3GPP TSG-RAN WG1 Meeting #115 R2-21xxxxx

Electronic, August 9th – 27th, 2021

Agenda: 8.2.3

Source: Ericsson

Title: Report for Support of A3/A5 for inter-SN CPC

Document for: Discussion, Decision

# 1 Introduction

This document contains the report for discussion of A3/A5 events for inter-SN CPC related to the following e-mail discussion:

* [Post115-e][217][R17 DCCA] Support of A3/A5 for inter-SN CPC (Ericsson)

Scope: Draft CRs that show how the support of A3/A5 events would be done for inter-SN CPC to assess the complexity of the feature. Can also discuss the gains from the functionality.

Intended outcome: report + draft CRs

Deadline: Long

# 2 Discussion

## 2.1 Support of A3/A5 related to PSCell for inter-SN CPC

In RAN2#112e, an agreement was made such that A3/A5 events can be configured for inter-SN CPC. In current specification A3/A5 event refer to the current serving cell, i.e. the PCell. For MN initiated inter-SN CPC, it is the PSCell that needs be evaluated as it is the PSCell that is configured to potentially be changed.

The e-mail discussion assesses the complexity of implementing the support for referring to the PSCell instead of the PCell for MN-initiated inter-SN CPC. The following solutions have been proposed:

* a) UE uses PSCell in A3/A5 if target candidate is an SCG (implicit)
* b) PSCell flag in Cond A3/A5 (explicit)

In both solutions the UE is not required to perform any extra measurements, as the UE is anyway required to perform PSCell measurements.

In solution a) the UE uses PSCell in A3/A5 if it identifies that the target candidate is an SCG cell. No additional signaling needs to be sent to the UE. A text proposal is the following:

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5.3.5.13.4 Conditional reconfiguration evaluation

The UE shall:

1> for each *condReconfigId* within the *VarConditionalReconfig*:

2> consider the cell which has a physical cell identity matching the value indicated in the *ServingCellConfigCommon* included in the *reconfigurationWithSync* in the received *condRRCReconfig* to be applicable cell;

2> for each *measId* included in the *measIdList* within *VarMeasConfig* indicated in the *condExecutionCond* associated to *condReconfigId:*

3> if the stored *condRRCReconfig* associated to *condReconfigId* includes a *secondaryCellGroup* and a *reconfigurationWithSync* in *spCellConfig*:

4> consider the SpCell as the PSCell in the event;

3> if the entry condition(s) applicable for this event associated with the *condReconfigId*, i.e. the event corresponding with the *condEventId(s)* of the corresponding *condTriggerConfig* within *VarConditionalReconfig*, is fulfilled for the applicable cells for all measurements after layer 3 filtering taken during the corresponding *timeToTrigger* defined for this event within the *VarConditionalReconfig*:

4> consider the event associated to that *measId* to be fulfilled;

3> if the leaving condition(s) applicable for this event associated with the *condReconfigId*, i.e. the event corresponding with the *condEventId(s)* of the corresponding *condTriggerConfig* within *VarConditionalReconfig*, is fulfilled for the applicable cells for all measurements after layer 3 filtering taken during the corresponding *timeToTrigger* defined for this event within the *VarConditionalReconfig*:

4> consider the event associated to that *measId* to be not fulfilled;

2> if event(s) associated to all *measId*(s) within *condTriggerConfig* for a target candidate cell within the stored *condRRCReconfig* are fulfilled:

3> consider the target candidate cell within the stored *condRRCReconfig*, associated to that *condReconfigId*, as a triggered cell;

3> initiate the conditional reconfiguration execution, as specified in 5.3.5.13.5;

NOTE: Up to 2 *MeasId* can be configured for each *condReconfigId.* The conditional reconfiguration event of the 2 *MeasId* may have the same or different event conditions, triggering quantity, time to trigger, and triggering threshold.

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In solution b) a flag is added to indicate the usage of PSCell, to avoid the need to check the content of the target candidate during CPC evaluation.

In NR an implementation could look like:

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##### 5.3.5.13.4 Conditional reconfiguration evaluation

The UE shall:

1> for each *condReconfigId* within the *VarConditionalReconfig*:

2> consider the cell which has a physical cell identity matching the value indicated in the *ServingCellConfigCommon* included in the *reconfigurationWithSync* in the received *condRRCReconfig* to be applicable cell;

2> for each *measId* included in the *measIdList* within *VarMeasConfig* indicated in the *condExecutionCond* associated to *condReconfigId:*

3> if the *condEventId* of the corresponding *condTriggerConfig* within *VarConditionalReconfig* has *pscell-Cpc-r17* set to TRUE:

4> consider the SpCell as the PSCell in the event;

3> if the entry condition(s) applicable for this event associated with the *condReconfigId*, i.e. the event corresponding with the *condEventId(s)* of the corresponding *condTriggerConfig* within *VarConditionalReconfig*, is fulfilled for the applicable cells for all measurements after layer 3 filtering taken during the corresponding *timeToTrigger* defined for this event within the *VarConditionalReconfig*:

4> consider the event associated to that *measId* to be fulfilled;

3> if the leaving condition(s) applicable for this event associated with the *condReconfigId*, i.e. the event corresponding with the *condEventId(s)* of the corresponding *condTriggerConfig* within *VarConditionalReconfig*, is fulfilled for the applicable cells for all measurements after layer 3 filtering taken during the corresponding *timeToTrigger* defined for this event within the *VarConditionalReconfig*:

4> consider the event associated to that *measId* to be not fulfilled;

2> if event(s) associated to all *measId*(s) within *condTriggerConfig* for a target candidate cell within the stored *condRRCReconfig* are fulfilled:

3> consider the target candidate cell within the stored *condRRCReconfig*, associated to that *condReconfigId*, as a triggered cell;

3> initiate the conditional reconfiguration execution, as specified in 5.3.5.13.5;

NOTE: Up to 2 *MeasId* can be configured for each *condReconfigId.* The conditional reconfiguration event of the 2 *MeasId* may have the same or different event conditions, triggering quantity, time to trigger, and triggering threshold.

[..]

***ReportConfigNR* information element**

-- ASN1START

-- TAG-REPORTCONFIGNR-START

ReportConfigNR ::= SEQUENCE {

reportType CHOICE {

periodical PeriodicalReportConfig,

eventTriggered EventTriggerConfig,

...,

reportCGI ReportCGI,

reportSFTD ReportSFTD-NR,

condTriggerConfig-r16 CondTriggerConfig-r16,

cli-Periodical-r16 CLI-PeriodicalReportConfig-r16,

cli-EventTriggered-r16 CLI-EventTriggerConfig-r16

}

}

ReportCGI ::= SEQUENCE {

cellForWhichToReportCGI PhysCellId,

...,

[[

useAutonomousGaps-r16 ENUMERATED {setup} OPTIONAL -- Need R

]]

}

ReportSFTD-NR ::= SEQUENCE {

reportSFTD-Meas BOOLEAN,

reportRSRP BOOLEAN,

...,

[[

reportSFTD-NeighMeas ENUMERATED {true} OPTIONAL, -- Need R

drx-SFTD-NeighMeas ENUMERATED {true} OPTIONAL, -- Need R

cellsForWhichToReportSFTD SEQUENCE (SIZE (1..maxCellSFTD)) OF PhysCellId OPTIONAL -- Need R

]]

}

CondTriggerConfig-r16 ::= SEQUENCE {

condEventId CHOICE {

condEventA3 SEQUENCE {

a3-Offset MeasTriggerQuantityOffset,

hysteresis Hysteresis,

timeToTrigger TimeToTrigger

},

condEventA5 SEQUENCE {

a5-Threshold1 MeasTriggerQuantity,

a5-Threshold2 MeasTriggerQuantity,

hysteresis Hysteresis,

timeToTrigger TimeToTrigger

},

...

},

rsType-r16 NR-RS-Type,

...,

[[

pscell-Cpc-r17 BOOLEAN,

]]

}

[..]

|  |
| --- |
| ***…*** |
| ***pscell-Cpc-r17***  If this field is set to *TRUE* the UE shall use the PSCell as the SpCell instead of the PCell for events *CondEventA3* and/or *CondEventA5* for CPC. |

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**Question 1: Please provide comments on the solutions, especially in terms of complexity and gain and which solution is preferred.**

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# Conclusion

Based on the above, the following is proposed:

# 4 References