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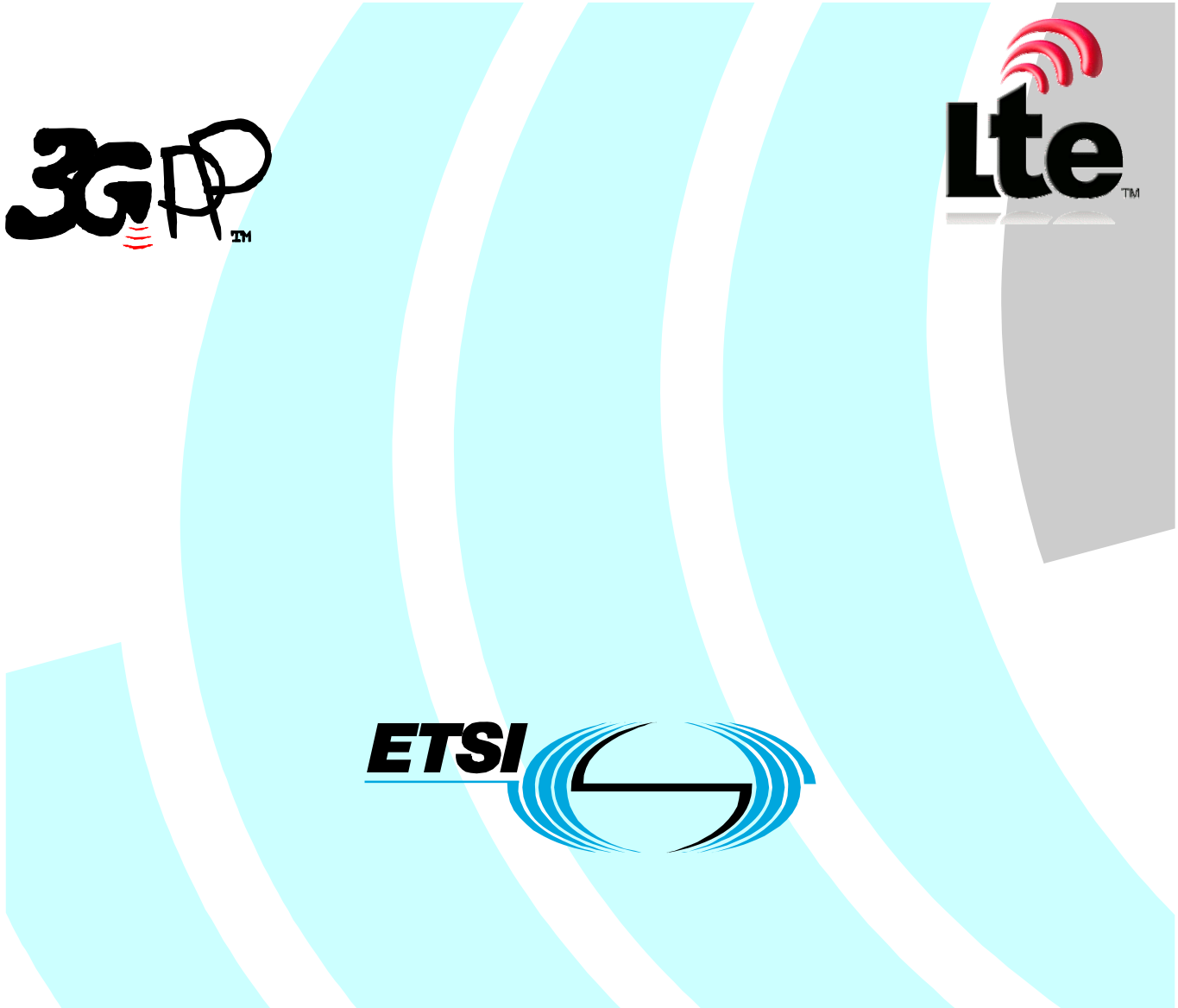
Technical Specification

Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
LTE;
Customized Alerting Tone (CAT) requirements;
Stage 1
(3GPP TS 22.182 version 8.5.0 Release 8)



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Foreword

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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1 Scope

The present document specifies the requirements and technical considerations for Customized Alerting Tone (CAT) service in both CS and PS domains, especially additional features for roaming and interoperability support.

This document considers voice and multi-media CAT, so the CAT user may experience favourable songs, multi-media clips or other customized alerting tones.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[3] 3GPP TS 22.240: "Service requirements for 3GPP Generic User Profile (GUP); Stage 1".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

Alerting Tone: An indication that is played to the calling party during establishment of a call or during an established call session indicating one of the following:

- that the called subscriber is being alerted.
- the progress of communication request (Call Forward, Call Wait etc.)
- any alerting event during a call session

Customized Alerting Tone: An Alerting Tone that is customized by the called subscriber or the calling subscriber. A Customized Alerting Tone (CAT) may e.g. be a piece of recorded or composed music, greeting words , voice, advertisement or video.

Customized Alerting Tone Service: A Customized Alerting Tone Service (CAT service) is an operator specific service by which an operator enables the subscriber to customize his alerting tone.

CAT Inter-action: is the interaction of the CAT service with other services, e.g. CAT Inter-action with Call Forwarding.

CAT Inter-working : Multiple Domains Inter-working is the interworking of a CAT service over different domains or subsystems (CS or IMS) as well as between PLMNs.

CAT content provider: A service provider that provides a set of Alerting Tones for use as CAT for subscribers of the CAT service. A 3GPP operator may be a CAT content provider.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

CAT Customized Alerting Tone

4 CAT Service Requirements

4.1 Basic functionality of the CAT service

The Customized Alerting Tone Service (CAT service) is an operator specific service by which an operator enables the subscriber to customize the alerting tone which is played to the calling party. CAT service should not negatively affect the conversation between calling and called parties, e.g. no voice/video clipping, no longer communication setup time.

- The service user shall be able to subscribe the CAT service, activate the CAT service, update the settings, e.g. to change his active CAT.
- The calling party shall be able to experience the CAT set by the called CAT service subscriber.
- The CAT shall override the default alerting tone towards the calling party.
- The operator should have the capability to store multiple CATs per CAT service subscriber.
- The CAT subscriber should be able to configure the CAT service. The CAT service should be able to select the appropriate CAT according to the rules. The CAT subscriber profile is based on the following parameters:

  1. CAT content descriptor - Pointing to the right content or combination of contents (e.g. personal prompt plus chosen music track).
  2. CAT timing descriptor - Time of day, day of week, specific date and intervals based on each of those parameters.
  3. User (called/calling party) descriptor - user ID (or group ID of users), user presence, user location, CAT user charging mode

Note 1: As location information may be restricted in some instances, the default user location may be a generic "unknown".

Note 2: Presence information for a CS user is limited to attached or detached

- The CAT service shall be able to select the appropriate CAT according to the CAT user profile.
- It should be possible to inform the user about status and changes in his CAT service, e.g. close expiry date for the CAT service or a particular CAT content.

Note: This information may be provided by existing means such as SMS and web access.

- The operator shall be able to charge for the CAT service.
- The called party shall be able to pre-configure the CAT service. The preconfigured service is played upon receipt of an incoming communication notification. This may be based upon the calling party identity.
- The calling party should be able to reject the CAT service based on rules e.g. time, the identity of the called party.
- It shall be possible for a CAT subscriber to subscribe to a CAT that is provided by a third party content provider.

4.1.1 CAT functionality in IMS domain

The functions identified here are specific to communications made between users within the IMS.

- The calling party shall be able to experience the CAT set by the called CAT service subscriber, both when the calling party is within HPLMN and when roaming.

4.1.2 CAT functionality in the CS domain

The functions identified here are specific to communications made between users within the CS domain.

- The calling party shall be able to experience the CAT set by the calling CAT service subscriber when in the HPLMN. When roaming this function may not be available.

- The calling party"s operator shall be able to configure which CAT should have priority, the one set by the called or calling CAT service subscriber. By default, if no preference is set, the CAT set by the calling party has priority.

- When the called party answers the communication the CAT shall stop.

- When the CAT is playing, the calling party shall be able to stop it, subject to service provider policy, and then he shall experience the default alerting tone for the duration of the communication establishment. The pre-requisites are that both called and calling user are subscribers to the same HPLMN and the calling user is within the HPLMN.

Note 1: The default alerting tone may be a CAT selected by the operator in the event of e.g. CAT STOP.

- The calling user shall have the possibility to copy the CAT of the called user as his own while the CAT is being played. The pre-requisites are that the called user has enabled CAT sharing, if applicable, for that instance of CAT and that both users are subscribers to the same HPLMN and the calling user is within the HPLMN.

Note 2: A CAT might also be copied offline via e.g. web interface but that functionality does not require standardisation.

Note 3: The expression "to copy the CAT" does not necessarily mean that the CAT is actually copied. It may also mean that a purchase request is being sent to the CAT service provider.

4.2 Normal procedures with successful outcome

4.2.1 Provisioning and Withdrawal

The CAT Service can be provisioned and withdrawn by the operator per subscriber. Procedures for provisioning and withdrawal are out of scope of standardisation.

4.2.2 Activation and Deactivation and Update

4.2.2.1 Activation

When a subscriber activates his CAT Service he shall be able to specify which CAT a calling user should experience, or use the operator"s default setting.

After a subscriber has activated his CAT Service a calling user should experience the CAT that was chosen by the subscriber.

4.2.2.2 Deactivation

After a subscriber has deactivated his CAT Service a calling user should experience the default alerting tone.

4.2.3 Basic scenarios

4.2.3.0 CAT to be supported in the CS domain

Alerting the called subscriber constitute the basic CAT service requirements, while other CATs may be considered optional

The following table summarize these cases:

Table 0: Normal Operation Scenarios

Scenarios	CAT Support
The called subscriber is being alerted	Mandatory
The progress of communication request (Call Forward, Call Wait, User busy etc.)	Mandatory
Others	Optional

4.2.3.1 Only called party has activated the CAT service

In the following scenarios, contained in table 1, it is assumed that the called party (B) has activated his CAT Service. Calling party (A) is calling B. The calling party has not subscribed and/or activated the CAT service.

The Customized Alerting Tone of B is CAT-B.

Table 1: Normal Operation Scenarios

	Called party B (condition)	Required behaviour
1	B, ringing	A experiences CAT-B
2	B, busy	A experiences busy indication.
3	B, no answer	First A experiences CAT-B and then the "no answer" indication after B"s "no answer" timer has expired
4	B, not reachable	A experiences "not reachable" indication

4.2.3.2 Only calling party has activated the CAT service

In the following scenarios, contained in table 2, it is assumed that only the calling party (A) has activated his CAT Service. Calling party (A) is calling B. The called party has not subscribed and/or activated the CAT service.

The Customized Alerting Tone of A is CAT-A,

Table 2: Normal Operation Scenarios

	Called party B (condition)	Required behaviour
1	B, ringing	Depending on A settings, subscriber A will experience either CAT-A or the default alerting tone.
2	B, busy	Depending on A settings, subscriber A will experience either CAT-A or the default busy tone.
3	B, no answer	Depending on A settings, subscriber A will experience either CAT-A or the default alerting tone and then the "no answer" indication after B"s "no answer" timer has expired
4	B, not reachable	A experiences "not reachable" indication

4.2.3.3 Both parties have activated the CAT service

In the following scenarios, contained in table 3, it is assumed that both the calling party (A) and called party (B) have activated the CAT Service. Calling party (A) is calling B.

The Customized Alerting Tone of B is CAT-B, the Customized Alerting Tone for A is CAT-A.

Table 3: Normal Operation Scenarios

	Called party B (condition)	Required behaviour
1	B, ringing	Depending on A settings, A experiences CAT-A, CAT-B or the default alerting tone.
2	B, busy	Depending on A settings, subscriber A will experience either CAT-A or the default busy tone.
3	B, no answer	Depending on A settings, subscriber A will experience either CAT-A, CAT-B or the default alerting tone and then the "no answer" indication after B"s "no answer" timer has expired
4	B, not reachable	A experiences "not reachable" indication

4.2.4 Interaction with Supplementary Services

The following section describes the interaction between CAT and the IMS Multimedia Telephony supplementary services defined in [22.173] and the equivalent CS supplementary services.

4.2.4.1 Originating Identification Restriction (OIR)

The OIR service takes precedence over the CAT service subscribed by the calling party or by the called party. If the called party has a CAT associated to the calling party"s identity, the service will not be invoked. If the called party has a CAT not associated to the calling party"s identity then the service is invoked.

NOTE: OIR service itself is independent from CAT service. The service logic providing CAT will handle the privacy request of the originator"s identity for invoking OIR service and decide whether to invoke CAT service.

4.2.4.2 Terminating Identification Restriction (TIR)

The TIR service takes precedence over the CAT service subscribed by the calling party or by the called party. If the calling party has a CAT associated to the called party"s identity, the service will not be invoked. If the calling party has a CAT not associated to the calling party"s identity then the service is invoked. The CAT service can take precedence

over the TIR service when the calling party has an override category, such as the police, for which the TIR service is not applied.

4.2.4.3 Communication Diversion (CDIV)

Additionally, for call-forwarding scenarios, it is assumed that Forwarded-to-party (C) has activated his CAT Service. The Customized Alerting Tone of C is called CAT-C. The Customized Alerting Tone of D is called CAT-D. The calling party has not subscribed and/or activated the CAT service. If applicable, the CAT experienced by the calling user should be the one customized for the user by the connected-to-party

In the following table, all the CATs that A experiences in the column "Required behaviour" may be replaced by CAT-B, if the operator wants to deploy so.

Table 4: Supplementary Service Interaction Scenarios

	Called party B (condition)	Forwarded-to-party (condition)	Required behaviour
1	B has activated Call Forwarding Unconditional (CFU) to C and A"s call is forwarded to C	C, ringing	A experiences CAT-C
2	B has activated Call Forwarding on Busy (CFB) to C, B is busy and A"s call is forwarded to C	C, ringing	A experiences CAT-C
3	B has activated Call Forwarding on No Reply (CFNRy) to C and A"s call is forwarded to C	C, ringing	A experiences CAT-B until B"s CFNRy timer has expired. Then experiences CAT-C.
4	B has activated Call Forwarding on Not Reachable (CFNRc) to C and A"s call is forwarded to C	C, ringing	A experiences CAT-C
5	B has activated a Call Forwarding to C and C has activated a Call Forwarding to D so A"s call is forwarded to D	Tandem Forwarding: C has activated a Call Forwarding to D and A"s call is forwarded to D	A experiences CAT-D

Table 5 describes when the calling party has subscribed and activated the CAT service.

Table 5: Supplementary Service Interaction Scenarios

	Called party B (condition)	Forwarded-to-party (condition)	Required behaviour
1	A has activated CAT-A and B has activated Call Forwarding Unconditional (CFU), Call Forwarding on Busy (CFB) or Call Forwarding on Not Reachable (CFNRc) to C. A"s call is forwarded to C	C, ringing	Depending on operator settings, subscriber A will experience the CAT set for user B, C or the default ringing tone.
2	B has activated Call Forwarding on No Reply (CFNRy) to C and A"s call is forwarded to C	C, ringing	A experiences CAT-A for user B until B"s CFNRy timer has expired. Then experiences CAT-A for user C.

- It should be possible to configure the CAT service so that different CATs are used according to user profile (e.g. Date, Time, Call status)

4.2.4.4 Communication Waiting (CW)

If the called party has activated the communication waiting and he is busy, depending on the operator"s settings, the calling party will experience either the CAT service or the default communication waiting indication.

Table 6: Supplementary Service Interaction Scenarios

	Called party B (condition)	Forwarded-to-party (condition)	Required behaviour
1	A has activated CAT and B has activated call waiting. B is engaged in an active or held call.		Depending on A settings, subscriber A will experience either CAT-A or the default call waiting tone.
2	B has activated CAT and B has activated call waiting and B is engaged in an active or held call.		Depending on A settings, subscriber A will experience either CAT-B or the default call waiting tone.

4.2.4.5 Explicit Communication Transfer (ECT)

The called party (A) has activated the ECT service and the communication is transferred to C. The calling party will only experience the CAT from the C in case of blind transfer and if C has activated the CAT service. In case of consultative transfer the calling party will not experience the CAT service.

4.3 CAT service configuration

- A service subscriber, that has activated his CAT service, shall be able to select and update his CAT settings - e.g. select a different CAT than the current one. It should be possible to charge the subscriber for selection / update of the CAT settings.

- The calling user should be able to "copy" the last CAT that was experienced in the ongoing call, as his own CAT.

Note: Operators should be aware that copyrights may be infringed and therefore the operator may need to take appropriate action.

4.4 The content of CAT

The content of CAT can be music, voice, text, or video.

In IMS the CAT may be composed of music, voice, text, video, which can be provided by the CAT content provider, operator or by the user himself.

If the calling party is in the CS domain the CAT may be composed of music, voice, video, which can be provided by the CAT content provider, operator or by the user himself.

The content of the CAT service may be dynamically created, possibly taking into account information available in the network, e.g. calling and/or called user"s location and/or presence information.

4.5 Inter-working CAT

4.5.1 CAT Interworking between different PLMNs

It is important for a good user experience that CAT works as predicted independently if the called or the calling user is roaming. A standardized CAT solution should therefore fulfil the following end user requirements:

- When calling a user of another PLMN, the calling party shall be able to experience the CAT set by the called party.
- When calling a user of another PLMN, the calling party shall be able to experience the CAT set by the calling party.
- When roaming to another PLMN, the calling party shall be able to experience the CAT set by the called party.
- The calling party shall be able to experience the CAT set by the called party who is roaming to another PLMN.

4.5.2 Interworking between CS and IMS based CAT services

The CS and IMS based CAT services should fulfil the following end user requirements:

- When calling a user in the other domain (CS or IMS), the calling party shall be able to experience the CAT set by the called party.
- When calling a user in the other domain (CS or IMS), the calling party shall be able to experience the CAT set by the calling party.
- When calling a CAT service subscriber of another domain (CS or IMS), the calling party should be able to copy the CAT of the called user as his own CAT. The pre-requisites are that the called user has enabled CAT sharing, if applicable, for that instance of CAT and that both users are subscribers to the same HPLMN.
- When calling a CAT service subscriber of another domain (CS or IMS), the calling party should be able to stop an ongoing CAT.

The scope of this interoperability may result in a limited service capability.

5 CAT Service Interoperability

5.1 Interaction with Charging

The operator shall be able to charge for the CAT service according to the different charging mode (see the table below):

Index	Charging mode	Example
1	Service monthly fee	Fixed (for example monthly) expense for the CAT service.
2	Fee of purchasing CAT	A subscriber is charged by the system when he purchases CAT, including copying CAT.
3	Fee of configuring CAT	A subscriber may be charged by the system when he set his CAT or updates his CAT setting.
4	Fee per CAT usage	Advertising CAT. High/low quality CAT

.

5.2 Interaction with User Profile

- It shall be possible to store a User Profile relevant to CAT.
- It shall be possible to access/manage CAT User Profile by a user/subscriber and/or CAT service provider.
- It shall be possible to manage access rights for
  - User Profile components
  - Media content

5.3 CAT Fall back

It shall be possible that if the CAT can"t be played for some reason (for example, the CAT system fails, or the CAT content expiry is up, or other reasons), the calling party will experience the traditional prompt tone instead of the CAT,

When the multi-media CAT fails to be played in some condition (such as the caller roams from 3G network to 2G network), the voice CAT may be played instead if possible.

Annex A (informative): Change history

Change history											
Change history											
TSG SA#	**SA Doc.**	**SA1 Doc**	**Spec**	**CR**	**Rev**	**Rel**	**Cat**	**Subject/Comment**	**Old**	**New**	**WI**
SP-38	SP-070842	S1-071674	22.182	0010	1	Rel-8	C	Removal of unworkable requirements	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071675	22.182	0006	1	Rel-8	C	Called party CAT selection	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071676	22.182	0008	1	Rel-8	C	CAT Rules	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071677	22.182	0009	1	Rel-8	C	Copy CAT	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071678	22.182	0011	1	Rel-8	C	CAT Calling	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071679	22.182	0012	1	Rel-8	C	CAT to CAT	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071804	22.182	0003	1	Rel-8	C	Clarification on CS CAT Provisioning	8.0.0	8.1.0	CAT
SP-38	SP-070842	S1-071805	22.182	0013	1	Rel-8	F	Update the CAT Interaction definition	8.0.0	8.1.0	CAT
SP-38	SP-070843	S1-071846	22.182	0004	2	Rel-8	B	TISPAN text for CTMIF filtering services	8.0.0	8.1.0	TISCMI-R8
SP-39	SP-080029	S1-080271	22.182	0014	1	Rel-8	C	Clarification of CS and IMS based CAT	8.1.0	8.2.0	CAT
SP-39	SP-080029	S1-080161	22.182	0015	1	Rel-8	B	Addition of a list of CAT to be supported in the CS domain	8.1.0	8.2.0	CAT
SP-41	SP-080492	S1-082347	22.182	017	-	Rel-8	F	CAT service notification	8.2.0	8.2.0	CAT
SP-42	SP-080767	S1-083434	22.182	0018	1	Rel-8	F	Removal of DRM note from CAT	8.3.0	8.4.0	CAT
SP-42	SP-080767	S1-084171	22.182	0020	-	Rel-8	F	Alignment of Stage 1 IMS CAT with Stage 3	8.3.0	8.4.0	CAT
SP-44	SP-090368	S1-091401	22.182	0021	-	Rel-8	F	Clarification on the interaction with CAT and OIR	8.4.0	8.5.0	CAT

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