
Source: Vodafone

Title: Maximum number of requested authentication vectors

Document for: Decision

Agenda Item: 8

Introduction

In 33.203 v1.0.0 section 6.1.1 an editor's note is included which explains that the maximum number of authentication vectors that can be requested from the HSS needs to be defined. In this document we consider how this value should be chosen.

Discussion

The maximum number of authentication vectors that can be requested from the HSS should satisfy the following conditions:

1. The value for the maximum number of authentication vectors that can be requested on the Cx interface in IMS should be independent to the maximum number of authentication vectors that can be requested in MAP for GSM and UMTS authentication. Note that the maximum value of 5 in the MAP authentication vector request message was selected because this equated to the maximum number of GSM triplets that could be packed into the response messages in the first versions of MAP. The limit of 5 remains in the current version of MAP even though the size restriction in the response message no longer applies. No such size restriction exists on the Cx interface.
2. Controlling the maximum batch size from a security perspective may help to prevent over exposure of authentication vectors in the S-CSCF but it cannot stop an S-CSCF from making lots of requests for small batches instead to create the same effect. However, a properly functioning S-CSCF will probably not fetch more vectors until only one or two are left. Therefore imposing a maximum limit on the size of batches would still help prevent ill-configured S-CSCFs from fetching too many vectors in advance. The actual limit should be influenced by the expected minimum frequency of re-authentication of a SIP registration which should be related to the activity level of the subscriber. For example, if it were decided that authentication vectors should not be stored in a S-CSCF for longer than 24 hours, a minimum re-authentication frequency of once every two hours (i.e. for 'inactive' users) would equate to a maximum batch size of 12.
3. The chosen value should be large enough to allow S-CSCF's to fetch large enough batches to reduce the cost of communication with the HSS when authenticating 'active' users. However, it does not need to be too large because the overhead of setting up a dialogue with the HSS is probably not that high compared with the cost of vector storage in the S-CSCF and the potential for vector wastage at de-registration.
4. There seems no reason to ensure that the maximum number of requested authentication vectors is a whole number of octets.

Conclusion

The final decision on the maximum number of requested authentication vectors requires more information on typical re-authentication frequencies in IMS and the cost of communication with the HSS and S-CSCF storage. However, based on an initial analysis it seems reasonable to make a working assumption that the maximum number of requested authentication vectors should be no higher than 10. SA3 are asked to study this issue to ensure that an appropriate value is selected before 33.203 is presented to SA#15 for approval. If a value is agreed, then this should be communicated to CN4.