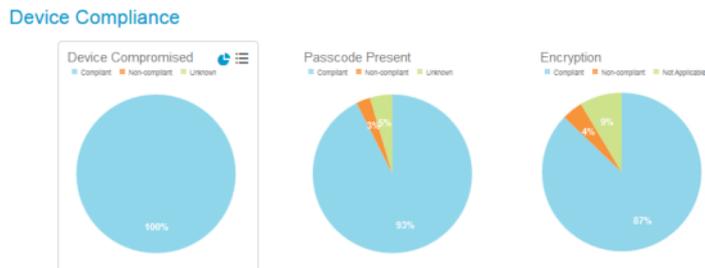
[Mobilize key activities with Company Apps](#)

### 3.3.3 Mobile security

Using MDM to improve mobile security is part of Nokia's overall security targets. The automated security provided by MDM provides benefits to both end-users and enterprises:

- End users can easily access corporate systems such as email confident in the knowledge that their data is secure and that their personal information is not compromised.
- Enterprises ensure that corporate data is safely stored on mobile devices, maintain and enhance corporate security, and control how data is handled on employees' mobile devices.

AirWatch MDM enables management of security policies and certificates. After enrolment, security policies are deployed silently, with no end-user action required. IT administrators monitor device compliance through an AirWatch dashboard. Furthermore, device encryption ensures that all data stored on a managed device is encrypted.



**Figure 3: Device compliance**

IT administrators can configure automated end user message rules in response to, for example, policy violation, and define actions required for devices to comply with security policies. Rules could, for example, include the following criteria:

- Defined number of days within which end-users must change their passwords.
- Defined (if BYOD comes with an insecure firmware version) how and when firmware must be updated for device to continue as enrolled in MDM.

The ability to wipe enterprise data remotely further enhances data security. End-users can perform the wipe themselves through a self-care portal, or make an IT request.

Additional settings and credentials provide access to accounts and enterprise resources.

### 3.3.4 Content Locker for Windows Phone 8

Nokia, like many enterprises, leverages mobile devices to share content and collaborate on sensitive intellectual property, such as financial reports, sales presentations, and corporate documents. IT administrators want to secure information while providing the best user experience, and they need a comprehensive solution to manage their organization's critical mail, apps and content. AirWatch Content Locker enables IT organizations to secure their most sensitive data.

Key Features of the AirWatch Content Locker for Windows Phone 8 include:

- Single Sign On (SSO) Integration
  - Content Locker has the ability to authenticate to AirWatch using the Windows Phone MDM Agent.
- Pivot control to easily navigate through content
- Push Notifications
  - Live-Tile notifications on the Start screen to notify the user for events like updates and messages.

- Download AirWatch and SharePoint content
- Enable Personal Content
  - Access Personal Content from the device.
  - Upload files from the device to Self Service Portal
  - Perform move/copy operations on files and folders
  - Access Shared Folders based on permissions assigned to the user

While Nokia plans to test and distribute the Content locker app using AirWatch MDM app management tools, Content Locker for Windows Phone 8 is also available for public download from the Windows Phone Store.

### 3.3.5 Dashboards

Dashboards and mobile dashboards allow IT administrators and end users to immediately address known issues.

Dashboards include filterable views of aggregate data with a range of valuable, real-time information, including:

- Certificates
- Compliance
- Event Logs
- Firmware
- World map
- Manufacturer
- Operating System
- Profiles
- Total number of enrolled devices
- Installed Company Apps

Basic data is available on the mobile dashboard via mobile phones or tablets.

## 3.4 Retirement

Corporate and enterprise data security must not lapse when end users no longer need their mobile devices. Mobile devices could be retired, that is, unenrolled from the Nokia AirWatch MDM solution in the following ways:

- Locally by the end-user
- Remotely by an IT administrator
- Automatically according to pre-defined criteria

A rule could define that if a device was not used in 6 months, for example, it would be unenrolled automatically on next connection to the server.

During retirement, corporate data can be removed from the mobile device while retaining personal data, if the end user wishes. Windows Phone provides a straightforward way of separating personal and corporate data — data stored under the Live ID is personal data while corporate data, such as like email and Line of Business applications, is managed by components controlled by MDM.

Unenrolment also includes steps for removing device policies, configurations, and enterprise applications. A full device-wipe is also possible.

## 4 Evaluation

During mass deployment of the AirWatch MDM solution, Nokia scaled up its MDM capacity to support up to 20 000 Nokia employees using both Nokia and non-Nokia phones, with 7000 new users enrolled during the first two months of mass deployment.

The flexibility of the solution was vital: Nokia, a handset provider, must be able to deploy new models quickly and efficiently while, for the broader industry, solution is one could be easily integrated into other existing enterprise architectures.

According to the November-December 2013 global mobility survey of Nokia employees, many find the applications and extra security provided by the AirWatch MDM solution to be both beneficial and easy to use. At the same time, further work is needed to both broaden the scope of mobile services provided and to continue communicating with employees in order to address their concerns about, for example, security, device usability, and privacy.

### 4.1 Development model

The success of the deployment was in no small part due to the continuing co-creation and testing of the solution by Nokia and AirWatch and communication with Microsoft.

Even after the first phase of deployment, user experience is continuously tracked through user feedback, which helps to prioritise development needs in the ongoing development process. These priorities are discussed during daily 'scrum' meetings between the Nokia team and the AirWatch R&D team that are a part of the solution's Agile development process.

### 4.2 Education and promotion

Building a robust and effective MDM solution alone is not sufficient for success. The key to the successful deployment of the MDM solution was understanding and promoting the benefits to end-users.

The education and promotion programme, alongside a direct online channel and contact from end users to the MDM team responsible for the development, deployment, and support, had the goal of encouraging and teaching people to enrol in MDM.

While traditional email campaigns were less successful, other promotional events highlighting the benefits to end users of MDM and the Company Apps delivered through MDM were more effective. These events included targeted info sessions with managers and other end users, demo calls, promotional stands in cafeterias and coffee areas, and posters with NFC tags pointing to the enrolment site.

The e-learning material and info sessions covered the entire mobile device life-cycle: MDM enrolment, privacy, security, using applications, and day-to-day end user support and troubleshooting practices. In addition, during deployment, a number of users were concerned with privacy issues, and the education and promotion content was adjusted in order to address those concerns.

### 4.3 Benefits for end users

End users benefited from MDM by improving productivity and maximizing the business potential of their smartphones. The solution allowed them to securely access corporate resources without extra hassle and without compromising personal freedom.

End users enrolled corporate mobile devices themselves, or even provided their own (BYOD), using a simplified enrolment process. On enrolment, they had easy and secure corporate access to key applications and a short list of recommended Store applications.

When using a managed device, end users could be confident the device was configured properly, adhered to corporate security policies, and had key software applications. Troubleshooting problems was simplified with automated notifications and application management tools. On retirement, end users could easily wipe old devices and get started with new ones.

### 4.4 Benefits for IT administrators

The MDM solution met corporate IT requirements for improved enterprise data security and mobile device and application visibility in order to maximize general security. Improved security options, like defined requirements for power-on password controls, password policy enforcement, and multiple levels of theft-loss protection, provided a comprehensive solution that addressed corporate risks. In many regions, are also interested in visibility to location information (where not limited by privacy legislation).

IT administrator responsibilities were streamlined by providing the following benefits:

- Real-time device and application visibility and the ability to analyse and report critical device information.
- Tools for administering policies and enforcing enterprise security and compliance.
- Reduced need for support upon device retirement.

### 4.5 Next steps

The AirWatch MDM solution must continue to develop in order to keep up with evolving technologies and to respond to changing end-user needs. Nokia and AirWatch have created a cooperation model that will help meet this requirement.

Some key demands, for example, full support for managing Windows Phone 8 devices and managing certificates, were met during the earlier pilot solution, and more still have been met during the first phase of full deployment. Other demands, such as support for VPN, will be supported later for Windows Phone.

Nokia plans to continue pioneering technology development in the MDM area by setting priorities for development and co-operating with AirWatch in the development effort. Both parties have benefited from the hard work — the journey is expected to continue with plans and ideas for months ahead:

- Continue focusing on providing a superb user experience by, for example, providing options for some level of personalising UIs to suit end user needs.
- Further simplify enrolment processes.

For example, with staged enrolment, a third party user, such as an IT administrator, can enrol multiple devices on behalf of other users or the user could take the phone to onsite support to have their device enrolled without divulging their password.

- Automatic configuration of mobile email access for all enrolled phones with, for example, powershell integration.

When enrolled devices are automatically configured for corporate email, end users would no longer have perverse incentives to use less secure email solutions such as personal email accounts for their business communications.

- Continued focus on improving application support, including:
  - Application distribution
  - Improved application security with, for example, encryption and password utilization
  - Application developer experience
- Windows Runtime (WinRT) support
- Improved targeted push communications and tools for checking whether users have read push messages
- Content management features and applications