Agenda Item: 16.2

Source: **Alcatel**

Title: **RNSAP "Cell Load Information" procedure and message contents**

Document for: **Approval**

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1   Introduction

The definition of the Load Information procedure in RNSAP has been discussed at RAN3#6 meeting, based on contributions from Nokia and Alcatel (Tdoc R3-856). This contribution presents a new proposal from Alcatel, trying to capture the different ideas and views expressed during the meeting.

2   Discussion

The Load Information procedure was proposed to be used between RNCs for the following purposes:

- Allow the source RNC to indicate the degree of load (in uplink and downlink) on some specific cells, under its control, to some target RNCs which control neighbouring cells. This permits the target RNC to take into account the load on neighbouring cells for the admission control on cells under its control. This may also permit the target RNC (SRNC) to select a carrier for doing a hard handover based on load criteria.

- Allow the source RNC to prevent some specific requests from remote SRNC, when an overload exists in some specific cells under its control. This permits to reduce the number of unsuccessful Radio Link Setup requests over the Iur.

It is believed that the second objective is very difficult to achieve, because the acceptance/rejection of requests will depend on a high number of parameters (requested bit rate, availability of codes, type of request, etc.). Therefore a large number of parameters (and combinations of parameters) would be needed in the load information message, to provide a meaningful message. In some cases, the SRNC may not attempt to add a new link because the previous load information message was indicating an overload for that type of request, whereas the request could have been accepted because the situation has recently changed. Since the final decision on admission control is always taken by the DRNC, it is believed that the SRNC should always be allowed to try to set up a new link. However the SRNC may decide on its own that the request has little chance to be accepted due to the last load value reported by the DRNC.

Therefore it is proposed to use the load information procedure only for the first purpose, i.e. indicating the degree of load in the neighbouring cells.

As far as the contents of the load information message is concerned, the degree of load is proposed to be reported as the percentage of load, rather than the absolute load value, because different RNCs may not be able to handle the same absolute load. The percentage of load is given per carrier, and may be defined as the ratio between the total received power level on one carrier and the maximum acceptable received power level in uplink, and as the ratio between the total transmitter power on one carrier and the maximum acceptable transmitter power per carrier in downlink. These are given as guidelines for the definition of these metrics, but the RNC is free to consider other criteria in the definition of load percentage. A SRNC receiving this load percentage values may use them to weight the different possible carriers and cells that are candidate for a hard handover.

The source RNC sends load information messages to some target RNCs, based on configuration set by

O&M. Reporting criteria are also set by O&M. For instance, it can send a Load Information message when the load percentage exceeds a given threshold.

The Load Information message is sent between CRNC, although it may be used by some SRNC local to the CRNC. The distinction is however not so relevant for the definition of the procedure.

3   Proposal

According to the discussion above, some changes are proposed to TS 25.423 in section 8.4 on Load Information procedure. It is proposed to remove the Load Information Request message, since the Load Information messages are triggered by the source RNC, using internal criterias. A new description of the Load information procedure is proposed. The contents of the Load Information message in 9.1.34 is also proposed.

8.4   Global Procedures

8.4.1   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.

CRNC1   CRNC2

LOAD INFORMATION REQUEST
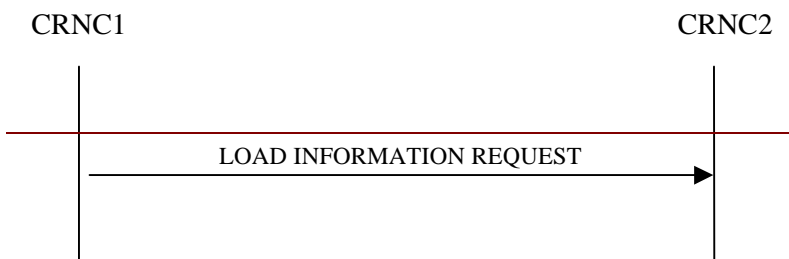
Figure 9-x: An example RNSAP message flow at I~ur~ interface for Load Information Request.

8.4.2   Load Information

With this procedure CRNC1 informs CRNC2 about the percentage of 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 information about the percentage of load in one or more cells.
The load information reporting criteria may be defined via O&M or using the Load Information procedure.

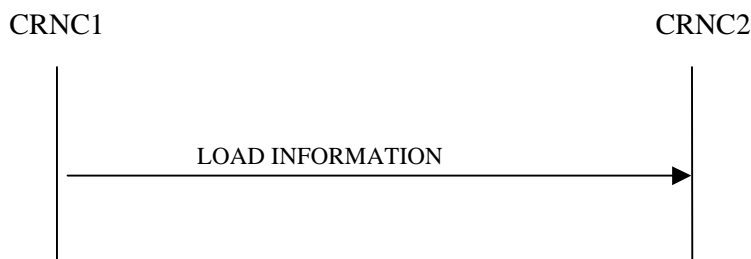CRNC1   CRNC2

LOAD INFORMATION

Figure 9-x: An example RNSAP message flow at I~ur~ interface for Load Information.

9.1.34 LOAD INFORMATION

[Editor's note:

This message has no content described due to lack of contributions. Contributions are invited.]

Information element	Reference	Type
Message type		M
Transaction ID		M
CRNC ID		M
Cells		**M**
Cell ID		M
Carrier ID		M
UL Carrier Load Percentage		M
DL Carrier Load Percentage		M

The new Information Elements are defined in section 9.2 :

9.2.xx UL Carrier Load Percentage

This defines the percentage of load in uplink on the specified carrier. This may be defined as the ratio between the total received power level on that carrier and the maximum acceptable level of interference.

9.2.xx DL Carrier Load Percentage

This defines the percentage of load in downlink on the specified carrier. This may be defined as the ratio between the total transmitter power level on that carrier and the maximum acceptable transmitter power.

4 Conclusion

It is proposed to include proposals of section 3 into TS 25.423.

5 References

[1] TS 25.423 RNSAP protocol