Agenda Item: 15.2

Source: Nokia

Title: Clarification on RNSAP Load Information Request and Load Information procedures.

Document for: Approval

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1   Introduction

This paper presents some clarification about the RNSAP Global procedures (Load Information Request and Load Information). It proposes additional text in the procedure description (changes are shown with revision marks) and the message contents.

2   Procedure description

2.1.1   Load Information Request

The Load Information Request procedure is used by CRNC1 to set in CRNC2 the reporting criteria used by the load information procedure towards CRNC1. The procedure consists in the message LOAD INFORMATION REQUEST sent by CRNC1 to CRNC2 using the connectionless service of the signalling bearer. The message is not acknowledged.

There are three different load reporting types that can be requested in Load Information Request procedure:

1. *Periodical reporting.* RNC1 requests from RNC2 periodical load reports from one or more cell under its control. Period between reports is specified by timer TPLR.

2. *Conditional reporting.* RNC1 requests from RNC2 to have load reports from one or more cell under its control only in case the cell is in critical load state (definition of overload state is up to CRNC2), or when the cell operational state changes. The report is sent also when the cell returns in normal operational conditions.

3. *Immediate reporting.* RNC1 requests from RNC2 an immediate report about the load of one (or more) cell under its control.

In case of periodical and conditional reporting, the LOAD INFORMATION REQUEST message is used also to terminate the reporting.

The procedure may be triggered by the RRM algorithm in SRNC, or via O&M configuration. RNC1 may for example ask periodical or conditional load reporting about the adjacent RNC2 cells. Those cells may be used to setup diversity branches (RNC1 acting as SRNC).

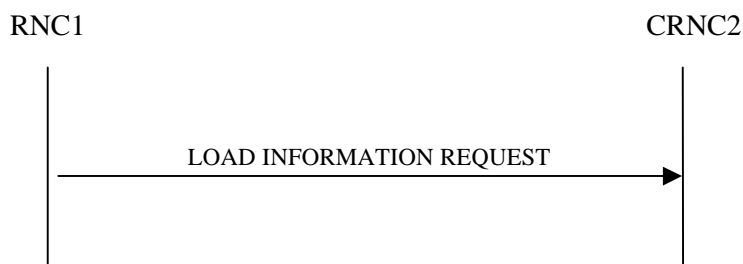The message contains the cell IDs and the reporting parameters.

RNC1   CRNC2

```
  |                                            |
  |                                            |
  |         LOAD INFORMATION REQUEST           |
  |------------------------------------------->|
  |                                            |
  |                                            |
```

Figure 9-x: An example RNSAP message flow at I_{ur} interface for Load Information Request.

1.1.22.1.2   Load Information

With this procedure CRNC1 informs CRNC2 about the load in one or more cells under its control.

When the load information reporting criteria are met, CRNC1 sends to CRNC2 the RNSAP LOAD INFORMATION message using the connectionless service of the signalling bearer. This message contains the following information about the load in one or more cell:

- Cell state: indicates the cell operational state (operative/not operative)

- UL/DL Overload information: it is an indication of the UL/DL overload, with following values:
  - Normal
  - Loaded, RNC2 is requested not to use additional resources in the cell
  - Overloaded, RNC2 is requested to reduce the use of resources in the cell (if any)

- UL/DL Capacity Available: the parameter expresses the available capacity in terms of percentage respect the maximum cell capacity.

The load information reporting criteria may be defined via O&M or using the Load Information procedure.
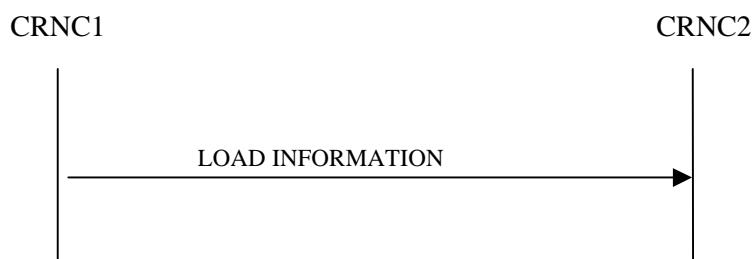
CRNC1   CRNC2

```
  |                                            |
  |                                            |
  |            LOAD INFORMATION                |
  |------------------------------------------->|
  |                                            |
  |                                            |
```

Figure 9-x: An example RNSAP message flow at I_{ur} interface for Load Information.

3   Message contents

3.1.1   LOAD INFORMATION REQUEST

Information element	Reference	Type
Message type		M
Cell Information		**M**
UTRAN Cell Identifier (UC-Id)		M
Immediate Reporting		M
Conditional Reporting		M
TPLR		M

TPLR

The timer for periodical Load Reporting defines the period (in tens of msec.) for the reporting of the load in the specified cells.

Immediate load reporting

The parameter defines if an immediate load reporting is needed or not.

Conditional load reporting

The parameter defines the conditional load reporting shall be sent or not.

3.1.2   LOAD INFORMATION

Information element	Reference	Type
Message type		M
Cell Information		**M**
UTRAN Cell Identifier (UC-Id)		M
Cell Status		M
Overload Indication (UL)		M
Overload indication (DL)		M
Available capacity (UL)		O
Available Capacity (DL)		O

Cell status

The parameter indicates if the cell is in operative state or not.

Overload Indication (UL)

The parameter indicates the level of UL load in the cell (normal, loaded, overloaded)

Overload Indication (DL)

The parameter indicates the level of DL load in the cell (normal, loaded, overloaded)

Available Capacity (UL)

The parameter indicates the available UL bit rate in the cell divided by the maximum UL bit rate supported by the cell.

Available Capacity (DL)

The parameter indicates the available DL bit rate in the cell divided by the maximum DL bit rate supported by the cell.

4   Proposals

- To replace sections 8.4.1 and 8.4.2 in [25.423] with sections 2.1.1 and 2.1.2 of this contribution.
- To replace sections 9.1.33 and 9.1.34 in [25.423] with the tables in sections 3.1.1 and 3.1.2 of this contribution. The description of the new information elements shall be added to chapter 9.2 in [25.423].

5   Reference

[25.423] RNSAP specification