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Abstract

This paper proposes a new selective aperiodic checkpointing approach for VLR (Visitor Location Register) failure restoration in wireless mobile networks. In this approach, the VLR data are backed up in the non-volatile storage whenever the location update counter for that VLR exceeds the pre-determined threshold. It restores the backed up VLR data after the failure of the VLR and sends location confirmation request messages only to the selected Registration Areas (RAs) whose information is updated between the time period of back up and failure of the VLR. This is necessary as this information is obsolete in the backed up VLR for this reason and needs to be updated in the restored VLR. However, previous work on aggressive restoration based on periodic and aperiodic checkpointing also provide solutions for VLR database failure recovery. But these solutions are not feasible as they broadcast the location confirmation request messages to the RAs whose location information is found to be obsolete during the

restoration. The analytical model and experimental results also show that the proposed method outperforms other previous approaches as it selectively sends the location confirmation request messages instead of broadcasting to the RAs during VLR restoration process.

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Index Terms

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Key words

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VLR

RA

failure restoration