Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Proposal for updating 802.16g standard architecture reference model**
Date Submitted	**2006-01-05**
Source(s)	Philip Barber Mailto: zlan@huawei.com Zou Lan Fu Yan Huawei Technologies
Re:	Contribution on IEEE802.16g -05_008r2
Abstract	This contribution proposed to update the system architecture reference model of 802.16-2004. And remove the corresponding description in 16g.
Purpose	Adoption
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.
Patent Policy and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <http://ieee802.org/16/ipr/patents/policy.html>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <mailto:chair@wirelessman.org> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.

Proposal for updating 802.16g standard architecture reference model
Huawei Technologies.

Introduction

This contribution proposes updating the 802.16g standard architecture reference model to give more explicit network architecture description.

Proposed Text

1. [Change the text in section 1.4 as following]

14.4 Reference Model

14.4.1 Network Reference Model

The Figure A describes a network reference model along with the interfaces that are within the scope of this specification. Multiple SS or MS maybe attached to a BS. ~~The SS communicate to the BS over the U interface using a Primary Management Connection or a Secondary Management Connection. MS typically only utilize the Primary Management Connection over the U interface for management and related control functions.~~ SS or MS communicate to the BS over the U interface using a Primary Management Connection, a Basic Management Connection or a Secondary Management Connection.
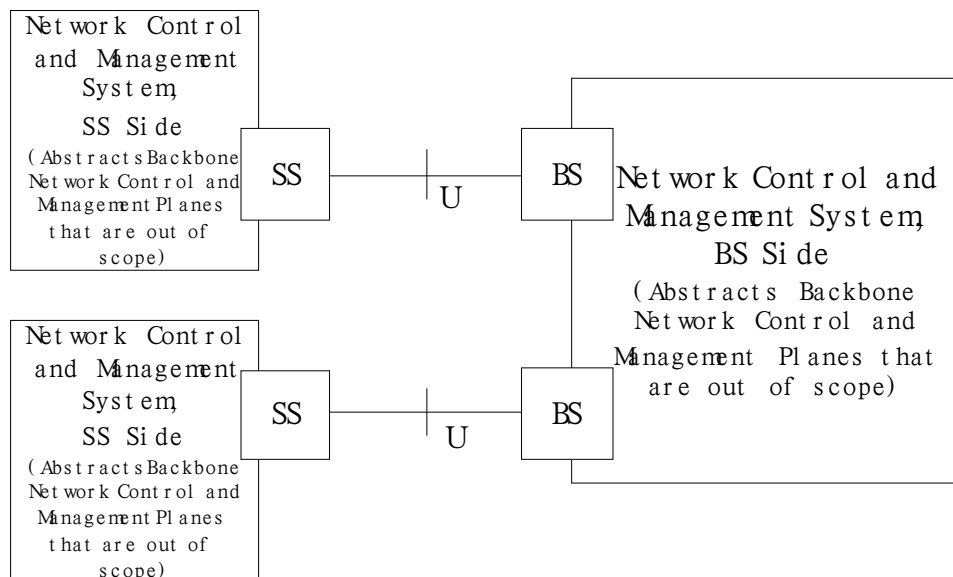

Figure A – Network Reference Model

14.4.1.1 Network Control and Management System(NCMS)

~~This abstraction is detailed in Figure y to show the different functional entities that make up such a Network Control and Management System. These entities may be centrally located or distributed across the network. The exact functionality of these entities and their services is outside the scope of this specification but shown here for illustration purposes and to better enable the description of the management and control procedures.~~

This abstraction is detailed shown the different functional entities that make up a Network Control and

Management System. For different network elements, the corresponding NCMS functions are also different. The exact functionality of these entities and their services is outside the scope of this specification but shown here for illustration purposes and to better enable the description of the management and control procedures.

The illustrated BS side NCMS functions are shown in Figure B.

```
┌─────────────────────────────────────────────────────────────────┐
│           Network Control and Management System,                │
│                         BS Side                                 │
│  ┌────────────────┐  ┌────────────────┐  ┌──────────────────┐  │
│  │                │  │                │  │  Inter-Working   │  │
│  │  AAA Services  │  │ Paging Services│  │    Services      │  │
│  └────────────────┘  └────────────────┘  └──────────────────┘  │
│  ┌────────────────┐  ┌────────────────┐  ┌──────────────────┐  │
│  │ Service Flow Id/│  │                │  │                  │  │
│  │  Connection Id  │  │Security Services│  │ Data Cache Services│ │
│  │Management Services│ │                │  │                  │  │
│  └────────────────┘  └────────────────┘  └──────────────────┘  │
│  ┌────────────────┐  ┌────────────────┐  ┌──────────────────┐  │
│  │RF Transmission and│ │Mobility Management│ │ Multimedia Session│ │
│  │ Synchronization │  │    Services    │  │Management Services│ │
│  │    Services     │  │                │  │                  │  │
│  └────────────────┘  └────────────────┘  └──────────────────┘  │
│  ┌────────────────┐  ┌────────────────┐  ┌──────────────────┐  │
│  │ BS Scheduling and│ │Gateway and Router│ │                  │  │
│  │  Co-ordination  │  │    Services    │  │   MH Services    │  │
│  │    Services     │  │                │  │                  │  │
│  └────────────────┘  └────────────────┘  └──────────────────┘  │
│  ┌────────────────┐  ┌────────────────┐                        │
│  │ Network Address │  │Network Management│                      │
│  │Management Services│ │    Services    │                       │
│  └────────────────┘  └────────────────┘                        │
└─────────────────────────────────────────────────────────────────┘
```
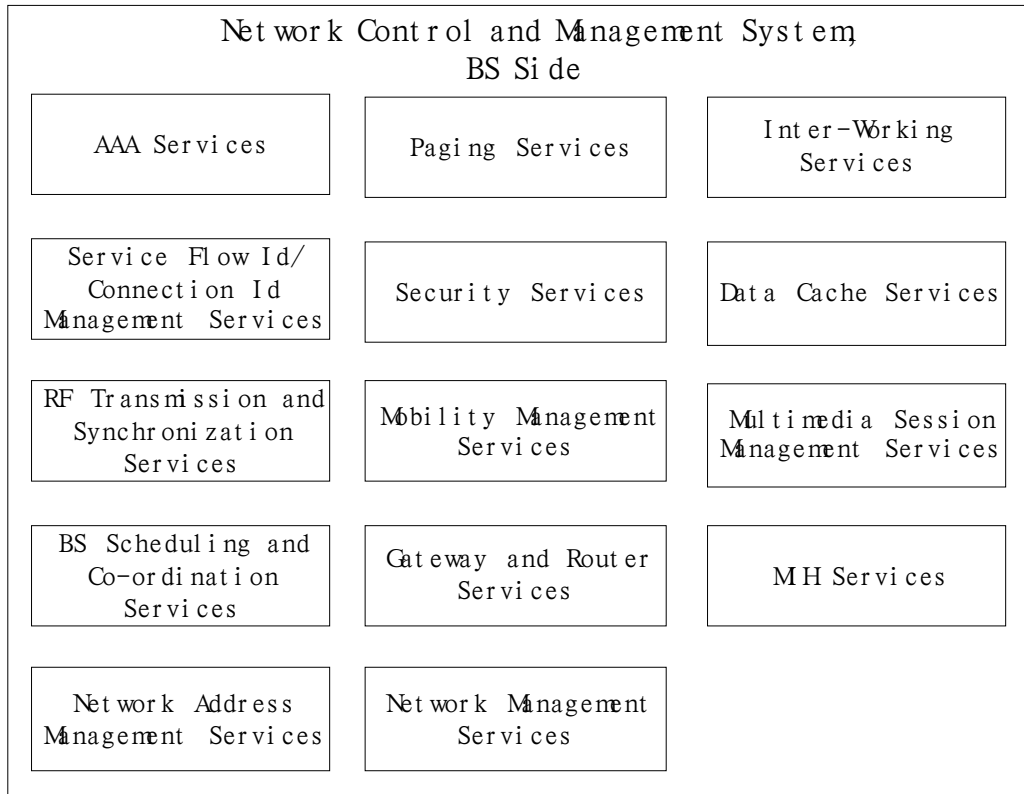
Figure B Illustration of BS side Network Control and Management System

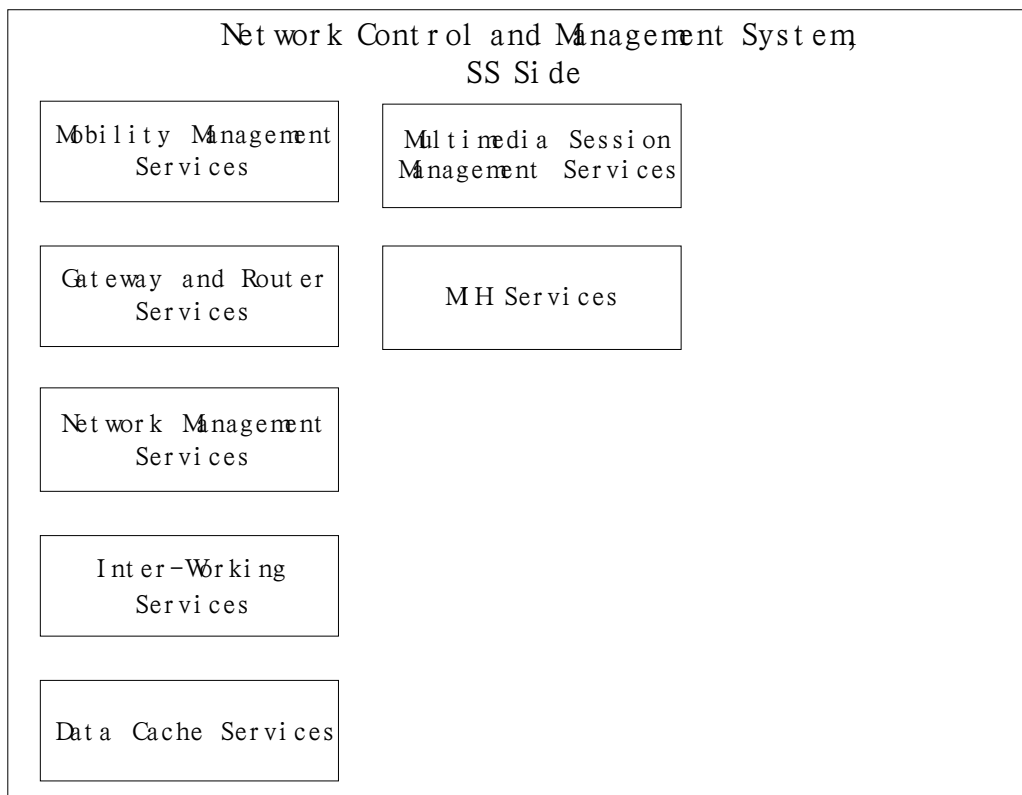The illustrated SS side NCMS functions are shown in Figure C.

Figure C Illustration of SS side Network Control and Management System

~~NCMS protocols are not defined in this specification, however information elements (IEs) and protocol primitives for these IEs are exposed using Service Access Points (SAP). This includes CS, MAC and PHY layer context information used by NCMS protocols to manage and control the air interface. Every BS is assumed to be part of an NCMS and therefore as shown in Figure 3.~~
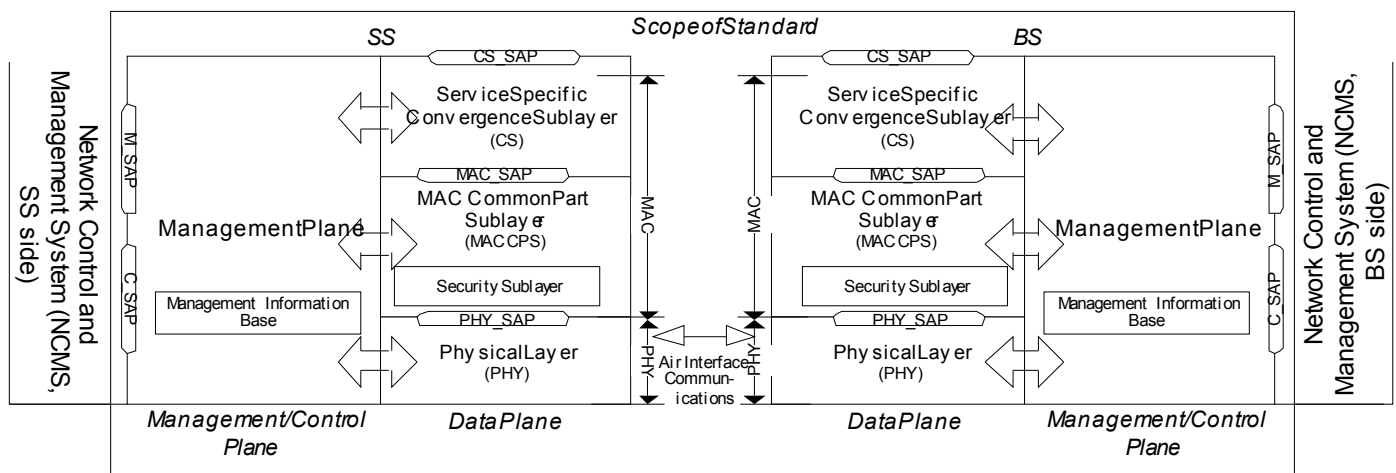
The system architecture is shown in Figure D.

Figure D System Architecture Model

14.4.1.1.1 SS/MS and BS Interface

SS or MS communicate to the BS over the U interface using a Primary Management Connection, a Basic Management Connection or a Secondary Management Connection.

For all SS or MS, the related control plane messages utilize the Primary Management or Basic Management Connection.

For managed SS or MS, the related management plane messages go through the Primary Management Connection or the secondary Management Connection.

14.4.1.1.2 SS/MS and NCMS Interface

This interface is a set of Service Access Points (SAP) between SS/MS and NCMS and is represented in the Figure D. It is decomposed into two parts: the Management SAP is used for Management plane primitives alone and the Control SAP is used for Control plane primitives that to support handovers, security context management, radio resource management, and low power operations (such as Idle mode and paging functions). The primary goal of such an interface is to ensure protocol separation.

14.4.1.1.2.1 Management SAP(M_SAP)

The Management SAP may include, but is not limited to primitives related to:

- System configuration

- Notifications/Triggers

14.4.1.1.2.2 Control SAP(C_SAP)

The Control SAP may include, but is not limited to primitives related to:

- Handovers (e.g. notification of HO request from MS, etc.)

- Idle mode mobility management (e.g. Mobile entering idle mode)

- Subscriber and session management (e.g. Mobile requesting session setup)

- Radio resource management, etc.

- AAA server signaling (Eg. EAP payloads).

14.4.1.1.3 BS and NCMS Interface

This interface is a set of Service Access Points (SAP) between BS and NCMS and is represented in the Figure D. It is decomposed into two parts: the Management SAP is used for Management plane primitives alone and the Control SAP is used for Control plane primitives that to support handovers, security context management, radio resource management, and low power operations (such as Idle mode and paging functions). The primary goal of such an interface is to ensure protocol separation.

14.4.1.1.3.1 Management SAP(M_SAP)

The Management SAP may include, but is not limited to primitives related to:

- System configuration

- Monitoring Statistics

- Notifications/Triggers

14.4.1.1.3.2 Control SAP(C_SAP)

The Control SAP may include, but is not limited to primitives related to:

- Handovers (e.g. notification of HO request from MS, etc.)

- Idle mode mobility management (e.g. Mobile entering idle mode)

- Subscriber and session management (e.g. Mobile requesting session setup)

- Radio resource management, etc.

- AAA server signaling (Eg. EAP payloads).