

CASE STUDY

## **QUALCOMM INCORPORATED**

WIRELESS TELECOMMUNICATIONS  
GIANT TRUSTS VERISIGN® CODE  
SIGNING CERTIFICATE TO PROTECT  
ITS KEY DEVELOPMENT PLATFORM





## CASE STUDY

In 2001, QUALCOMM Incorporated introduced Binary Runtime Environment for Wireless (BREW<sup>®</sup>) as a comprehensive, open development platform for the creation of mobile phone applications. With competition driving down mobile call profit margins, many carriers saw wireless application services as a strong new source of revenue. In addition to rich content development and delivery capabilities, BREW immediately differentiated itself by providing an interface between the application and the wireless device on-chip operating system. This facility gave programmers the ability to develop applications without needing to include code for each individual mobile device or write multiple system interfaces. Developers were strongly attracted by this capability and it proved equally compelling for manufacturers by allowing access to the most popular applications for their whole range of current and future devices.

### PROTECTING THE DEVELOPMENT ENVIRONMENT

In 2000, before launching the BREW platform, QUALCOMM was concerned about operational physical security for the root key—including limiting the number of copies—and validating developer access. The QUALCOMM team responsible for BREW did not have the manpower or resources to create and deploy in-house solutions to address these security concerns.

Martin Bennett, QUALCOMM's senior manager of IT, explained, "If an unauthorised developer gained access and put a sub-standard application out there—or worse still, some type of malicious code—that caused problems for our operators, there would be a huge negative impact on the trust that we have built with our partners—potentially doing untold damage to QUALCOMM's reputation and business. We therefore wanted the notarisation of developers to occur every time the code is touched."

QUALCOMM opted to utilise code signing certificates, mandating that the developer signs all code with the same digital signature using public key infrastructure (PKI) cryptography.

The QUALCOMM BREW team understood that security of the root key was mission critical for the long-term success of the platform and consequently looked to outsource the management of code signing and developer notarisation to a trusted and proven vendor. In 2001, VeriSign won the selection process.

### VERISIGN'S FLEXIBLE PKI SOLUTIONS

VeriSign<sup>®</sup> Code Signing Certificate, together with some custom code, was implemented to accomplish the physical security operations relating to storage of the BREW root key. Matthew Hohlfeld, staff engineer, elaborated, "This approach ensures that VeriSign authenticates the source of all requests from our company; cross-checking the applicant against the list of people that QUALCOMM says are approved to make that particular request."

### SOLUTION SUMMARY:

Wanting notarisation of developers to occur every time they access code within the BREW<sup>®</sup> environment and also needing robust root key security, QUALCOMM elected to leverage VeriSign<sup>®</sup> Code Signing Certificates and has since successfully defended the code from all unauthorised developer access.

#### Industry

- Telecommunications

#### Challenges

- It was critical to ensure that the BREW environment did not allow the company's high standards of trust and integrity to be open to compromise.
- Needed operational physical security for the BREW root key.
- All developers accessing the code base needed to be validated and authorised.

#### Solution

- VeriSign<sup>®</sup> Code Signing Certificate
- VeriSign<sup>®</sup> Document IDs for BREW<sup>®</sup>
- VeriSign Platinum support

#### Results

- There has not been a single unauthorised developer security breach.
- The BREW root key is appropriately secured.
- A notarised, time-stamped record is created for all code changes within the environment, creating an auditable history of all activities.





## CASE STUDY

The VeriSign Code Signing Certificate solution performs a digital packaging of code and content, which protects software publishers and users when they download code over the Internet or mobile networks. Digital signatures authenticate the source and verify the integrity of content.

Secondly, for the certification of third-party BREW authenticated developers, QUALCOMM and VeriSign collaborated to create and deploy a customised version of the solution, known as VeriSign® Document IDs for BREW®. Hohlfeld described the steps in the operational process, “Via submission from a custom VeriSign portal, a new developer goes through Class Two or Three authentication with VeriSign where the corporate identity of the developer is cross-checked. Once successfully validated, VeriSign issues certificates for key material so the developer can authenticate back with QUALCOMM. Having validated with QUALCOMM, the developer gets a tool that interoperates with the key material provided by VeriSign, and this then allows them to sign code for submission to QUALCOMM’s BREW platform.”

VeriSign Document IDs for BREW enables authorised BREW developers to digitally notarise BREW applications from their own desktop, giving them non-repudiatable proof of document content, source, together with a time-stamp, and in turn QUALCOMM is assured of the content source and integrity.

The third element to QUALCOMM’s security solution is digital notarisation. “This is an Internet RFC 3161-based time-stamping service from VeriSign,” said Hohlfeld, “so when QUALCOMM submits a signed request that’s appropriately labeled, VeriSign returns a specialised formatted version.”

To round out the VeriSign solution QUALCOMM has Platinum support providing service availability at 99.5 percent around the clock. “We have a good handle on our business processes and how they are complemented by the VeriSign solution—we’ve optimised the support and consulting services to match these requirements,” noted Bennett. “VeriSign has been very receptive to any requests that we’ve had, and we have monthly meetings with the support team to track and progress action items that need resolution. We have a large number of developers—currently more than 1,800—doing testing along with a third-party test house, and by using VeriSign’s Platinum support, we have strong peace of mind.”

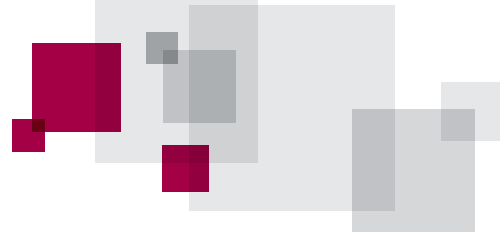
### TRUSTING IN VERISIGN

Today, QUALCOMM is undertaking a review and possible migration of its certification of third-party BREW authenticated developers to the Authenticated Content Signing (ACS) platform. Jane Bushor, program manager, commented, “We are currently defining how to optimally transition to ACS; there are some hurdles, but by collaborating with VeriSign, we’re confident that we can make this project as successful as our current solutions have been.”

“Since going live we have not had a single unauthorised developer breach our security, which is why our relationship with VeriSign is so strong and long-standing... We have an inherent trust in VeriSign to protect us.”

Martin Bennett,  
senior manager of IT,  
QUALCOMM Incorporated





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The success of VeriSign's security solutions has been proven by QUALCOMM experiencing zero "Severity 1" security events. Bennett reflected, "Since going live, we have not had a single unauthorised developer breach our security, which is why our relationship with VeriSign is so strong and long-standing. It's been a rewarding and easy partnership to maintain."

He concluded, "We have an inherent trust in VeriSign to protect us."

Visit us at [www.VeriSign.com.sg](http://www.VeriSign.com.sg) for more information.

"Since having VIP FDS in place, together with a more manual layer of security in the back-end, we're already seeing a tangible drop in inappropriate activities. To date we have not had ANY loss of funds. Nonetheless, we never want to become complacent and are constantly researching ways for additional improvements—we're looking to multi-factor authentication to reduce the attempts at fraud even further. Additionally, we particularly wanted 100 percent delivery reliability of the OTPs, no matter where our members are located when accessing their account."

Blanca Guerrero, chief information officer,  
Addison Avenue Federal Credit Union

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