

**RCS Certificates**

Case Study

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# Overview

RCS uses a variety of certificates to let the RCS Agents gather information on each device. Certificates are mandatory and cannot be avoided for proper functioning of RCS Agents.

1. Symbian aside, all the certificate are provided by HT at no additional cost for the Customer.

Certificates are organized into three categories:

1. Certificates from an existing Certification Authority (**Type 1**)
2. Certificates with no identification information (**Type 2**)
3. Self-signed certificates (**Type 3**)

Type 1 certificates bear full details about the requestor, such as company name, address, technical contacts, and administrative contacts.

Type 2 certificates are uniquely bound to the requestor but no information is directly accessible. Information about the requestor can be asked to the Certification Authority that issued the certificate; sometimes that information is available via public databases as well.

Type 3 certificates are created by the software itself or by the Customer, and are self-signed. They bear no direct information about the requestor and, *unless* the same information is used (certification authority name, location…) each time a new certificate is created, there’s no way to identify them as part of an RCS installation.

On specific architectures, more than one certificate may be required.

## Symbian certificate

A Symbian Developer Certificate for up to 1000 IMEIs and 17 capabilities is required to install and run the RCS Agent on Symbian devices: this is due to the highly restricted nature of Symbian platforms. Unsigned applications haven’t been allowed to run in any way starting from Symbian OS 9.1.

The Customer is required to buy a *Developer Certificate* from [TrustCenter](https://www.trustcenter.de/en/products/tc_publisher_id_for_symbian.htm).

1. The procedure to request a Symbian certificate and how to use it is detailed in the RCS manuals and provided as basic training upon purchase of the Symbian Platform.

# Visibility

Information stored into certificates may be visibile to the Target. Two levels of visibility identify how much information the Target can access:

1. Certification information is not exposed without Target’s intervention, but is accessible if the Target performs specific actions, for example browses the package properties.
2. Certification information may be obtained by extracting the signed binary from the RCS Agent, then performing further analysis on it. The certificate and its information are available only upon disclosure of the RCS Agent presence.

# Architectures

Here is a list of all the supported RCS Agent architectures with their respective requirements for certificates:

**Android**

*Type 3* certificate required.

**BlackBerry**

*Type 2* certificate required.

**iPhone**

No certificate is required.

**MacOS**

No certificate is required.

**Symbian**

*Type 2* certificate required after 21/Jun/2011, *type 1* certificate required for Agents signed before 21/Jun/2011.

**Windows 32-bits**

No certificate is required.

**Windows 64-bits**

*type 1* certificate is required for kernel component.

**Windows Mobile**

*Type 1* certificate is required for dropper

*Type 3* certificate is required for Agent.

# Analysis

Listed below is a risk analysis in case an Agent is identified, extracted and analysed.

## Android C:\Users\Quequero\Documents\DangerBar_Green.png

Certificate information is exposed only in case of a binary analysis of the Agent. A Type 3 certificate is currently provided by HT, thus disclosure of the Customer’s identity is impossible.



## BlackBerry C:\Users\Quequero\Documents\Danger_Medium.png

Certificate information is exposed only in case of a binary analysis of the Agent. T*ype 2* certificate is used, thus presenting no immediate danger of identification.

Currently the certificate is provided by HT, due to signing requirements during development process.



## iOS (iPhone/iPad) C:\Users\Quequero\Documents\DangerBar_Empty.png

No certificate is used by the Agent on iOS platforms.

## Mac OS X C:\Users\Quequero\Documents\DangerBar_Empty.png

No certificate is used by the Agent on OS X platforms.

## Symbian C:\Users\Quequero\Documents\Danger_Medium.png

The Certificate information can be exposed by Target actions and by binary analysis of the Agent executable. *Type 2* certificate is used starting from 21st July 2011, posing no immediate risk of identification. Installations performed before 21st July 2011 uses *Type 1* certificates, thus showing identification information. Certificate is must be provided by the Customer.



## Windows 32-bit C:\Users\Quequero\Documents\DangerBar_Empty.png

No certificate is used by the Agent on Windows 32-bit platforms.

## Windows 64-bit C:\Users\Quequero\Documents\DangerBar_Full.png

The Certificate information can be exposed by Target actions and by binary analysis of the Agent executable. A T*ype 1* certificate containing company name and location information is used. Danger of identification is immediate if RCS or associated components are identified, extracted and analysed. Currently the certificate is provided by HT.



## Windows Mobile C:\Users\Quequero\Documents\Danger_Medium.png

The Certificate information can be exposed by Target actions and by binary analysis of the Agent executable. T*ype 1* and T*ype 3* certificates are used. Danger of identification exists *only* at infection time. After this stage the component carrying *Type 1* certificate is erased from the system and only components using *Type 3* certificates are kept on the device.



# Costs

*Type 1* and T*ype 2* certificates must be acquired from Certification Authorities, the price may vary and there might be yearly subscription fees.

**Android**

Free.

**BlackBerry**

20 USD *una tantum*.

**Symbian**

200 USD, yearly fee.

**Windows 64-bits**

499 USD, yearly fee.

**Windows Mobile**

 450 USD at subscription, 100 USD yearly fee or after signing 10 times.