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Performance Management Primitives for Signal Tracing

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1. Introduction

The purpose is to describe the signal tracing procedure and the service primitives that shall be exchanged between the BS and the NCMS entities. This procedure makes it possible to collect all primitives/messages in one call which will help to monitor the system and locate the abnormity. Therefore we can improve the performance of the system.

2. Summary of the Proposed Remedy

The procedure can support the collection of the primitives/messages according to pre-configuration. In this contribution, we define five primitives to support signal tracing which are described briefly in the following table.

Primitive	Direction	Primitive Contents
SIGNAL_COLLECTION_START_REQUEST	NCMS -> BS	Signal collection configuration
SIGNAL_COLLECTION_START _RESPONSE	BS -> NCMS	Result of start collection request
SIGNAL_REPORT	BS -> NCMS	The signal data。
SIGNAL_COLLECTION_STOP_REQUEST	NCMS -> BS	Signal collection configuration
SIGNAL_COLLECTION_STOP _RESPONSE	BS -> NCMS	Result of stop collection request

Proposed Text Changes

[*Insert section 14.5.4 as follow*]

14.5.4.1 Signal Tracing

Signal Tracing is a basic performance management function in wireless access systems. The information of the system can be collected and monitored through this function. By collecting and analyzing the signals, it is convenient to detect whether the system is functioning normally and to locate where the abnormality occurs.

14.5.4.1.1 Procedure of Signal tracing

It includes the following steps:

(1) NCMS sends SIGNAL_COLLECTION_START_REQUEST to BS which is used to deliver the signal tracing configuration information to BS. The signal collection configuration contains the signal configuration information such as which interface/SAP or which MS will be traced.
(2) BS sends SIGNAL_COLLECTION_START _RESPONSE to NCMS to notify whether it is ready.
(3) BS sends SIGNAL_REPORT to NCMS which includes the signal data NCMS requires.
(4) NCMS sends SIGNAL_COLLECTION_STOP_REQUEST to BS which is used to stop some or all the signal tracing actions.
(5) BS responses with SIGNAL_COLLECTION_STOP _RESPONSE and stops tracing some or all the signals.

Step (4) and (5) can be used to decrease the message load in the system.

The procedure of signal tracing is as followed:

图 1.signal tracing procedure

14.5.4.1.2 Service Primitives for signal tracing

14.5.4.1.2.1 SIGNAL_COLLECTION_START_REQUEST

14.5.4.1.2.1.1 function

This primitive is sent from NCMS to BS. And it requests BS to begin signal tracing. The signal collection configuration information such as the U interface is included in the primitive.

14.5.4.1.2.1.2semantics of this primitive

The parameters of this primitive are as follows:

SIGNAL_COLLECTION_START_REQUEST
(
Signal collection configuration;

)

Signal collection configuration

Contains the signal configuration information such as which interface/SAP or which MS is to be traced

14.5.4.1.2.1.3 When generated

This primitive is issued by NCMS when some interface/SAP or MS need to be monitored to trace the performance of the system or to locate some abnormity in the system.

14.5.4.1.2.1.4 Effect of receipt

When the NCMS sends this primitive, it shall wait for the response from BS. And after BS receives the primitive, it should configure the tracing parameters according to the content of the primitive.

14.5.4.1.2.2 SIGNAL_COLLECTION_START_RESPONSE

14.5.4.1.2.2.1 Function

This primitive is a response message sent from BS to NCMS on whether it will begin signal tracing.

14.5.4.1.2.2.2 Semantics of this primitive

The parameters of this primitive are as follows:

SIGNAL_COLLECTION_START _RESPONSE

(

Result;

)

Result:

When the BS begins signal tracing, it shall response with result = success, else it shall response with result = false.

14.5.4.1.2.2.3 When generated

This primitive is issued by a BS when it receives a SIGNAL_COLLECTION_START _REQUEST from NCMS.

14.5.4.1.2.2.4 Effect of receipt

BS begins signal collection according to the configuration in the request primitive.

14.5.4.1.2.3 SIGNAL_REPORT

14.5.4.1.2.3.1Function

This primitive is sent from BS to NCMS to report which signal is now being traced and what information is contained.

14.5.4.1.2.3.2 Semantics of this primitive

The parameters of this primitive are as follows:

SIGNAL_REPORT
(
Signal collection configuration;
Time of report;
Signal information;
)

Signal collection configuration
Contains the signal collection configuration such as which interface/SAP, which MS the signal belongs to

Time of report
The time of the signal reportgenerated

Signal information
The signal data that NCMS requests

14.5.4.1.2.3.3 When generated

As soon as the BS collects the signal information, it shall issue the primitive to NCMS.

14.5.4.1.2.3.4 Effect of receipt

NCMS will get the signal information it requested.

14.5.4.1.2.4 SIGNAL_COLLECTION_STOP_REQUEST

14.5.4.1.2.4.1 Function

This primitive is sent from NCMS to BS to request the BS to stop collecting signals. It can be used to stop all the signals or some type of signals.

14.5.4.1.2.4.2Semantics of this primitive

The parameters of this primitive are as follows:

SIGNAL_COLLECTION_STOP_REQUEST
(
Signal collection configuration;
)

Signal collection configuration
Contains the signal collection configuration such as which interface/SAP, which MS the signal belongs to

14.5.4.1.2.4.3When generated

When NCMS want to stop signal tracing, it shall issue the primitive to BS.

14.5.4.1.2.4.4Effect of receipt

When NCMS sends the primitive, it will wait for the stop response from BS. And after BS receives the primitive, it shall stop collecting the signal according to the information contained in the primitive.

14.5.4.1.2.5SIGNAL_COLLECTION_STOP_RESPONSE

14.5.4.1.2.5.1Function

This primitive is sent from BS to NCMS in response to whether it is successful in stopping the signal tracing.

14.5.4.1.2.5.2Semantics of this primitive

The parameters of this primitive are as follows:

SIGNAL_COLLECTION_STOP _RESPONSE
(
Result;
)
Result:
When the BS will stop signal tracing, it should response with result = success, else it should response with result = false.

14.5.4.1.2.5.3When generated

This primitive is issued by a BS when it receives a SIGNAL_COLLECTION_STOP _REQUEST from NCMS.

14.5.4.1.2.5.4Effect of receipt

When BS sends the primitive with result = success, it will stop signal tracing; when the result = false, BS will continue to collect signal until the next SIGNAL_COLLECTION_STOP_REQUEST is received and responses with result = success.