To create the security case for Instant Messaging (IM) software from the given security case pattern, we will instantiate the placeholders with context-specific information and represent the resulting assurance case in a hierarchical tree format.

### Instantiated Security Case:

- \*\*G1: IM software is acceptably secure in the messaging system\*\*

- \*\*C1: Definition and description of IM software\*\*

- \*\*C2: Definition and description of the messaging system\*\*

- \*\*C3: Definition of acceptably secure\*\*

- \*\*S1: Argument of that IM software assets are under protection\*\*

- \*\*J1: Protection of IM software assets supports that IM software is acceptably secure\*\*

- \*\*G2: All identified IM software critical assets are protected\*\*

- \*\*S2: Respective arguments of IM software critical assets\*\*

- \*\*C4: List of IM software critical assets\*\*

- \*\*J2: Relationship between assets is clear and can be argued separately\*\*

- \*\*G3: IM software critical asset (User Data) is protected\*\*

- \*\*S3: Argument of the type which the User Data belongs to\*\*

- \*\*C5: List of software critical asset types in PEDD\*\*

- \*\*J3: Types of software assets are according to PEDD\*\*

- \*\*G4: User Data which belongs to Confidentiality is protected\*\*

- \*\*G3: IM software critical asset (Message History) is protected\*\*

- \*\*S3: Argument of the type which the Message History belongs to\*\*

- \*\*C5: List of software critical asset types in PEDD\*\*

- \*\*J3: Types of software assets are according to PEDD\*\*

- \*\*G4: Message History which belongs to Integrity is protected\*\*

- \*\*G3: IM software critical asset (Encryption Keys) is protected\*\*

- \*\*S3: Argument of the type which the Encryption Keys belongs to\*\*

- \*\*C5: List of software critical asset types in PEDD\*\*

- \*\*J3: Types of software assets are according to PEDD\*\*

- \*\*G4: Encryption Keys which belongs to Confidentiality is protected\*\*

- \*\*G3: IM software critical asset (Service Availability) is protected\*\*

- \*\*S3: Argument of the type which the Service Availability belongs to\*\*

- \*\*C5: List of software critical asset types in PEDD\*\*

- \*\*J3: Types of software assets are according to PEDD\*\*

- \*\*G4: Service Availability which belongs to Availability is protected\*\*

### Hierarchical Tree Format:

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- G1: IM software is acceptably secure in the messaging system

- C1: Definition and description of IM software

- C2: Definition and description of the messaging system

- C3: Definition of acceptably secure

- S1: Argument of that IM software assets are under protection

- J1: Protection of IM software assets supports that IM software is acceptably secure

- G2: All identified IM software critical assets are protected

- S2: Respective arguments of IM software critical assets

- C4: List of IM software critical assets

- J2: Relationship between assets is clear and can be argued separately

- G3: IM software critical asset (User Data) is protected

- S3: Argument of the type which the User Data belongs to

- C5: List of software critical asset types in PEDD

- J3: Types of software assets are according to PEDD

- G4: User Data which belongs to Confidentiality is protected

- G3: IM software critical asset (Message History) is protected

- S3: Argument of the type which the Message History belongs to

- C5: List of software critical asset types in PEDD

- J3: Types of software assets are according to PEDD

- G4: Message History which belongs to Integrity is protected

- G3: IM software critical asset (Encryption Keys) is protected

- S3: Argument of the type which the Encryption Keys belongs to

- C5: List of software critical asset types in PEDD

- J3: Types of software assets are according to PEDD

- G4: Encryption Keys which belongs to Confidentiality is protected

- G3: IM software critical asset (Service Availability) is protected

- S3: Argument of the type which the Service Availability belongs to

- C5: List of software critical asset types in PEDD

- J3: Types of software assets are according to PEDD

- G4: Service Availability which belongs to Availability is protected

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