INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATIONS AND ROBOTICS
ISSN 2320-7345

MOBILE WEB APPLICATION DEVELOPMENT

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Abstract -We will demonstrate how a common mainstream web application development stack, the so-called *AMP* stack, can be installed on a mobile phone and used for creating a mobile website that utilize the unique characteristics of a mobile personal device. By providing a widely used web application development environment also on the mobile phone, we foresee that the threshold for developing mobile websites effectively can be removed.

I. INTRODUCTION

All high-end mobile phones of today are equipped with web browsers that allow users to browse the web. In general, mobile phones — in particular so-called smartphones — are increasingly becoming like general purpose computers and functionality that traditionally have been available only on regular computers is being migrated to them. However, so far mobile phones have not really been used as servers – in particular, web servers – although they in terms of processing power and the amount of available memory are on the same level as, or even surpassing, the servers that were used when the web was in its infancy in the early nineties.

In the beginning of 2004 we started a project at Nokia Research Center with the aim of exploring what implications it would have if it were possible to host a website on a mobile phone and if that website were addressable in and accessible from the Internet, using the operator networks of today. As part of that work we created a mobile web server – Raccoon[1] – that consists of a port of the Apache web server to the S60 platform and a connectivity solution that on the one hand enables HTTP traffic from the Internet to a mobile phone, and on the other hand provides a mobile phone with something akin to a domain name. A high-level architecture is shown in Figure

1. The results of the research project were open sourced in the early summer of 2006 and a more consumer oriented product was released in the summer of 2007 [2].

Hosting a website on a mobile personal device opens up a range of interesting possibilities that offsets the technical limitations – lower processing power and bandwidth, higher latency, and higher cost, both monetary and in terms of energy consumption – of that same device. For instance, we can change the way mobile phones are perceived and

used by making it possible to access the full range of the core applications of the phone over the web using a regular web browser. From another perspective, by utilizing the changing context of a moving device and the fact that the "administrator" is always nearby, we can create websites that would be hard or even impossible to duplicate using traditional stationary servers.
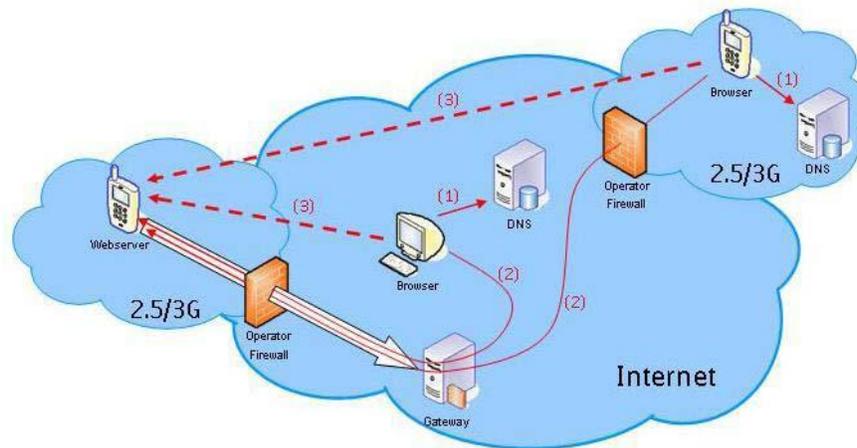

Figure 1. High-level architecture of mobile web server

From a narrow technical perspective a web server is all that is needed in order to create a website. Indeed, in the infancy of the web that was indeed the case. HTML pages were written by hand using more or less HTML aware editors and saved as regular files that subsequently were served by the web server. Fairly soon, however, more advanced approaches appeared and today it is fair to say that no serious website is managed manually, but instead more advanced solutions are used.

Currently, a website typically consists of three equally crucial components; a web server, a database and a programming language well suited for web programming. One, if not the most, important component bundle is the so-called *LAMP* solution stack [3]. The original expansion of the acronym is as follows:

- Linux, referring to the operating system;
- Apache, the web server;
- MySQL, the database management system (or database server);
- PHP, the programming language.

The combination of these technologies is used to define a web server infrastructure, define a programming paradigm of developing software, and establish a software distribution package. Later, a large number of similar acronyms have been used where only the first letter, denoting the used operating system, is different. From a web programming perspective the used operating system is the least important.

Of the AMP components, originally Raccoon provided the web server but also the programming language as *mod_python*[4], a component that integrates the Python[5] programming language and Apache, was an integral part. However, although the *P* in AMP often refers to Python, most if not all content management systems that build upon the AMP stack explicitly require PHP. Unfortunately, the database support was conspicuously absent.

II. AMP ON A MOBILE PHONE

To fully support the typical web programming model, we have now ported both MySQL and PHP to the Symbian platform, thus providing a new AMP stack, this time called PAMP as in *Personal* AMP. We chose not to call the stack *S*AMP after the operating system, as the primary distinguishing feature of this stack compared with others is that it is used on a personal device. Apart from the lowest operating system layer, it is structurally identical with AMP stacks on other systems.

The primary benefit of providing the AMP stack is that the environment in which to develop mobile websites is now identical with that of regular website development. That is, the threshold for developing mobile websites has now effectively been removed. Furthermore, regular *content management systems*, such as Drupal[6], Joomla[7], XOOPS[7] to name but a few, that are built on top of the AMP stack, can now easily be deployed also on a mobile phone. The details of running Drupal on the PAMP stack are covered in greater detail in a separate demo [9].

III. DEMO

In the demo we will highlight multiple aspects. Firstly, the current mobile phones are powerful enough to run the same software solution stack that is used on traditional web servers. Secondly, with PHP available, it is easy to create web applications that utilize the unique characteristics of a mobile phone and to create websites that would be hard or impossible to realize in the context of regular stationary web servers. Thirdly, with the AMP stack available we show that it is possible to install regular content management systems, thus illustrating that tools used in the regular web are now just as applicable in the mobile web.

IV. DEMO REQUIREMENTS

We will bring along a laptop and a number of S60 mobile phones equipped with the PAMP stack and demonstrate that stack and a mobile website created with it, by browsing to the mobile websites from the laptop.
The only external requirement for the demo is electricity.

REFERENCES

[1] Nokia *Raccoon* m*obile web server* [Online] Available:
http://wiki.opensource.nokia.com/projects/Mobile_Web_Server
[2] Consumer oriented mobile web server [Online]
Available: http://mymobilesite.net
[3] LAMP [Online] Available:
http://en.wikipedia.org/wiki/LAMP_(software_bundle)
[4] mod_python [Online] Available: http://www.modpython.org/
[5] Python programming language [Online] Available: http://www.python.org/
[6] Drupal [Online] Available: http://drupal.org/
[7] Joomla [Online] Available: http://www.joomla.org/
[8] XOOPS [Online] Available: http://www.xoops.org/
[9] Nurminen J.K., Wikman J., Kokkinen H., Muilu P., and Heikelä M.,
"Drupal Content Management System on Mobile Phone", demonstration session at 5th IEEE Consumer Communications & Networking Conference CCNC 2008, Las Vegas, Nevada, January 2008.