Mobile Monitoring Service
Service Description

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Document author Ulrik Van Schepdael

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mobco

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Mobco bvba
Kerkberg 5
1700 Dilbeek, Belgium
VAT 0830714829
KBC IBAN BE72 7340 3019 6816 - BIC KREDBEBB

Represented by Ulrik Van Schepdael
uvs@mob.co +32 2 669 95 00

1 Objective

With the Mobile Monitoring Service we provide enterprises reliable information on the current status of their entire infrastructure.

Traditional monitoring services are based on server and network availability. Although this provides reliable feedback on the status of these components, it doesn't provide an overall status of the functionality perceived by the employee.

Our objective is to measure the mobile user experience.
By doing this we can improve the service availability and reduce the operational cost.

The current employee tools like smartphones and tablets are based on design principles that include cloud components, unreliable networks and many active security components to protect internal resources. It is virtually impossible to include every single component in a traditional monitoring scenario, unless we change the approach, and take the employee perspective: does it work for the employee?

This technical document describes the service based on the top-down employee approach and details the evaluation criteria. It allows the reader to determine to what extend MMS can help improve service availability and reduce operational expenses.

The Mobile Monitoring Service is offered as a managed service by mobco.

1.1 The use of monitoring

Based on our own experience and shared by every service desk responsible for many employees, users call in more and more to report infrastructure issues.

In an era, not so long ago, IT was responsible for every IT tool the employee used. The PC was managed remotely and included only corporate data, the user had no administrator rights and was connected on a local area network shielded and protected from the outside world. On the same network, we found the servers running enterprise applications, accessible only from that very same network. The helpdesk was confronted with end-user issues and failing devices. Monitoring of the network and servers ensured timely actions when infrastructure was failing.

A bottom up approach, where the sum of the component availability equals the overall availability of the service.

Today, those same employees are using consumer grade hardware running corporate and private apps on the same device, connected to guest wifi or 4G and cloud services are introduced in the corporate service library.
When the end-user calls the helpdesk to report the 'email' is not working, it can be anything. We can no longer 'probe' every component, as such, the traditional monitoring approach is failing and IT organisations do not have the appropriate tools to understand the overall service availability.

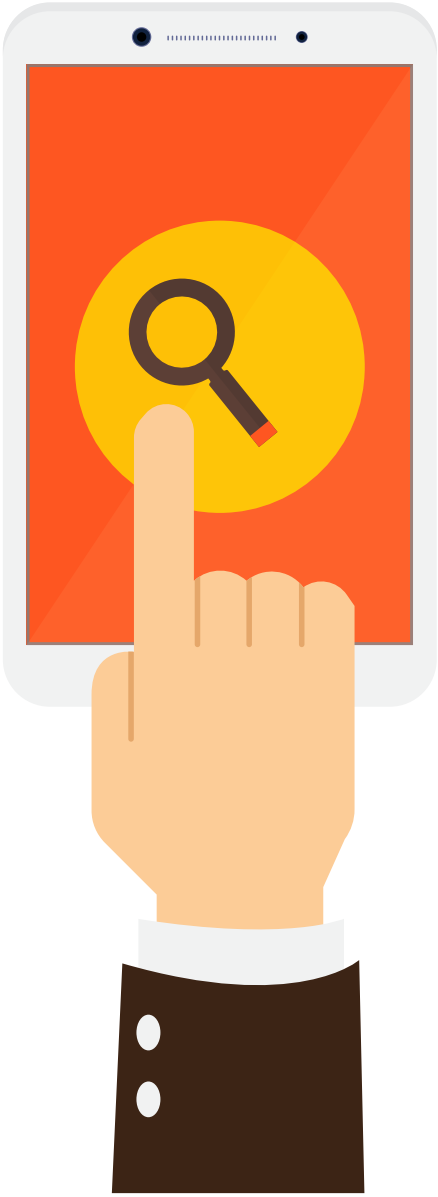
When IT regains that view over the service availability it is possible to:

- informed on failures before the users call the helpdesk
- decrease the time to fix due to clear issue logs
- increase the infrastructure availability
- improve the mobile employee experience
- decrease operational cost

When infrastructure issues are solved before end-users call in to report issues, it's clear everybody wins!

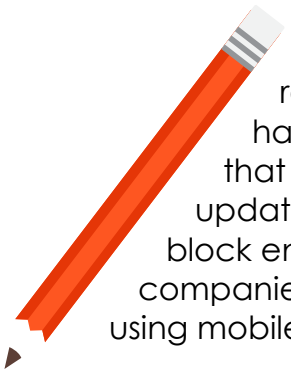
1.2 Monitoring the mobile experience

Traditional monitoring systems provide only part of the solution to solve the overall service availability equation for mobile devices.
The "mobile experience" includes the devices, the mobile OS, the apps, the network, the cloud apps, on-premise servers and data, security, …



Most of these components are not exclusively developed for enterprise customers but are common and consumer grade technology. In this market the supplier of the technology defines the rhythm of change, new versions.
The same is true for enterprise specific mobile apps and cloud services. It is the speed of change, impossible for a traditional enterprise to follow, that drives adoption.

Even when a complete stack is tested and validated, there is no engineer on this planet that will guarantee service availability with such a vast number of parameters open for change, without control.
The mobile experience is fragile. The enterprise IT department is identified as the sole responsible but is in fact not capable of guaranteeing anything.



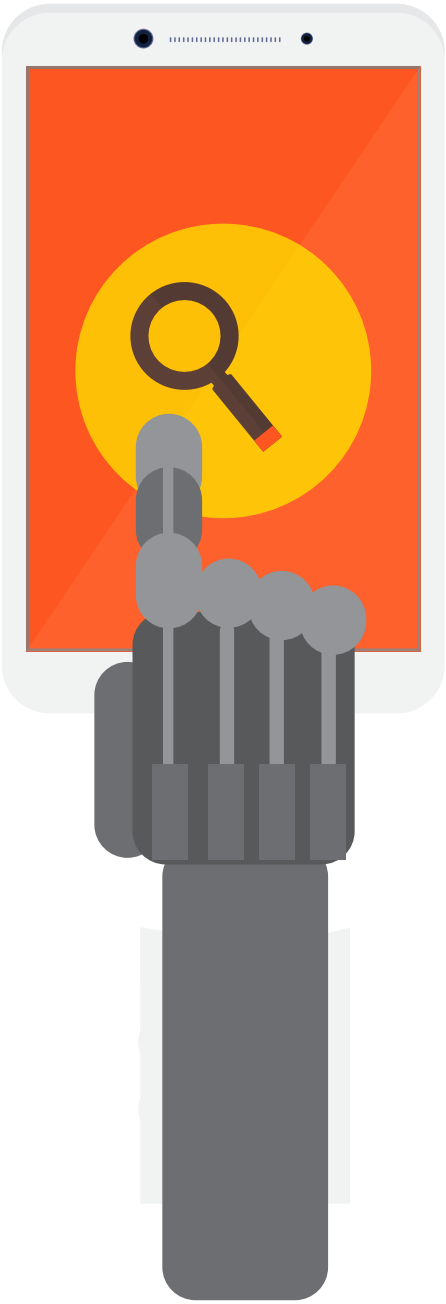
Examples in the recent past have shown that OS updates can block entire companies from using mobile mail.

Monitoring the mobile experience should not be limited to networks, cloud services, servers, … it should include every single component the employee will use for work.

By taking the employee perspective, we know exactly what's going on.

1.3 Taking the employee perspective

When a high level of accuracy is required, every vector that can potentially change needs to be considered. That means we need to rely on the exact same set-up as the employee would; device, apps, data.



We need to take the same approach when test-driving the mobile experience after final delivery of a project. Testing the enrolment of a new device, opening email for the first time, using a business app, sending an order…

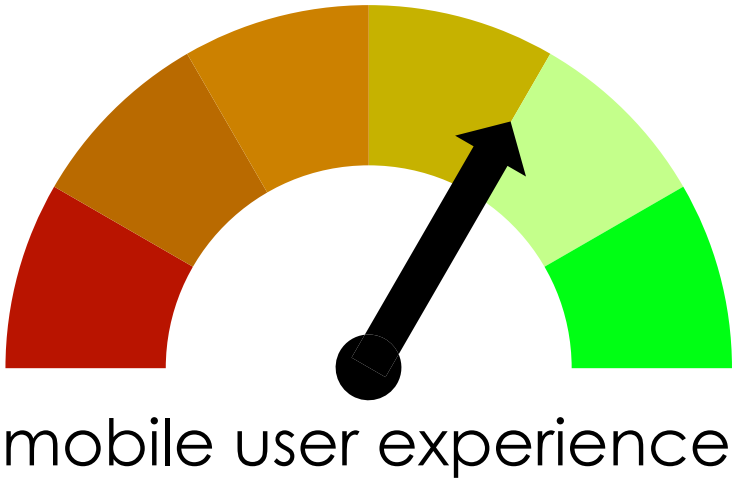
We have taken that challenge to the next level and execute the script, over and over again, including detailed logging and video of every action to finally evaluate the success of every step in the script. Non-stop, all the time.

Together with our partner Quamotion we have developed technology to program software robots to control a device and to interpret the screen feedback. The robot mimics the employees' actions.
No shortcuts.

- Operation is measurable in quality, frequency and time
- Detailed logging of every action and feedback
- It is a 24/7 operation

2 The Mobile Monitoring Service

To ensure a truthful employee perspective, the service is based on real hardware and connected on a remote network.



- register new device
- install company apps
- send and receive email
- check intranet pages
- lookup customer in CRM
- find pending orders
- retire device

The service is build-up with availability and scalability in mind. This means we have a distributed architecture with a virtual unlimited number of test devices.
Intelligent scheduling allows us to ensure maximum test capacity.

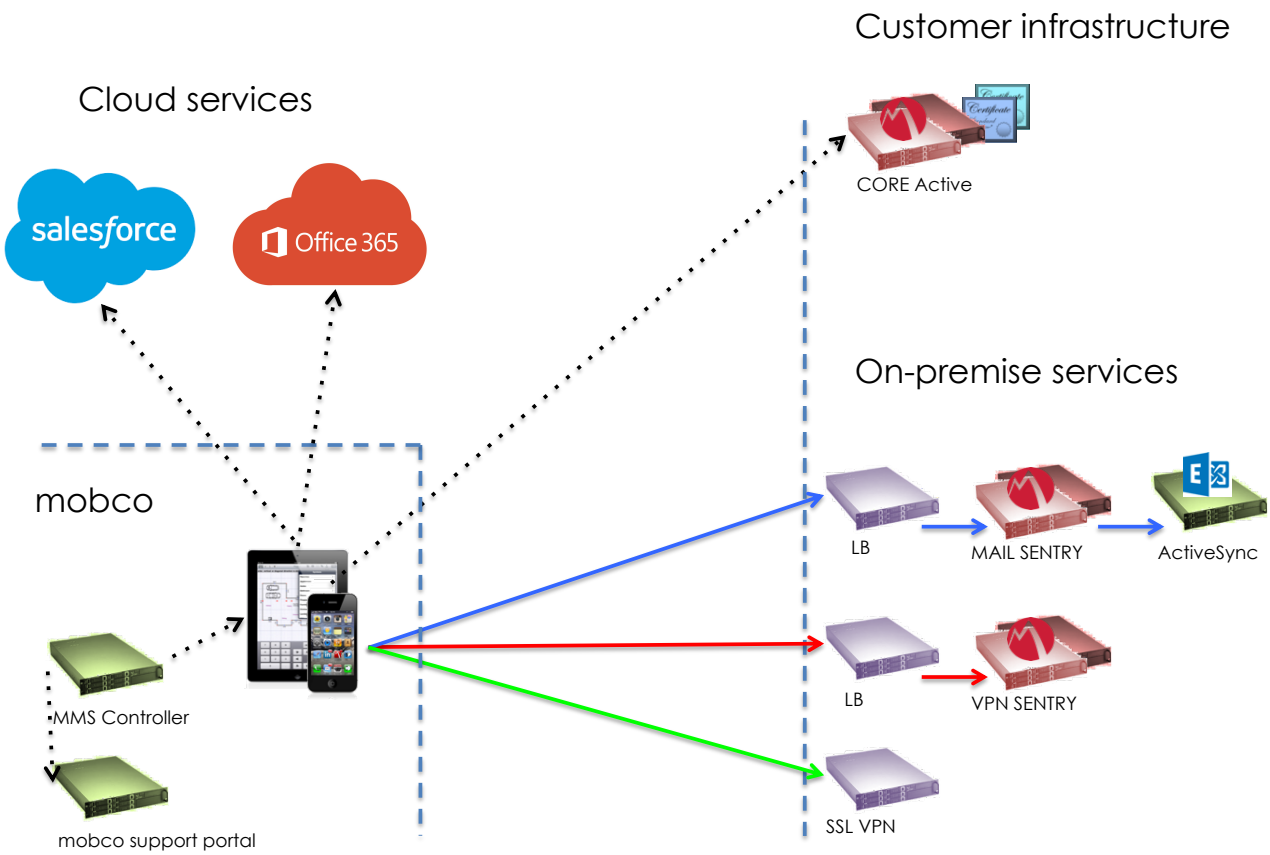
What is the 'mobile user experience'?

Your employee registers a new device for work, gets business apps, email, and uses the device, apps, content on any network; the combined availability and functionality of every component adds up to the mobile user experience.

2.1 The MMS Architecture

At the mobco data center we host the secure support portal that is known to our EMM customers to report issues and find technical articles in the FAQ database.
We use the very same portal interface to authenticate users before gaining access to their monitoring results.

The distributed architecture of the MMS allows us to run an unlimited number of simultaneous devices. These devices are typically located in the mobco data center for convenience, but are not limited to that location.



Both the access portal as the MMS controller, plus (standard) devices, are operated from the mobco data center. These devices connect to those services defined in the script and report back detailed logging on the execution of the actions.

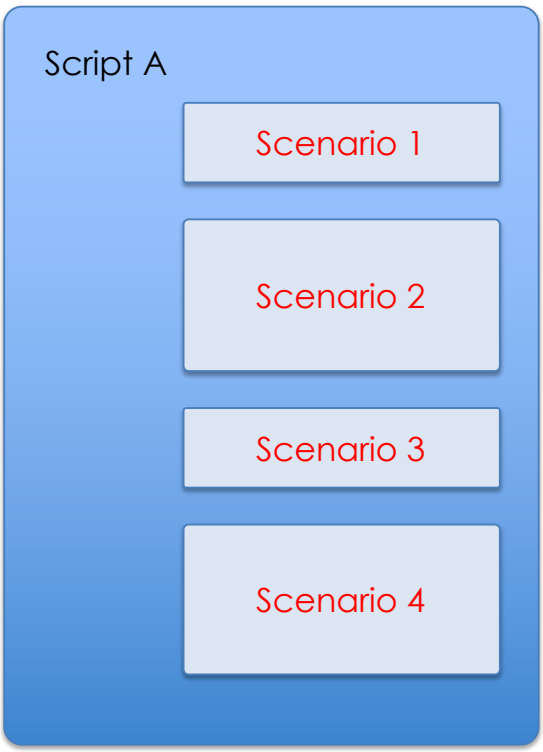
Can I host this service in my own data center?

In theory, it is possible to run your own instance of the mobile monitoring service.
Several practical issues, such as wireless network availability in enterprise datacenters, prevent IT departments to run true end-to-end monitoring from their own facilities.

2.2 Script and scenario's

The robot we developed is smart but still needs to be told what to do, fortunately.

The overall list different tasks is called a 'script'.



In every script we identify the different steps that need to be taken. Every step is called a scenario and describes in detail the actions to be performed.

Every scenario is a logical grouping of actions, for example: enrol the device in EMM, send an email, …

There can be a dependency between scenario's, but not necessarily.

Important to understand is that every scenario will be evaluated separately, depending on the severity and frequency it will then trigger an alert, or not.
The more granular the project is set-up, the more scenario's and the better the smart warning algorithm will work.

It might for example be 'interesting' to know email is down, but it can 'business critical' when there is no access to the intranet over VPN.

The Mobile Monitoring Service is capable of acting as a user, it can work on the standard apps on the device, but it can also interact with any (custom build) business app connecting to a remote service.

Every script includes confidential metadata to identify the customer and ensure the correct results are presented to the right customer.
This closed-loop approach ensures an improved privacy and better overall security of MMS.

A script is always from A to Z?

We like to show you all capabilities, but for sometime only a subset is required with focus on business apps. Important to know is that the robot can be learned to control just any app, also those you have developed specifically for your business.

2.3 Set-up of a new project

Based on the mobco consultant's feedback there is a clear definition of what exactly needs to be included in the monitoring.

Every script can include several scenarios, underneath we have listed the four most common types of scenarios:

1. Enrolment of the device in EMM
   Although we typically focus on devices under management, this is not a requirement.
   By including the enrolment part (and when you use an EMM infrastructure), you have perfect insight in the total functionality of the EMM infrastructure, including the enrolment for new users.
   When EMM is being used and when you include enrolment in the script, mobco is able to lower your cost by mutualizing the infrastructure over different scripts (when the device remains enrolled, only one script can be executed on the device)

2. Standard apps such as email (or other supported apps by mobco)
   The standard app catalogue is growing with every project and is currently available for the native apps such as email and those apps offered by mobco such as Enterprise Files to access on premise file shares.

3. Custom apps (in-house developed or specific business apps)
   Custom or business apps specific to the business and with specific actions. For example, a lead form or stock action that needs to performed.

4. Webservices
   In every scenario, you have the capability to include external webservices for extra logging or actions.
   Using this feature you can validate incoming orders, delete orders, … that are generated in previous scenarios.

Mobco develops the overall script and scenarios for you based on your input. Every script is tested extensively before being put into production to minimize the number of false positives.

Once testing is complete we need to include the metadata for evaluation, alarm contacts and provide you access to the portal.

2.4 Evaluation criteria

The Mobile Monitoring Service includes a smart warning system that eliminates issue not worth reporting or triggering an alert for.
The smart warning algorithm identifies the important and business crictial scenario's, the success rate, frequency and time required to execute.
When for example the mobile network is upgraded at night and fails for only 5 minutes, it should be reported to the IT administrators, but it should not trigger the alarm.
In the case the same issue lasts for much longer, it becomes a critical issue.

To provide enough flexibility and to improve the smart algorithm, we have introduced 2 parameters:

Executiontime	Runtime	Ensure enrolled
08/08/2018 20:34:20	702.2367	✖
08/08/2018 19:31:18	697.0874	✖
08/08/2018 18:40:15	703.9369	✖
08/08/2018 17:37:22	712.3577	⚠
08/08/2018 16:27:21	271.5358	✔
08/08/2018 15:25:23	250.5354	✔
08/08/2018 14:30:45	263.6263	✔
08/08/2018 13:34:06	265.579	✔
08/08/2018 11:30:56	275.2554	✔

1. How successful was the scenario?
It can be 100% ok, partial fail, total fail or inconclusive

2. How critical is the scenario?
A number of consecutive fails before alarming support, if any (a nice to have feature might have 0, meaning it will never trigger an alarm when it fails). When 3 is chosen for a scenario, it means that 3 consecutive total fails the alarm triggered.

Only 'one' alert is fired when the state of the test remains the same, the 'counter' is reset once the scenario is executed with success.

In the example on the left we have identified "2 consecutive" fails before sounding the alarm bells.

You can see the evaluation of the different runs, with the oldest underneath. After the first fail at 17:37 the alarm was not triggered, but when the next run failed again at 18:40, the alarm was activated.

On top of the evaluation of the scenario, the logging includes detailed feedback from the console of the device, video of the screen and total runtime needed to execute the script.

2.5 Alarm handling and using log information

We currently support a direct interface to our ticketing system based on the automatic alarms generated by the service.
This alarm messaging can be extended towards your own in-house alarm handling service, email or SMS.

The alarm itself contains a selection of the available information to ensure the problem run can be easily identified. A direct link to the logging is also included and requires extra authentication via the mobco support portal.

On the portal detailed logging is available of every step in the script and scenario.
In the example below, you see the scenario of enrolment in EMM where one app fails to install during registration.
Direct feedback shows the securebrowser app is causing the issue.

As this was considered as non-critical, there is only a warning without alarm trigger.

Enroll in EMM ⚠

Name	Result
Given Appconnect Passcode is [redacted]	✔
Then the device is enrolled with Mobco bvba	✔
Then Install apps using appleID password [redacted]	✖
Message: Not all apps were pushed: com.mobileiron.securebrowser **Stacktrace:** at <ScriptBlock>, /script/script/mdm.psm1: line 68 68: throw "Not all apps were pushed: $remainingApps" From /script/script/script.feature: line 20	
And Configure Mobile@Work on emm.mob.co for user quamotion with password [redacted] and passcode [redacted]	✔
Then Install Mobile@Work using appleID quamotion@mob.co with password [redacted]	✔
And Device is not under management	✔
When Managed apps are uninstalled	✔
Given Device is retired from emm.mob.co for user quamotion with password [redacted]	✔

3 SOW, service components and pricing

The Mobile Monitoring Service provides a real-time insight in the mobile experience of your employees.

In the next paragraphs the different components are listed including the deliverables and pricing structure.

Set-up of MMS

This service is tailored to your specific requirements and EMM architecture.

Given the nature of this service is to take the employee perspective and to measure the mobile experience, it is not possible to provide one-size-fits-all service.
For every project we need to customize the script, scenario and even actions or validations towards different back-end systems.

Part of this set-up project is also to document the existing infrastructure, mobile policies and configurations.

Product code: MO-CO-ARCHITECTURE
Service name: Project intake
Unit: per manday

Description:
A senior consultant translates the customer requirements into a high level design, including all components (EMM, VPN, file servers, web services, …).
The high level script includes evaluation parameters that will be used in a later phase to evaluate the success, failure or partial failure.
Alarm handling input is being discussed.

Deliverables:

- An architecture design including all components relevant for the script
- High level script
  - Network access for mobile device
  - OS and device details for testing
  - List of the scenarios + description
  - Custom app handling + back-end actions
  - Username, passwords to execute testing
- A project plan with timeline
- Frequency of execution
- Alarm handling

Product code: MO-TECH-MOBSEN
Service name: Script set-up
Unit: per manday

Description:
A senior technical consultant will create the actual script by building the different scenarios, run these on the desired device and OS for testing.

Deliverables:

- A technical implementation of the script, documented version
- Test validation document illustrating successful implementation
- Potential feedback on error handling / adjustment

Product code: MO-TECH-MMS-INSTALL
Service name: MMS implementation
Unit: per service

Description:
The validated script is put into production on the MMS infrastructure.
The mobco support portal connection is created and tested.

Deliverables:

- Implementation on the MMS production servers

- Access to the support portal and MMS portal

Product code: MO-TECH-DOCUMENT
Service name: Documentation
Unit: per service

Description:
Full documentation file including high level script, implementation script, alarm handling and alerting.

Deliverables:

- Online documentation for technical reference

MMS operations

The MMS is an automated service that requires a subscription per script.

This subscription fee is in relation to the required device time for testing.
When a device needs to stay enrolled on the same infrastructure, this requires a full time device.

Product code: MO-MMS-SUB
Service name: MMS Subscription
Unit: monthly fee, invoiced 12 months in advance

Description:
Included in this subscription is access to the MMS portal, secured by the support portal. There is no limit on the number of user access accounts.

This script subscription allows execution of the script on the MMS production servers and devices. The actual rate is defined based on device reservation requirements.

Deliverables:

- Script execution
- Detailed logging
- Alarm evaluation
- Alert handling

4 Contact Mobco

Operations and Support
support@mobco.be or support@mob.co
https://support.mobco.be
+32 2 669 95 09

Sales
info@mob.co
https://mob.co
+32 2 669 95 00

Accounting
accounting@mob.co
+32 2 669 95 19