

# System Architecture Design for WAP Services Based on MISC Platform

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**Abstract.** WAP(Wireless Application Protocol) services have become the available method for subscribers to access mobile Internet through mobile terminal anywhere and anytime. To efficiently compete in the global telecommunication market, SP (Service Providers) need a unique, open, scalable and flexible WAP Service System Architecture. A logical architecture of WAP Service Systems based on MISC(Mobile Information Service Center) platform discussed in this paper is designed and developed on J2EE(Java 2 Enterprise Edition) architecture and deployed on BEA WebLogic Server. This system can support multiple services, applications and contents across multiple access wireless networks and devices, can reduce the development complexity, deployment risk and help SP rapidly develop a series of diverse WAP services and applications for the purpose of Industry perspectives and profitability which ultimately can promote beneficial circulation of Industry Value Chain and impulse WAP Service market to further develop.

## 1 Introduction

A good logical architecture of WAP Service System not only processes flexible, portable and scalable interfaces which make it more easier to develop various services, but also provides rational and feasible Maintenance and Management System that can make it more convenient to make corresponding WAP services maintenance and management for the purpose of solving diverse problems from the system inside and various complains from terminal users outside.

Considering the development status quo of WAP services, a kind of logical architecture of WAP Service System based on MISC Platform [2] has been designed and developed, based on which some WAP Services have also been implemented. The practical value of this System has got validated.

In this paper, for each component in system, detail description involves its responsibility and function. Besides, an amount of analysis and research to related technologies are also discussed.

## 2 WAP Service System Architecture Based on MISC

As described in Figure 1, this kind of WAP Services System Architecture is designed based on MISC platform. The whole system mainly concludes two parts: MISC Platform and SP WAP Services System.

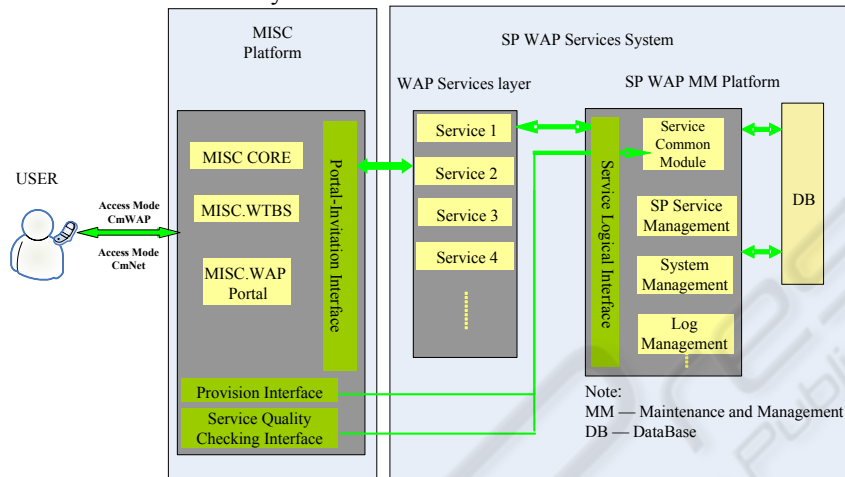


Fig. 1. MISC WAP Service System Architecture.

### 2.1 MISC Platform

MISC Platform is the band and bridge between Operators and SP. As the mobile data services platform of CMCC (China Mobile Communication Co.), it is the core of CMCC Monternet Plan and composed of three components and three interfaces:

- MISC.CORE—the key component of Mobile Monternet Wireless Data Service Net, with main responsibility for User Management Services Management and SP Management and providing open common API[2](Application Programming Interface) to outside entities (SP)and changing function to every service Gateway and SP;
- MISC.WTBS—the proxy of user and SP to transmit services request and be in change with data synchronization information of Service State Management;
- MISC.WAP.Portal—Monternet WAP Portal Website, integrating many SP services.
- Interfaces between MISC and SP WAP Services System—implementation of information transmission between MISC and SP services.
  - Page invitation Interface: MISC transmits authorization information to SP through this interface;



- **Function Use:**

After successful subscription, users can invite the subscribed service. WTBS as Service Invitation Proxy substitutes for user to invite service, at the same time, makes service control and management to guarantee the legal subscribed relationship.

- **Function Change:**

Once the subscribed service is used, MISC platform will create corresponding service changing information to change, finally to transmit BOSS [5] (Business Operation Support System) or SCP (Service and Content Provider) of IN [6] (Intelligent Network) with responsibility of changing users.

### 2.3 SP WAP Services System and Key Technologies

SP WAP Services System including following three components: SP Service Layer, SP WAP MM (Maintenance and Management) Platform and DB (Database):

- **SP Service Layer:** includes a series of service modules. Various wireless services are designed and developed according to its client service request, such as News Browse, Picture download, Weather Conditions Query, Search Engine etc.
- **SP WAP MM Platform:** involves a series of service logical interfaces and WAP MM modules. Service logical interfaces as the band and bridge between SP Service Layer and SP WAP MM Platform, which is called usually API with purpose of helping to implement various service logical functions. SP MM modules are designed to implement Service Management, SP WAP System Management and Log Management, etc.
- **DB:** a module with responsibility for providing plenty of data resources.

This WAP Service System is designed based on J2EE architecture. The related key technologies of this system are involved:

- SP Service Layer have many service modules, which are implemented with Servlet technology in which WML[1][7](Wireless Markup Language) or XHTML[5][8](eXtensible Hypertext Markup Language) can be embedded;
- System MM platform is mainly implemented by JavaBean, JSP technologies which can be tested on BEA WebLogic Server, while the interfaces between WAP Services Layer and WAP MM system are adopted EJB technology which can be directly deployed and tested on BEA WebLogic Server. Logical Interfaces adopts EJB technology.
- As for the DB design, Oracle[10][14] has been taken into account.

The benefits of this Design:

In this WAP Service System Design based on J2EE architecture, many technologies can be created, tested, debugged, optimized or deployed on BEA WebLogic Server, can reduce the development complexity, deployment risk and help SP rapidly develop a series of diverse WAP services and applications as soon as possible for the purpose of Industry perspectives and profitability.

## 2.4 Typical WAP Service Flow

Figure 3 describes a typical WAP service procession.

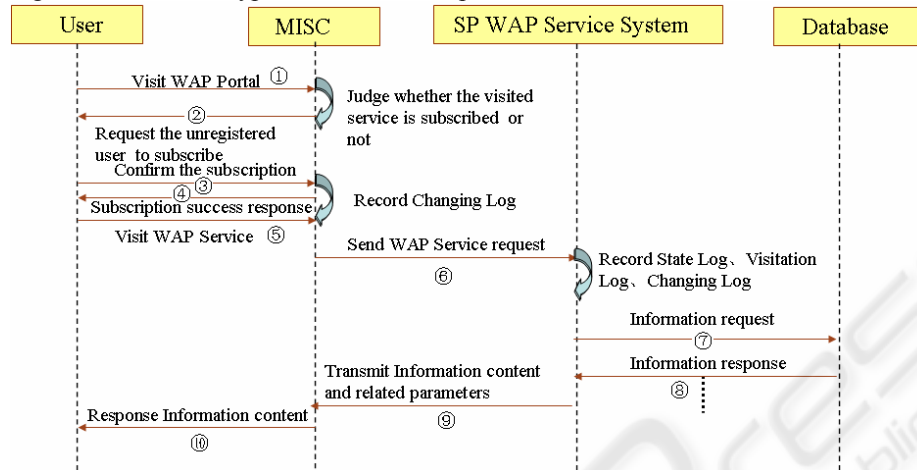


Fig. 3. Typical WAP Service Flow.

- ① At first, User invites MISC.WAP.Potal;
- ② After received inviting request, MISC.WAP.Potal permits user authoritarian and checks the subscribed relationship between user and the corresponding Monternet service;
- ③ If not subscribe this service, the user will be return to subscription page noted the subscribed changing information;
- ④ After confirmed the subscribed relationship by user, return user subscription success response;
- ⑤ User sends service visiting request to MISC;
- ⑥ Then MISC sends inviting request to SP WAP Services System;
- ⑦ Service Logical Module in SP WAP Service System records corresponding Logical procession and sends Information request to SP DB;
- ⑧ ~ ⑩ The corresponding information got from DB by Service Logical Module will be transmit to the user by the proxy—WTBS Module MISC Platform.

## 3 Diversification of WAP services

Some hot WAP services includes: News Browse, Picture&Ring Download, WAP Address, Checking Flight information, Viewing Traffic and Location information, Checking weather conditions, WAPMail, WAP search engine, Stream Media based

on WAP and MBlog based on WAP and so on, some of which have been implemented on our WAP Services System and put into practice.

#### 4 Conclusion and Future Work

In this paper, the whole system is designed and developed on J2EE architecture and deployed on BEA WebLogic server, which is a kind of optimized scheme to not only design and development WAP services system but also other value-added services.

This system can support multiple services, applications and contents across multiple accessing wireless networks and devices, can reduce the development complexity, deployment risk and help SP rapidly develop a series of diverse WAP services and applications.

A series of diverse WAP services developed on this system has verified the implementation of this system. Given the interface, WAP services logical layer development is the key technology that can make more and more new popular services easier to access the WAP Service System. The flexibility, portability and scalability of the interfaces will be a very important direction in our future research and development.

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