

NGA Telephony SIP User Profile Example Call Flows

NICC Standards Limited

Michael Faraday House,
Six Hills Way,
Stevenage
SG1 2AY

Tel.: +44(0) 20 7036 3636

Registered in England and Wales under number 6613589

NOTICE OF COPYRIGHT AND LIABILITY

© 2012 NICC Standards Limited

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be that printing on NICC printers of the PDF version kept on a specific network drive within the NICC.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other NICC documents is available at:

<http://www.niccstandards.org.uk/publications/>

If you find errors in the present document, please send your comments to:

<mailto:help@niccstandards.org.uk>

Copyright

All right, title and interest in this document are owned by NICC Standards Limited ("NICC") and/or the contributors to the document (unless otherwise indicated that copyright is owned or shared with a third party). Such title and interest is protected by United Kingdom copyright laws and international treaty provisions.

The contents of the document are believed to be accurate at the time of publishing, but no representation or warranty is given as to their accuracy, completeness or correctness. You may freely download, copy, store or distribute this document provided it is not modified in any way and it includes this copyright and liability statement.

You may not modify the contents of this document. You may produce a derived copyright work based on this document provided that you clearly indicate that it was created by yourself and that it was derived from this document and provided further that you ensure that any risk of confusion with this document is avoided.

Liability

Whilst every care has been taken in the preparation and publication of this document, neither NICC, nor any working group, committee, member, director, officer, agent, consultant or adviser of or to, or any person acting on behalf of NICC, nor any member of any such working group or committee, nor the companies, entities or organisations they represent, nor any other person contributing to the contents of this document (together the "Generators") accepts liability for any loss or damage whatsoever which may arise from the use of or reliance on the information contained in this document or from any errors or omissions, typographical or otherwise in the contents.

Nothing in this document constitutes advice. Nor does the transmission, downloading or sending of this document create any contractual relationship. In particular no licence is granted under any intellectual property right (including trade and service mark rights) save for the above licence to download copy, store and distribute this document and to produce derived copyright works.

The liability and responsibility for implementations based on this document rests with the implementer, and not with any of the Generators. If you implement any of the contents of this document, you agree to indemnify and hold harmless each Generator in any jurisdiction against any claims and legal proceedings alleging that the use of the contents by you or on your behalf infringes any legal or other right of any of the Generators or any third party.

None of the Generators accepts any liability whatsoever for any direct, indirect or consequential loss or damage arising in any way from any use of or reliance on the contents of this document for any purpose.

The NICC Standards Web site contains the definitive information on the [IPR Policy and Anti-trust Compliance Policy](#)

If you have any comments concerning the accuracy of the contents of this document, please write to:

The Technical Secretary, NICC Standards Ltd.,

Michael Faraday House,
Six Hills Way,
Stevenage
SG1 2AY

Contents

Intellectual Property Rights	4
Foreword	4
1 Scope	5
2 References	5
2.1 Normative references	5
3 Definitions, symbols and abbreviations	5
3.1 Definitions	5
3.2 Abbreviations	5
4 Generic Call Flows	7
4.1 Connecting a held user to a network based announcement	7
Annex A (informative): ATA example call flows	8
A.1 Basic Call Setup	9
A.1.1 En-bloc sending mode	9
A.1.1.1 ATA to ATA within one NGA-T Service Provider network	9
A.1.1.2 ATA to PSTN within one NGA-T Service Provider network	11
A.1.1.3 PSTN to ATA within one NGA-T Service Provider network	13
A.1.2 Overlap sending mode	15
A.1.2.1 ATA to PSTN using Multiple INVITE option	15
A.1.2.2 ATA to PSTN using In-Dialogue option	16
A.2 Call Release	17
A.3 Supplementary Services	18
A.3.1 Call Return (1471-3)	18
A.3.1.1 Call Return using 302 Moved Temporarily	18
A.3.1.2 Call Return using Forked Responses	20
A.3.1.3 Call Return using Update method	22
A.3.2 3-Way Call	24
A.3.2.1 Hold for Enquiry Call – Successful setup	24
A.3.2.2 Hold for Enquiry Call – Setup failure	26
A.3.2.3 Enquiry Call phase – Active remote party clears	27
A.3.2.4 Toggle	28
A.3.2.5 Flash to release remote party	29
A.3.3 Simplified Call Waiting	30
A.3.3.1 User A flashes to accept waiting call (With Waiting Announcement)	30
A.3.3.2 User A hangs up to accept waiting call	32
A.3.3.3 User A ignores waiting call	34
A.3.3.4 User A clears as waiting call arrives	35
A.3.3.5 User A flashes to toggle between active and held users	37
History	38

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to NICC. Pursuant to the [NICC IPR Policy](#), no investigation, including IPR searches, has been carried out by NICC. No guarantee can be given as to the existence of other IPRs which are, or may be, or may become, essential to the present document.

Foreword

This NICC Document (ND) has been produced by NICC APWG

1 Scope

The present document contains example call flows for services that can be offered across the NGA-T SIP interface as described in ND1033 [3]. These flows are not definitive and show how any one Next Generation Access (NGA-T) Service Provider may wish to implement a particular service.

2 References

For the particular version of a document applicable to this release see [ND1610](#) [1].

2.1 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- | | |
|-----|---|
| [1] | ND1610 Next Generation Networks, Release Definition |
| [2] | ND1645 NGA Telephony; Architecture & Requirements |
| [3] | ND1033 NGA Telephony SIP User Profile |

3 Definitions, symbols and abbreviations

3.1 Definitions

Next Generation Access Telephony (NGA-T) Service Provider : As defined in ND1645 [2].

3.2 Abbreviations

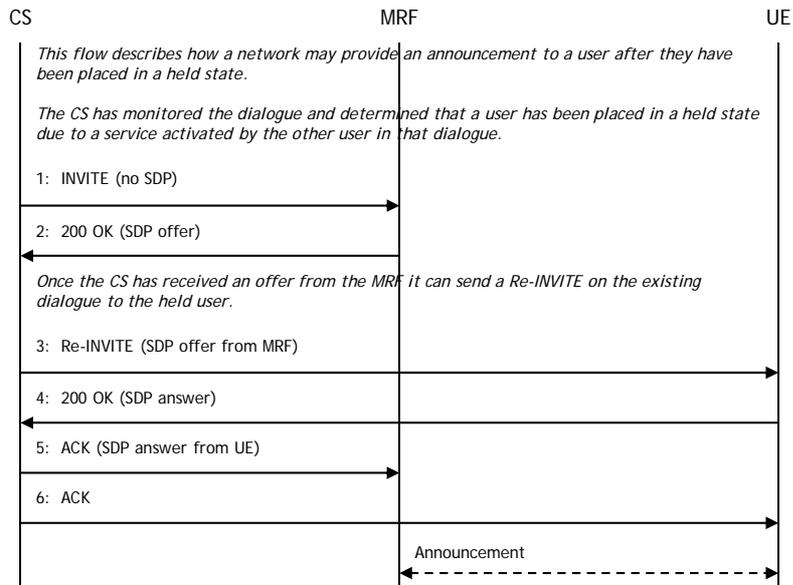
ACK	SIP Acknowledgement message
ACM	ISUP Address Complete Message
ANM	ISUP Answer Message
ATA	Analogue Terminal Adaptor
CS	Call Server
CW	Call Waiting
IAM	ISUP Initial Address Message
INFO	SIP Information Message
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
MGC	Media Gateway Controller
MRF	Media Resource Function
NGA	Next Generation Access
NGA-T	NGA-Telephony
NICC	NICC Standards Limited
P-E-M	P-Early-Media
PSTN	Public Switched Telephone Network
Req-URI	Request-Uniform Resource Identifier

RFC	Request For Comment
SDP	Session Description Protocol
SIP	Session Initiation Protocol
UE	User Entity
URI	Uniform Resource Identifier

4 Generic Call Flows

ED: Generic calls flows are for further study

4.1 Connecting a held user to a network based announcement



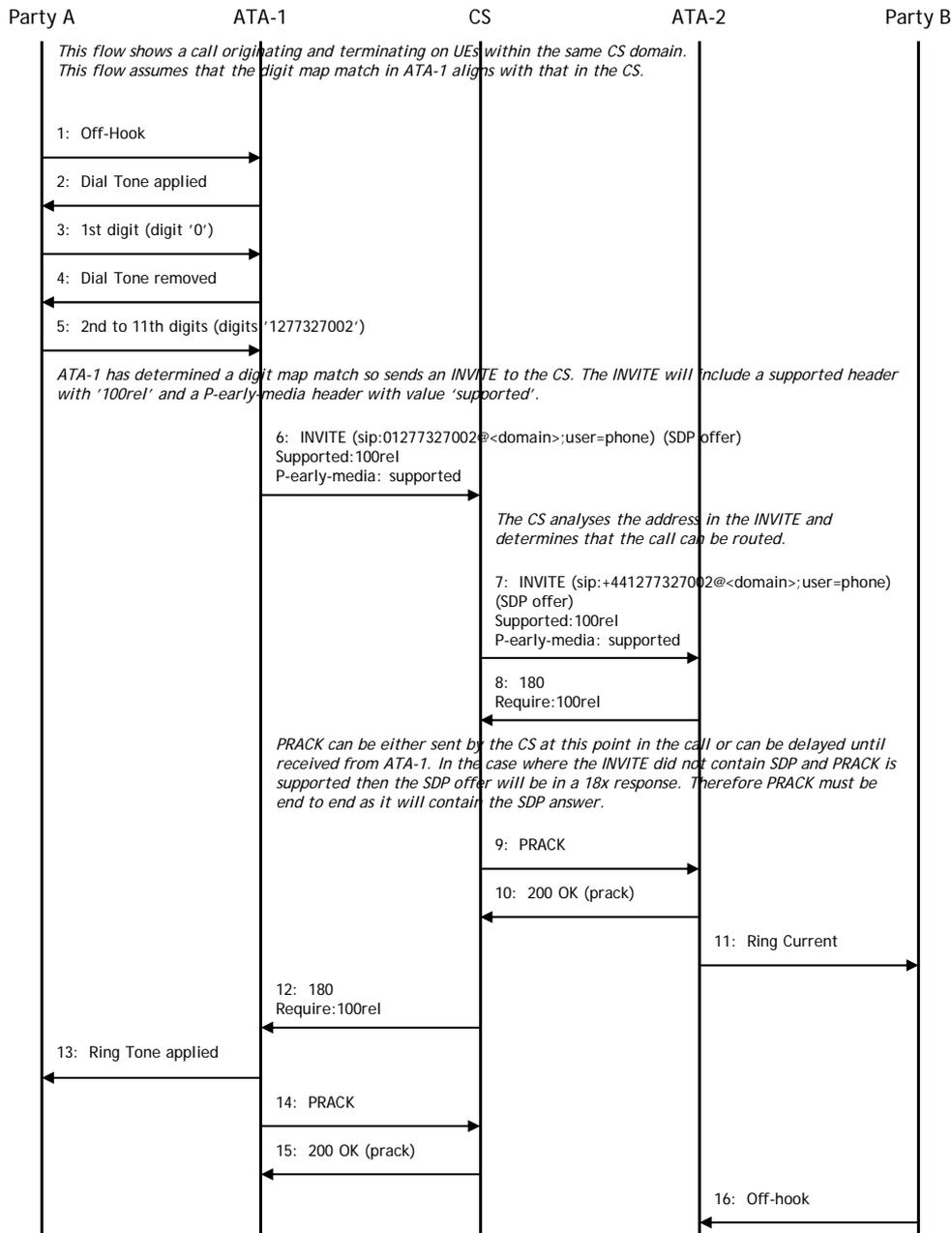
Annex A (informative): ATA example call flows

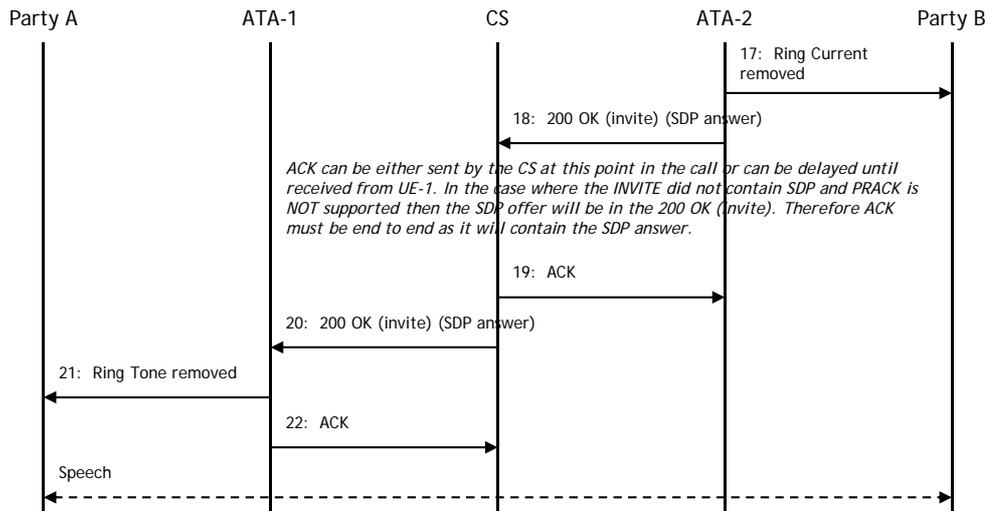
The flows in this annex have been produced to align with the ATA actions as described in Annex A of ND1033. It is entirely possible that other SIP endpoints could use the same signalling flows to provide telephony services.

A.1 Basic Call Setup

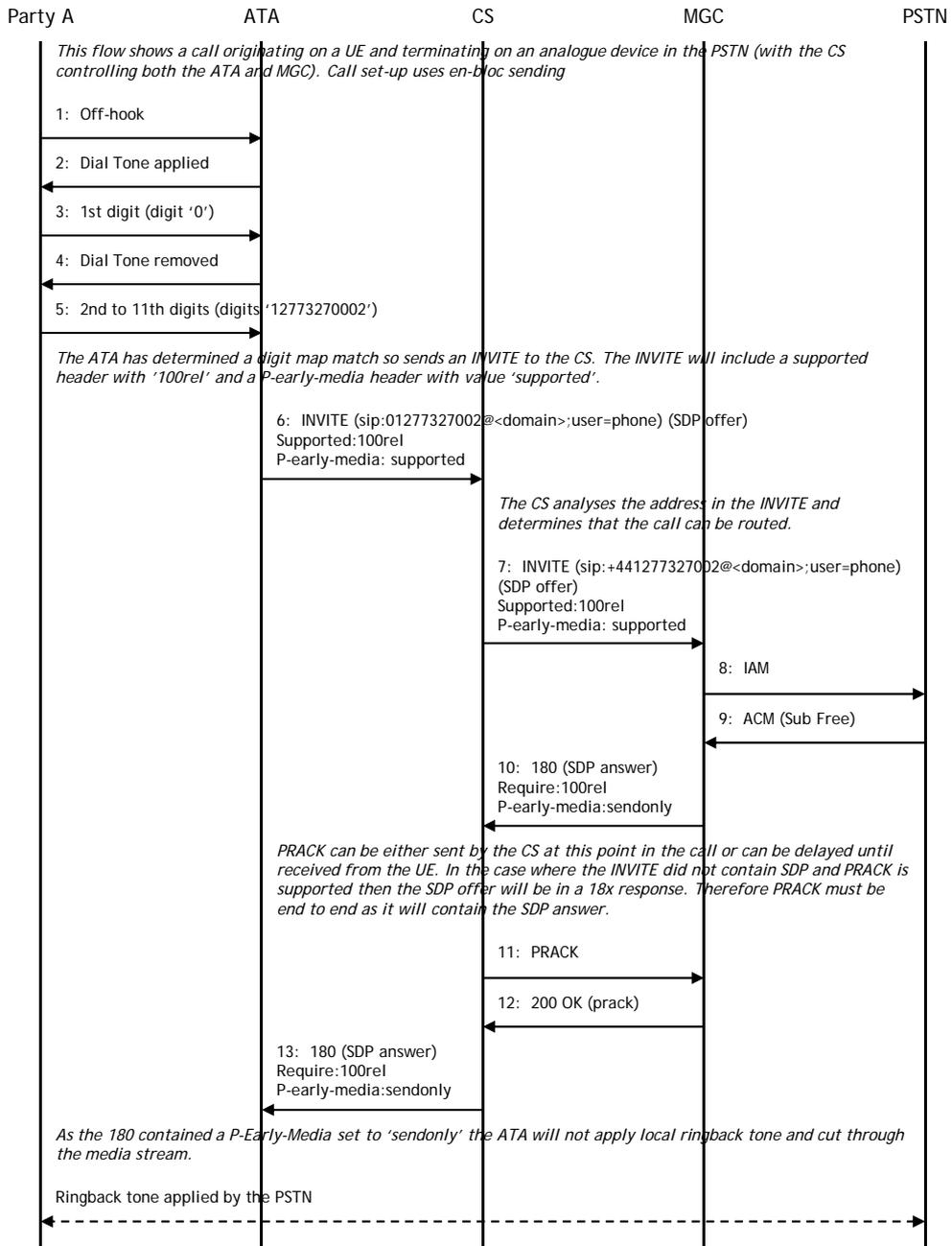
A.1.1 En-bloc sending mode

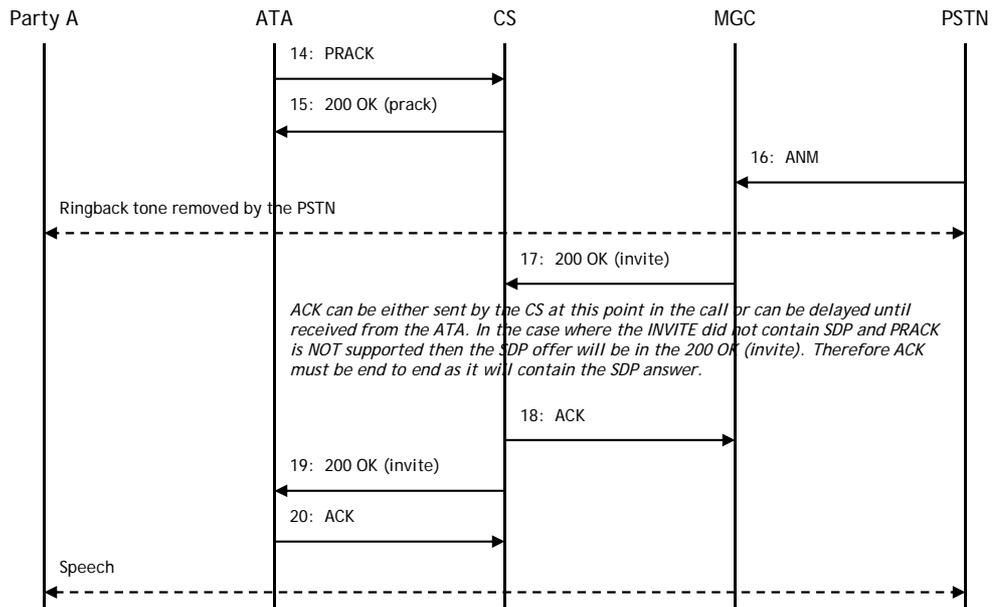
A.1.1.1 ATA to ATA within one NGA-T Service Provider network



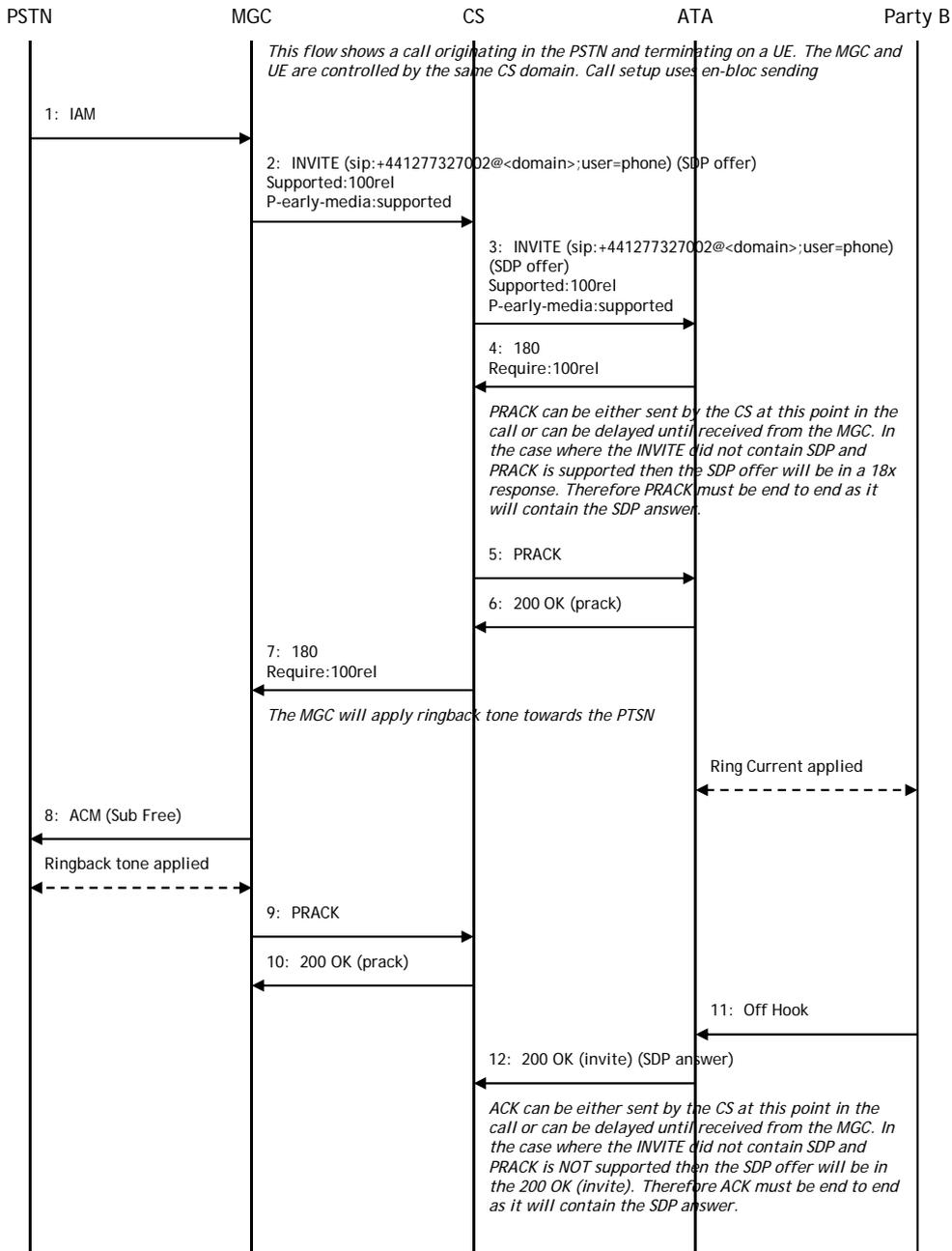


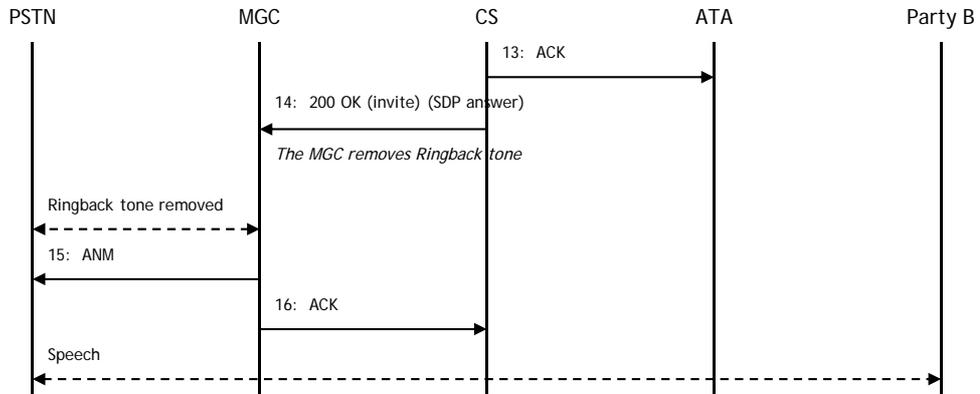
A.1.1.2 ATA to PSTN within one NGA-T Service Provider network





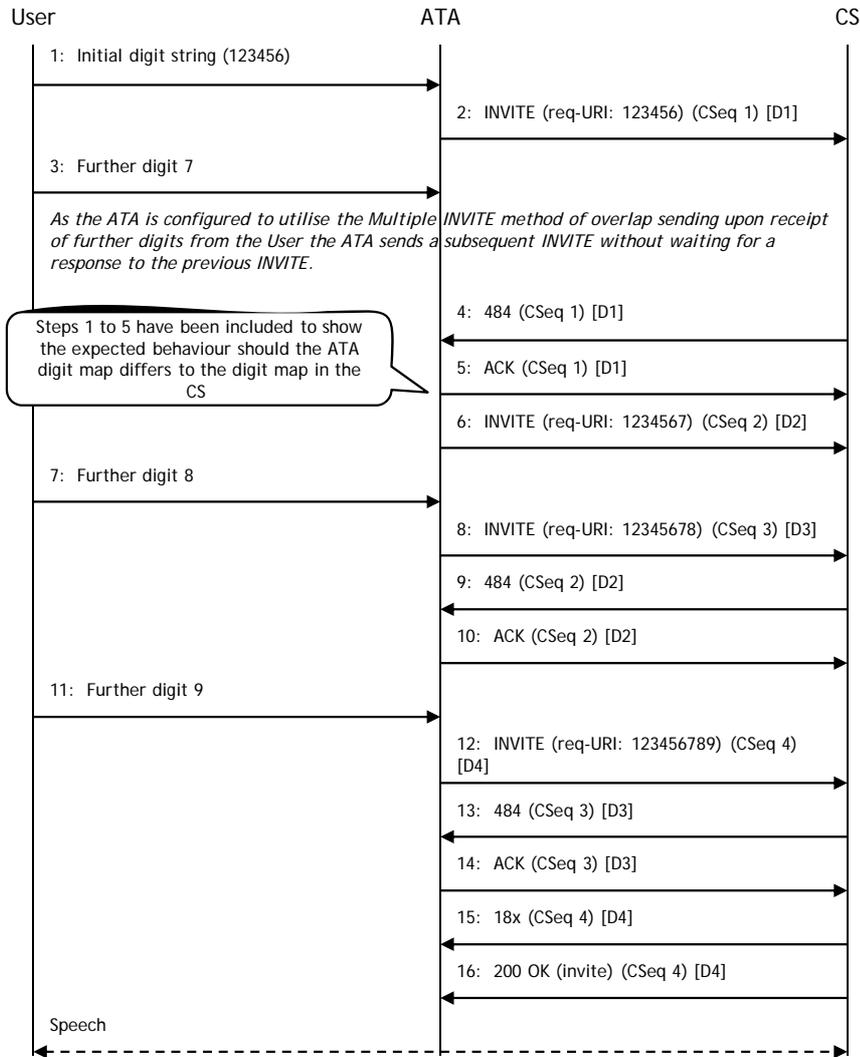
A.1.1.3 PSTN to ATA within one NGA-T Service Provider network



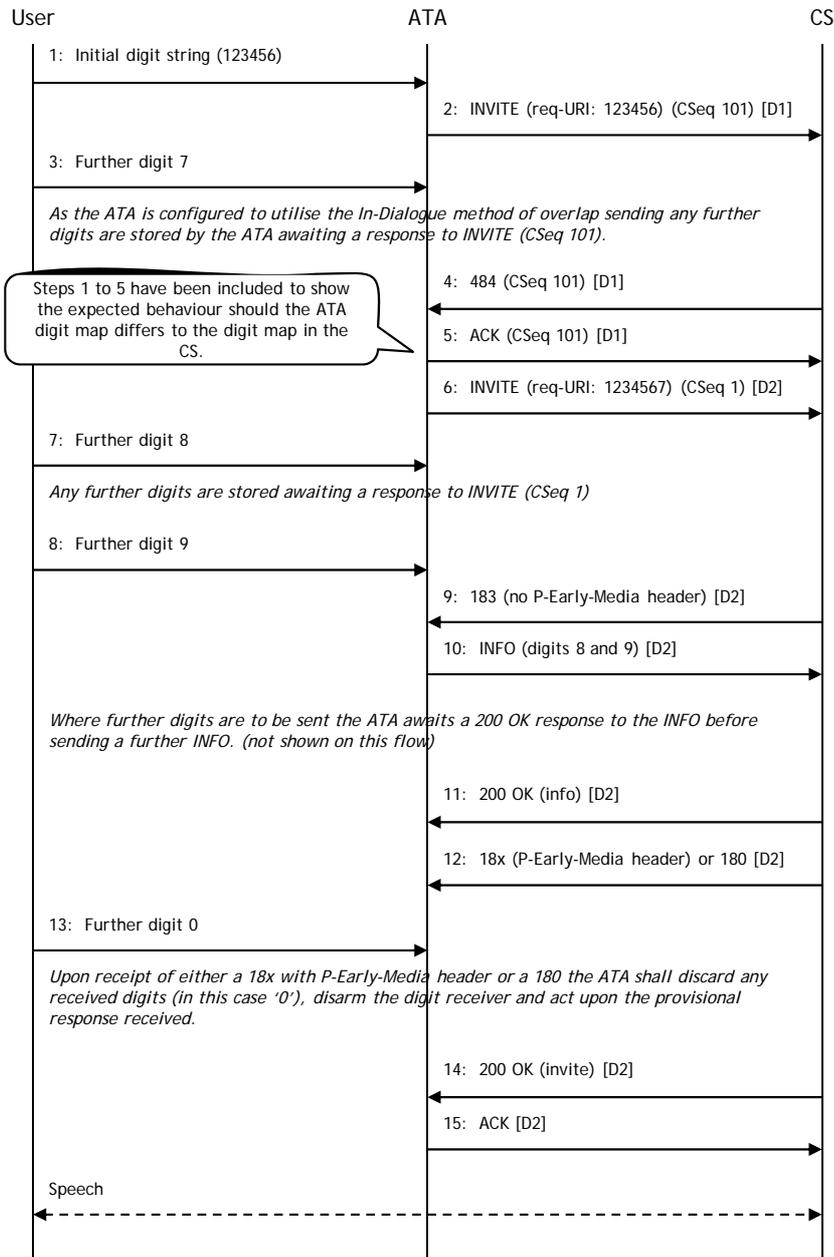


A.1.2 Overlap sending mode

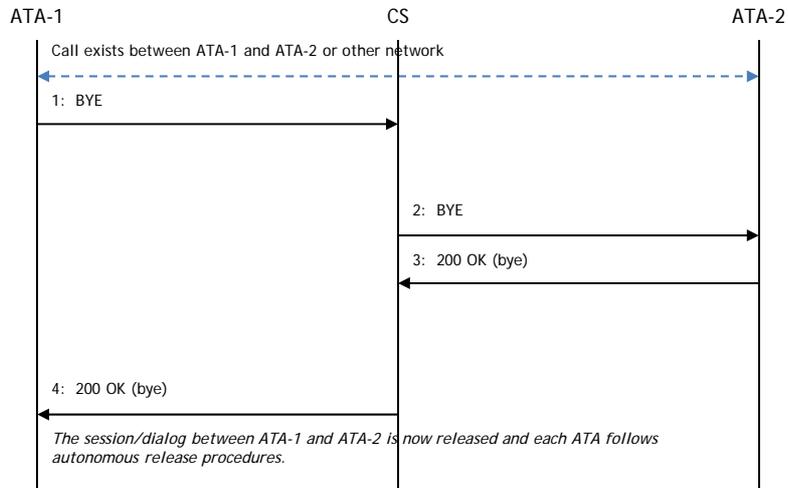
A.1.2.1 ATA to PSTN using Multiple INVITE option



A.1.2.2 ATA to PSTN using In-Dialogue option



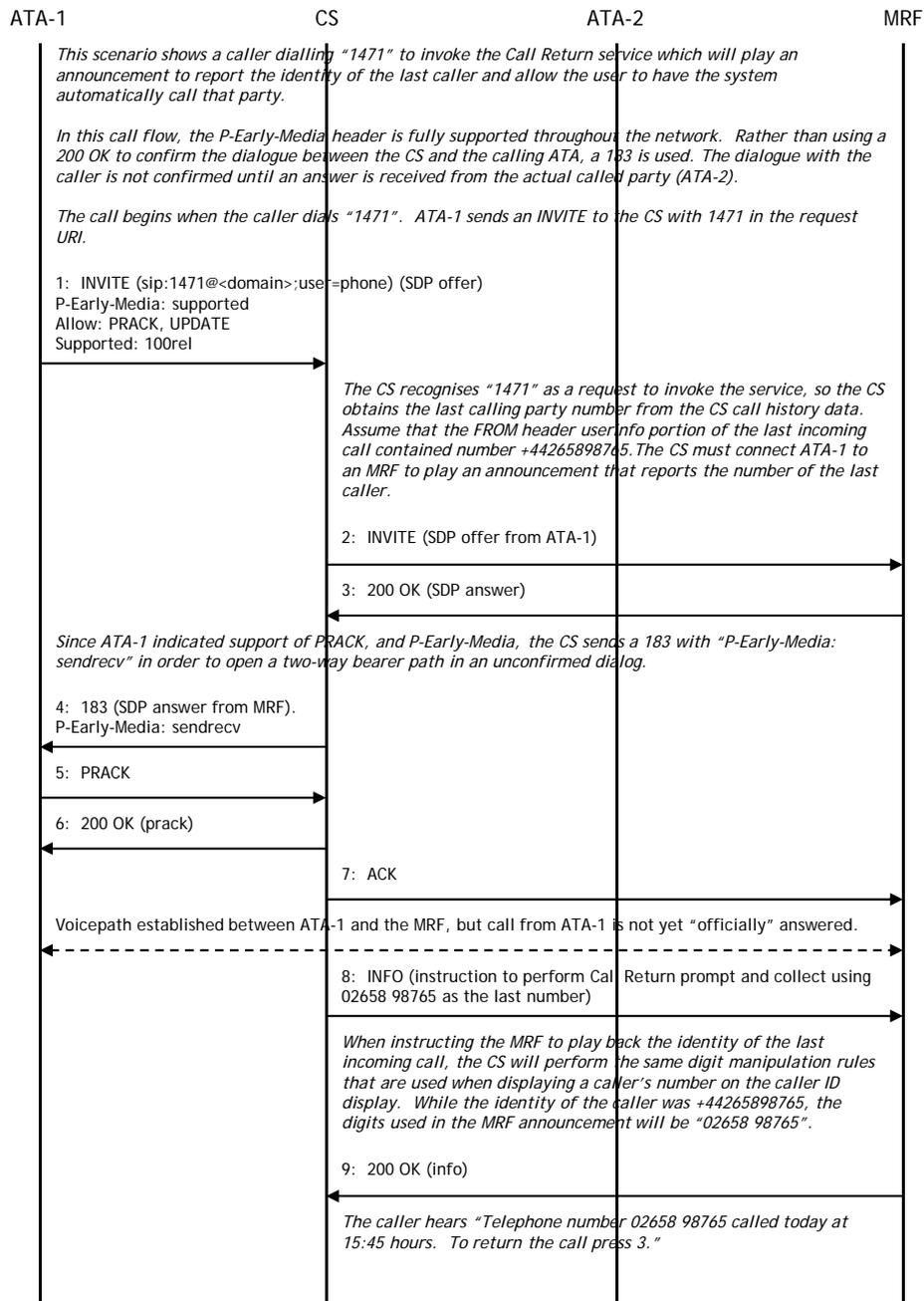
A.2 Call Release

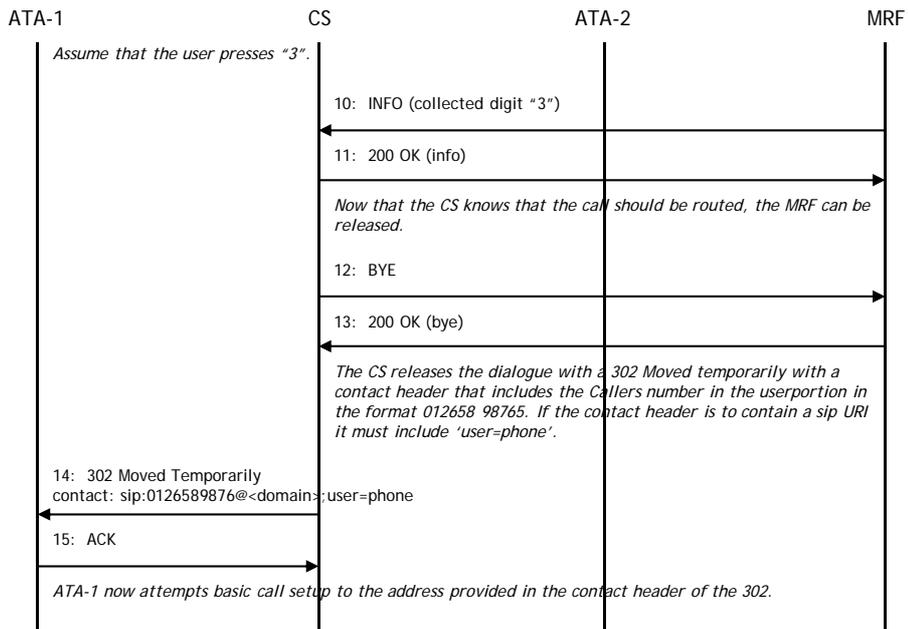


A.3 Supplementary Services

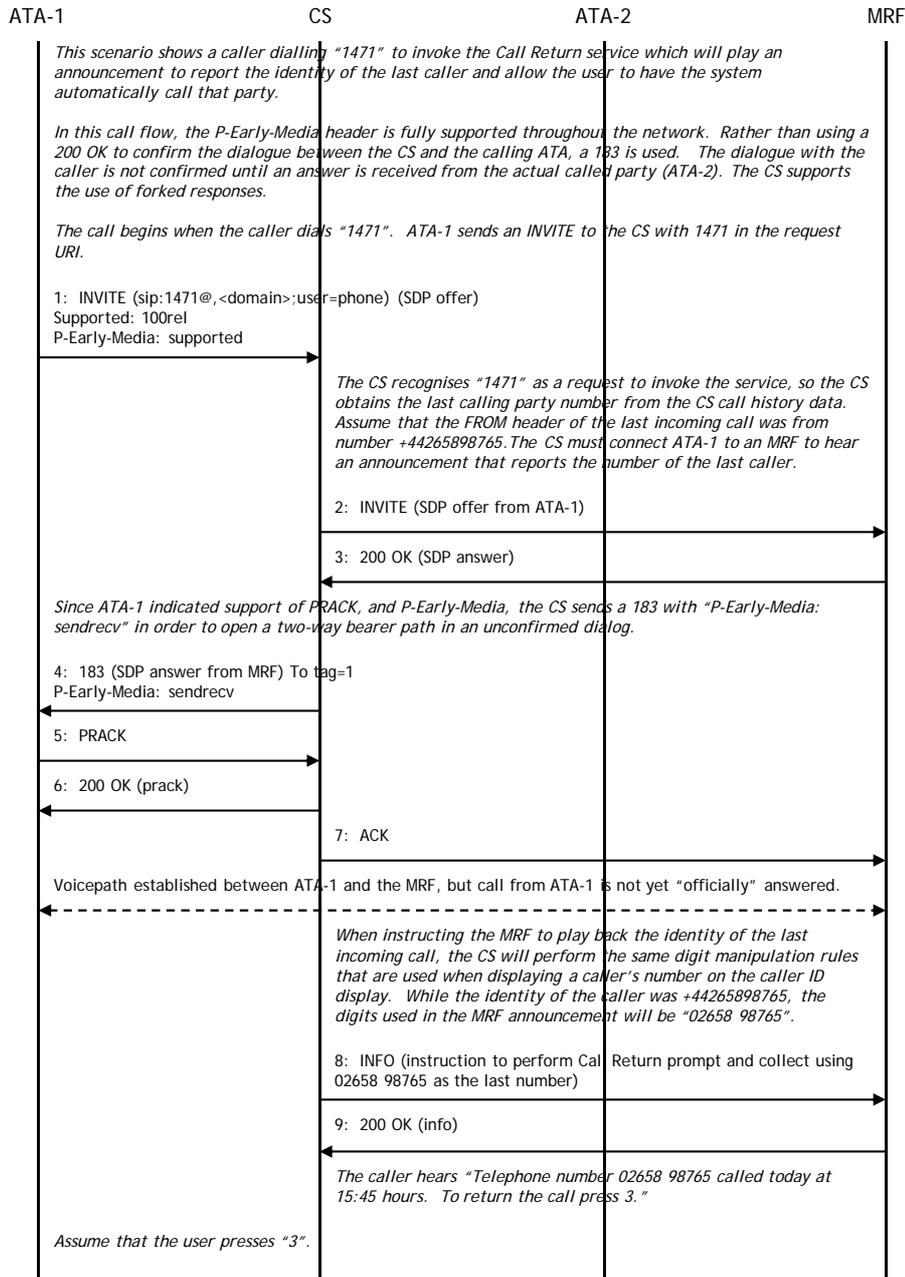
A.3.1 Call Return (1471-3)

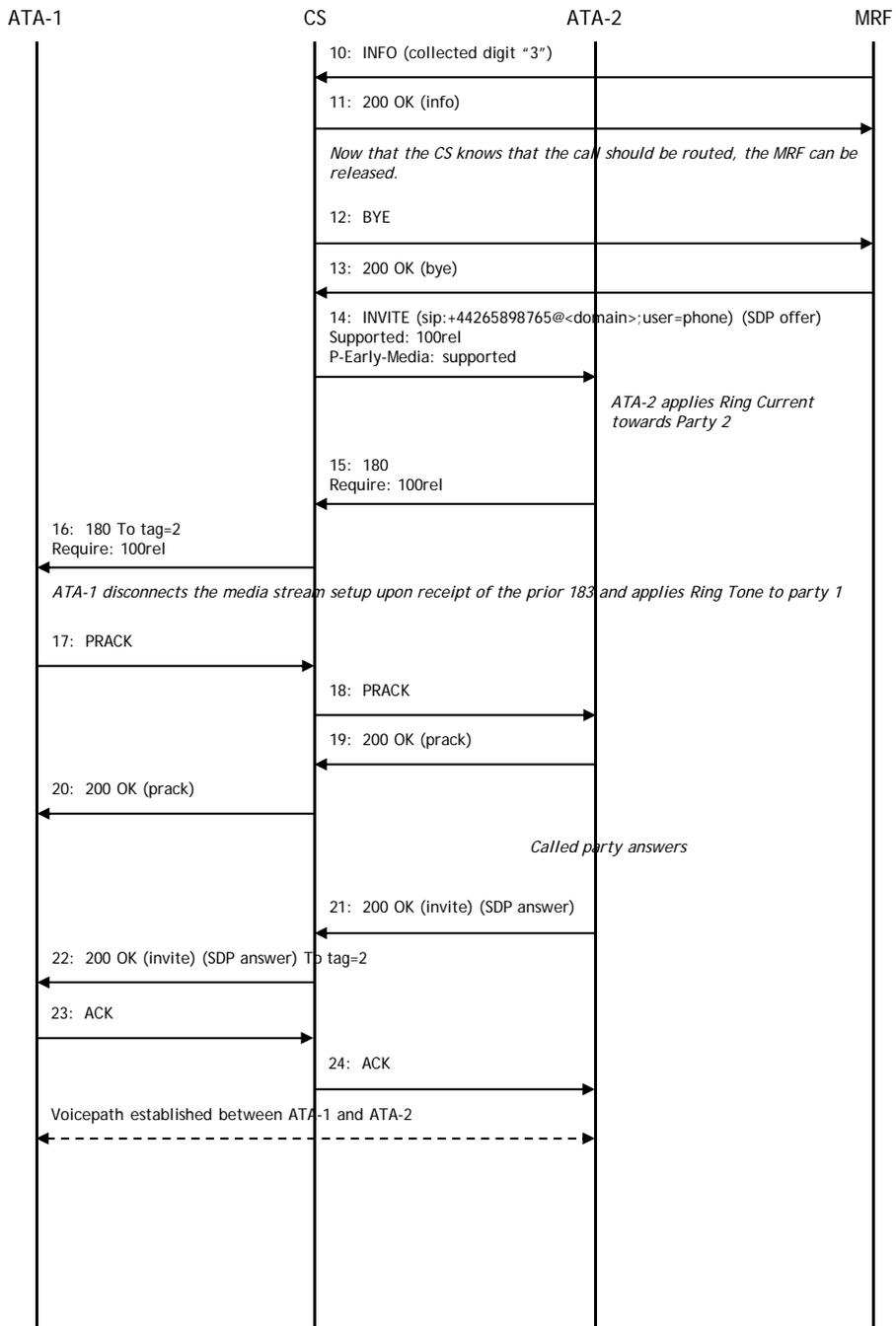
A.3.1.1 Call Return using 302 Moved Temporarily



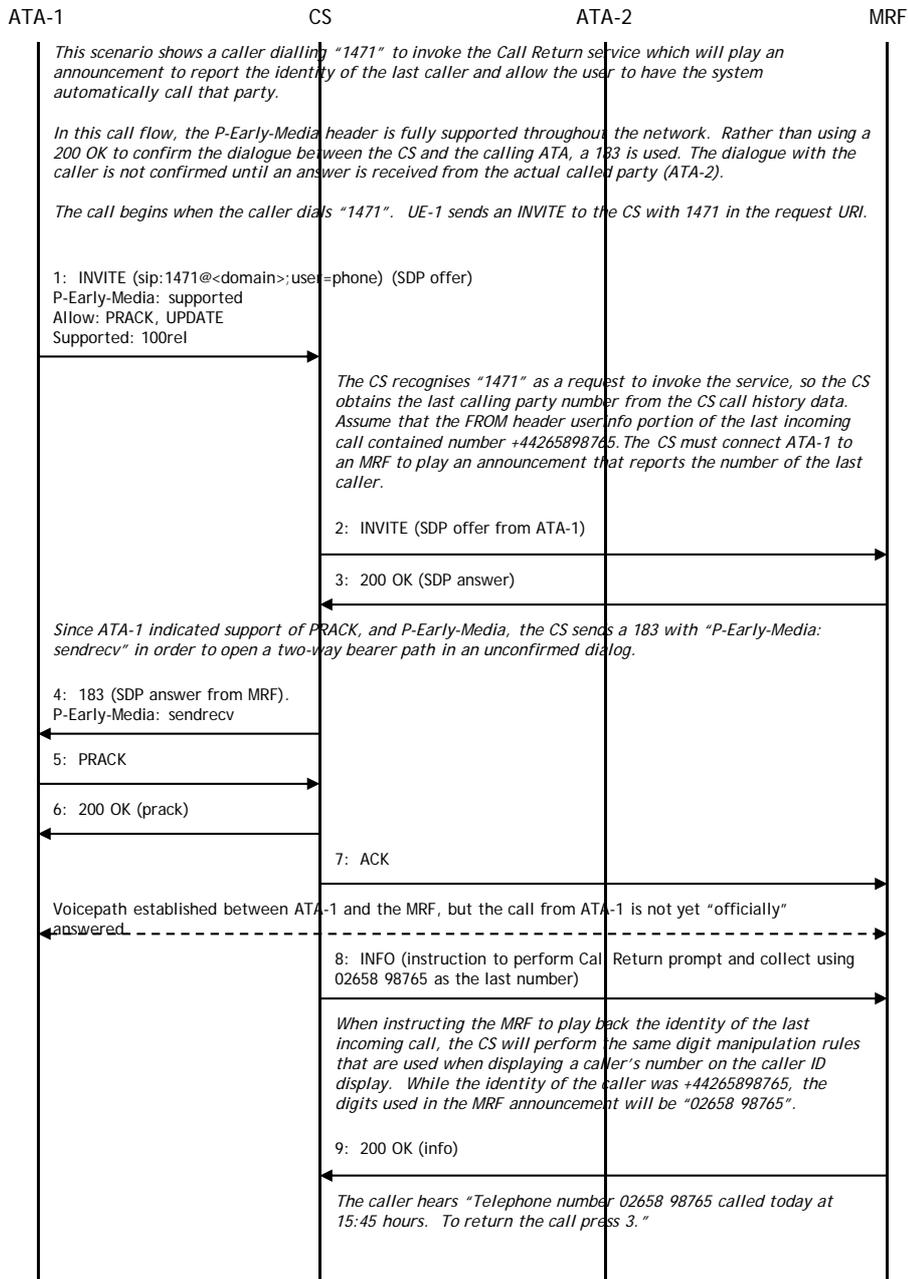


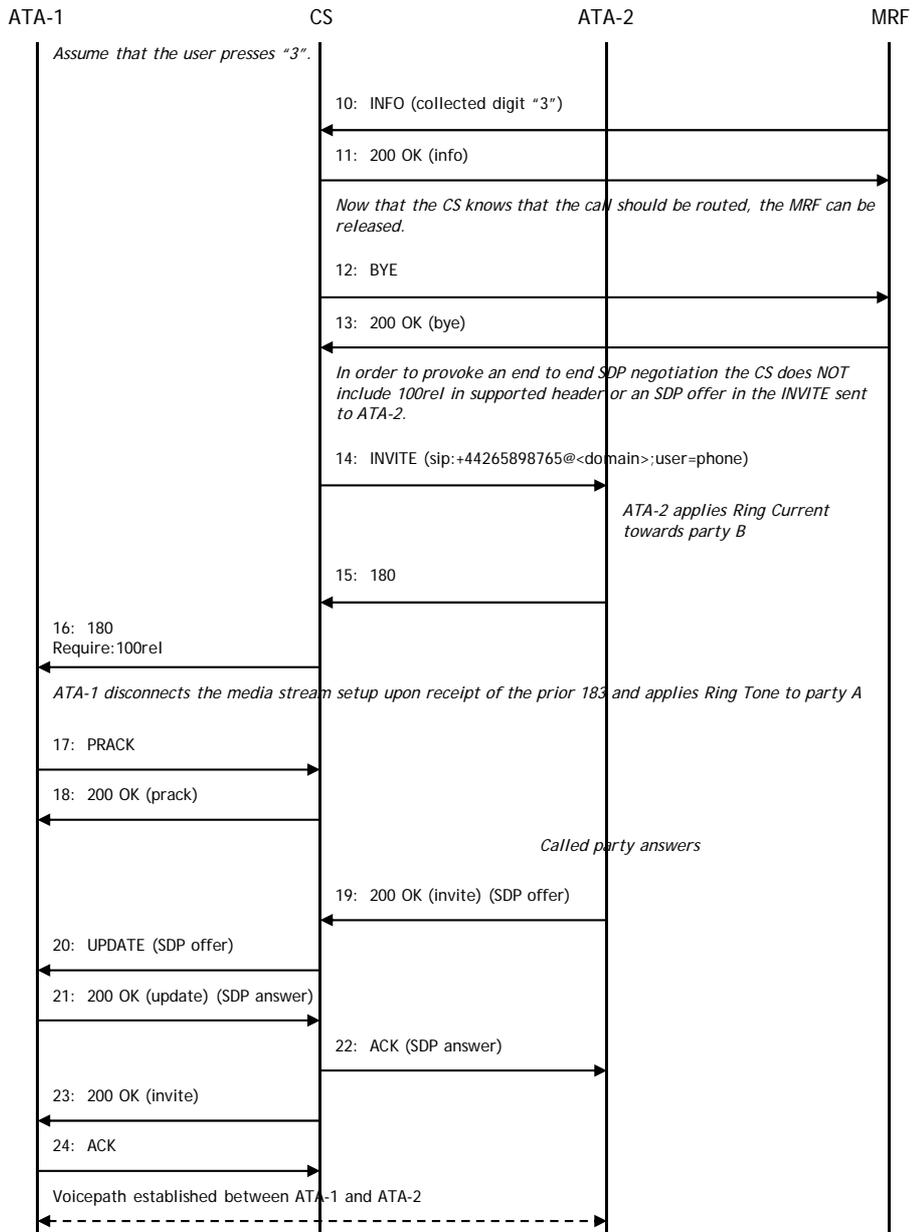
A.3.1.2 Call Return using Forked Responses





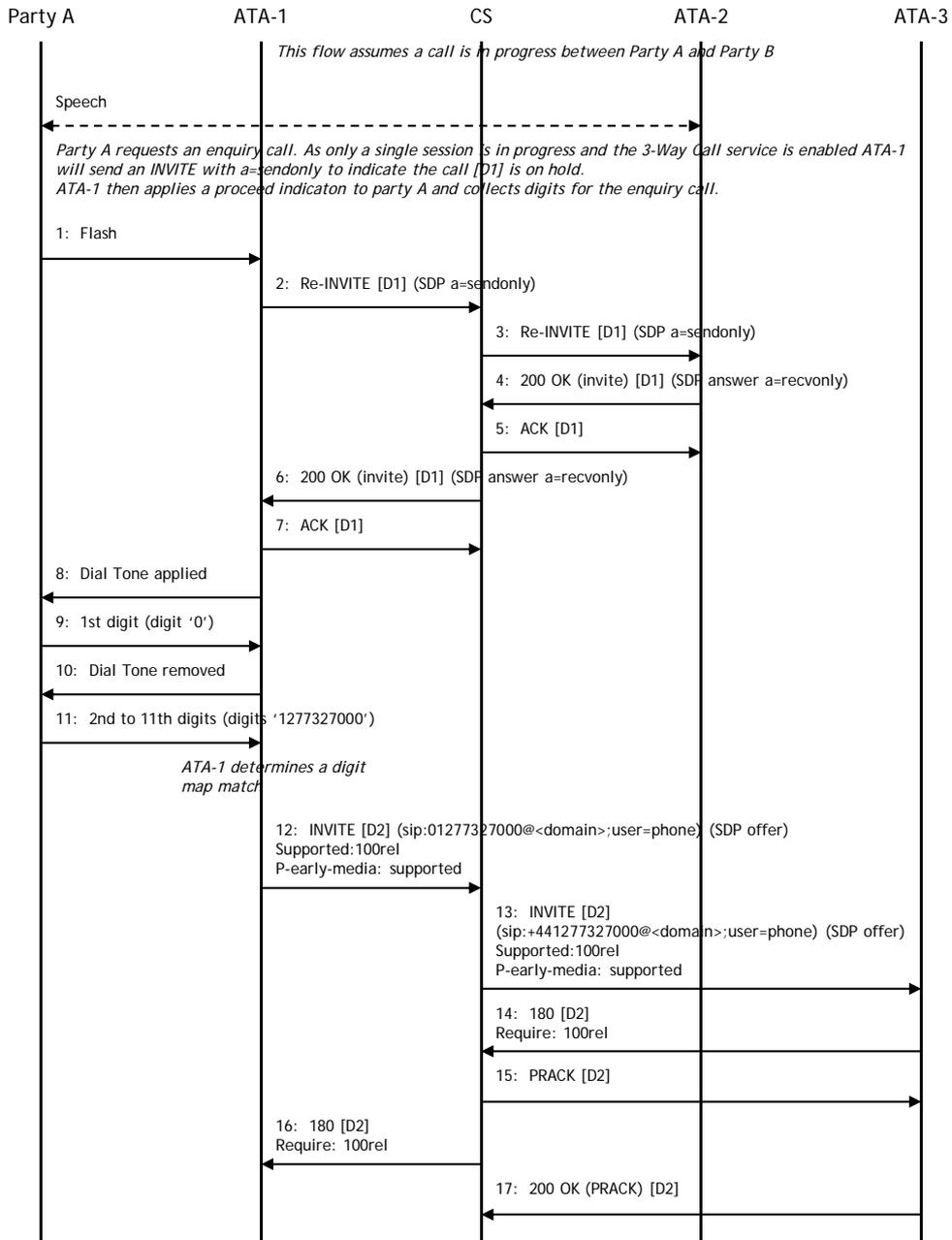
A.3.1.3 Call Return using Update method

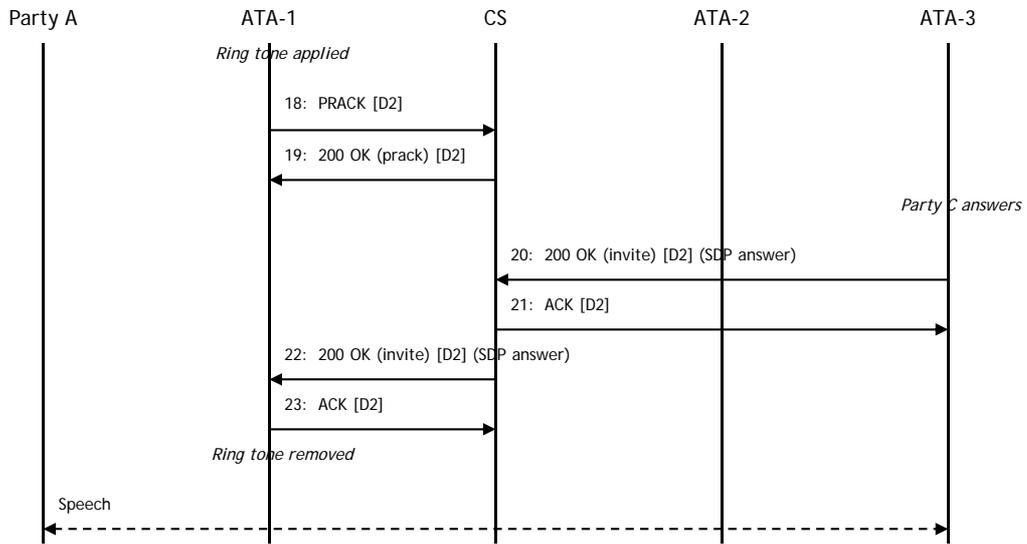




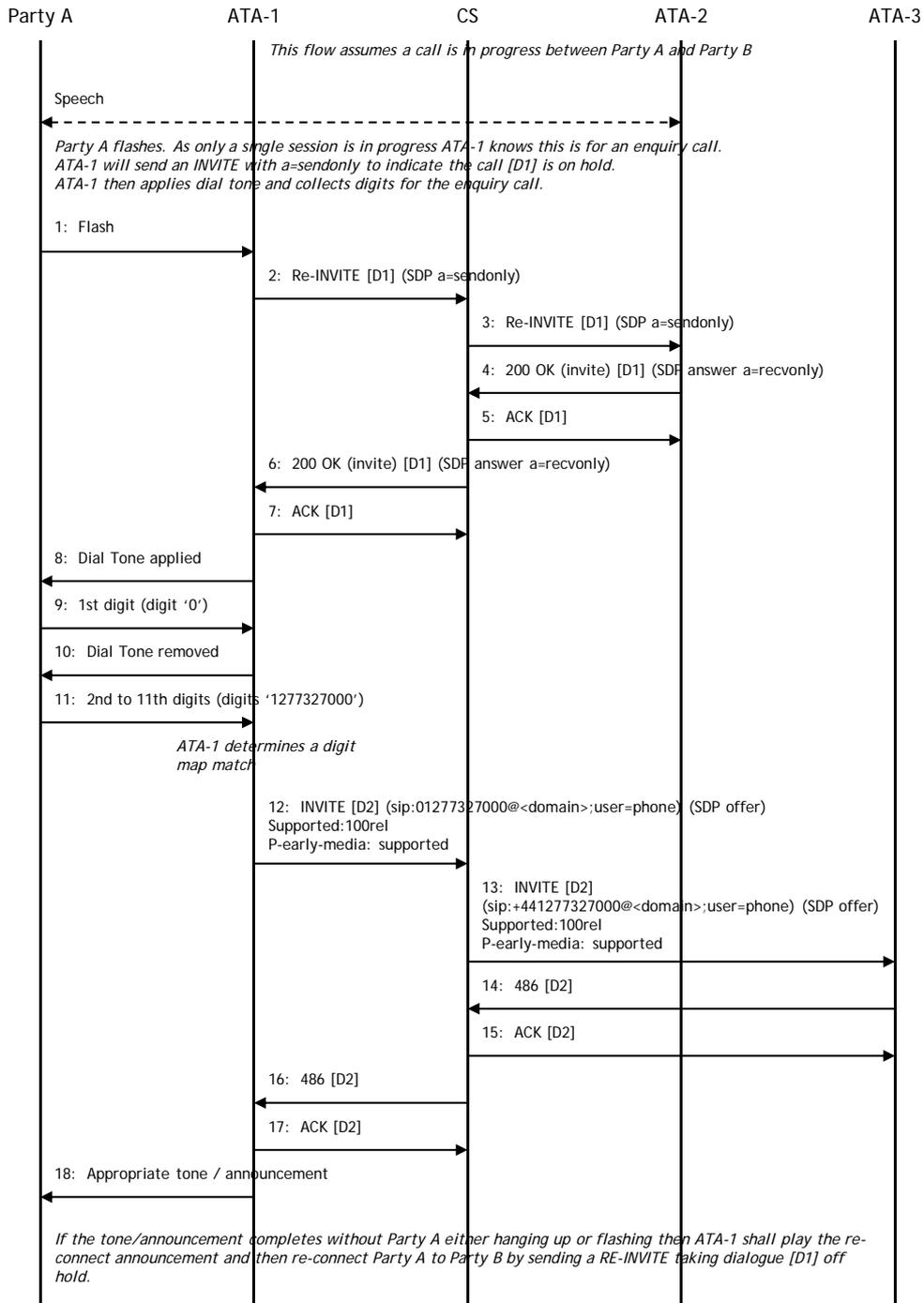
A.3.2 3-Way Call

A.3.2.1 Hold for Enquiry Call – Successful setup

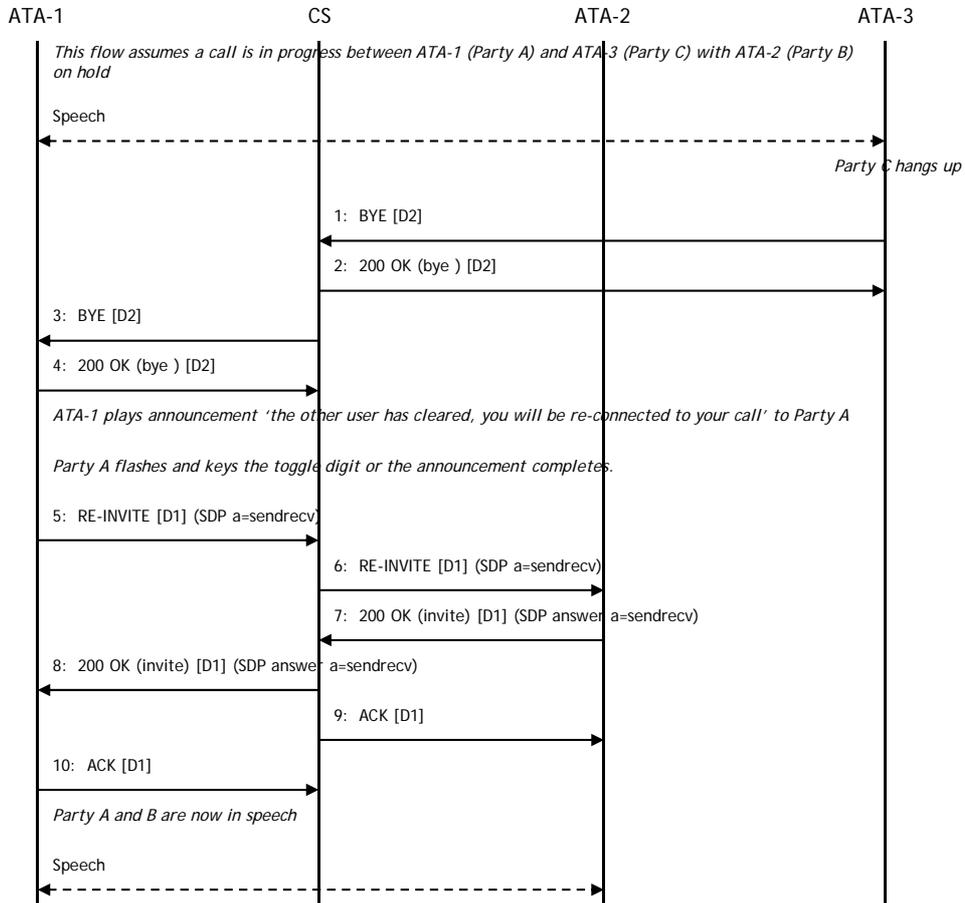




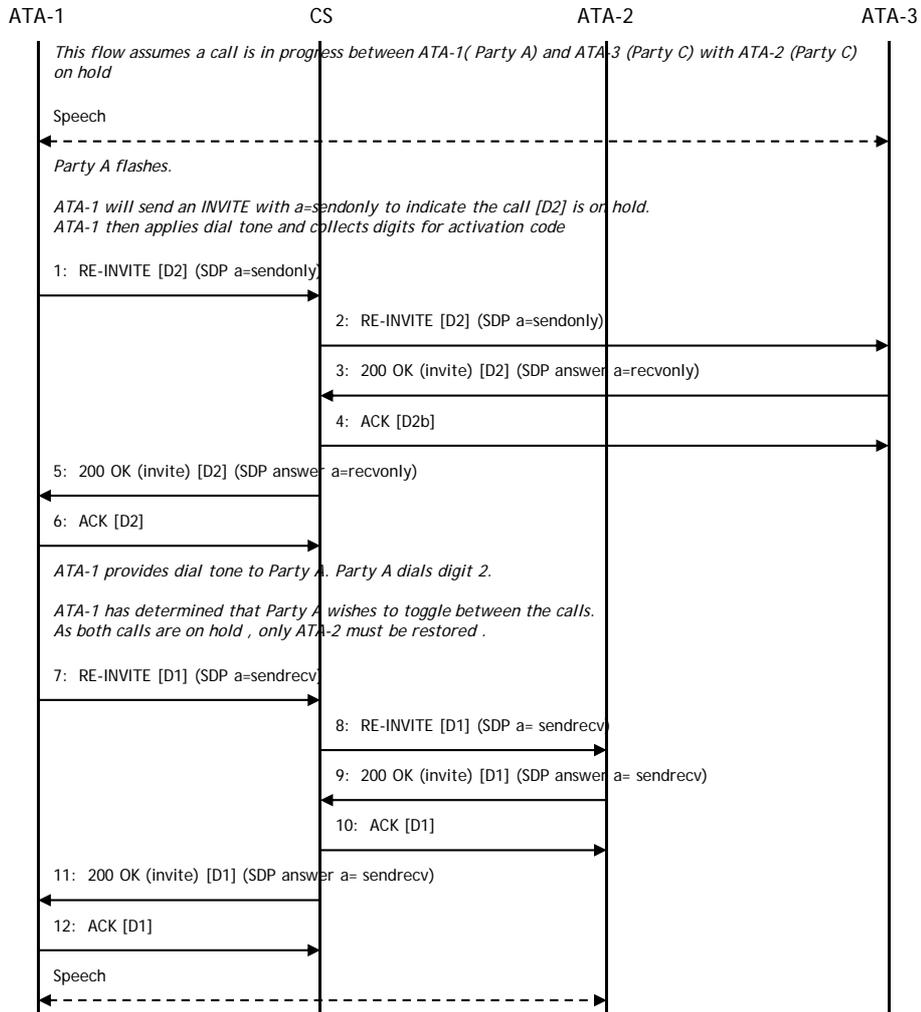
A.3.2.2 Hold for Enquiry Call – Setup failure



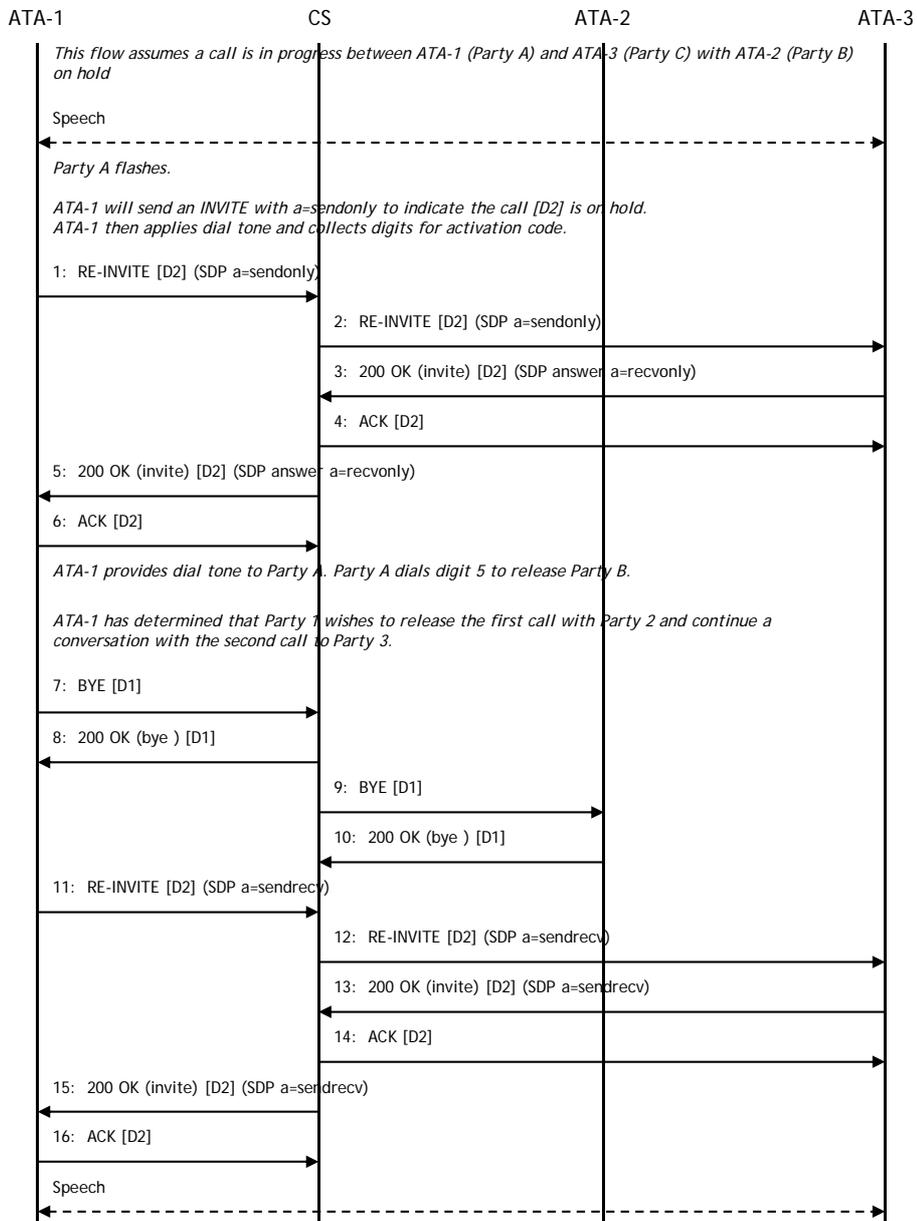
A.3.2.3 Enquiry Call phase – Active remote party clears



A.3.2.4 Toggle

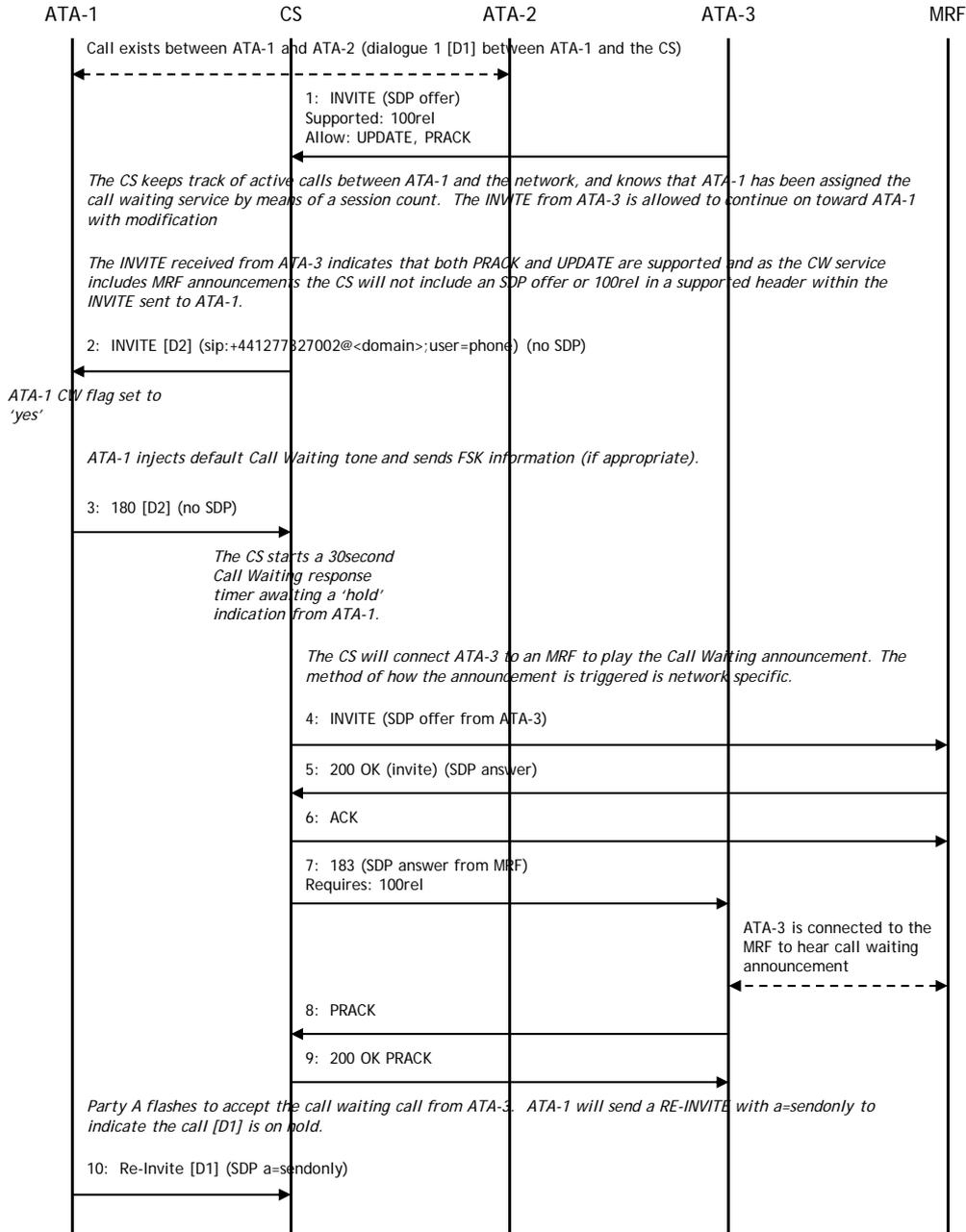


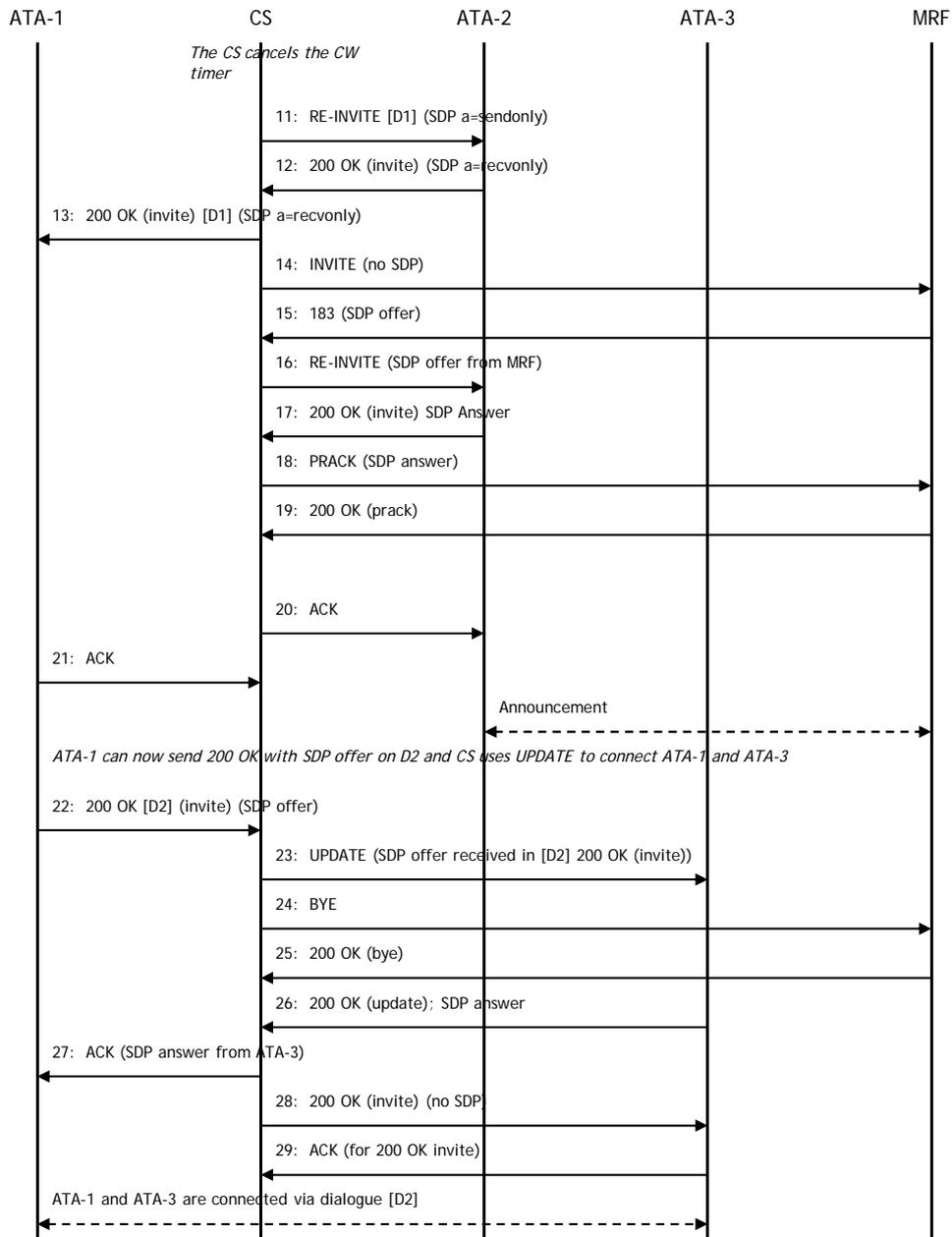
A.3.2.5 Flash to release remote party



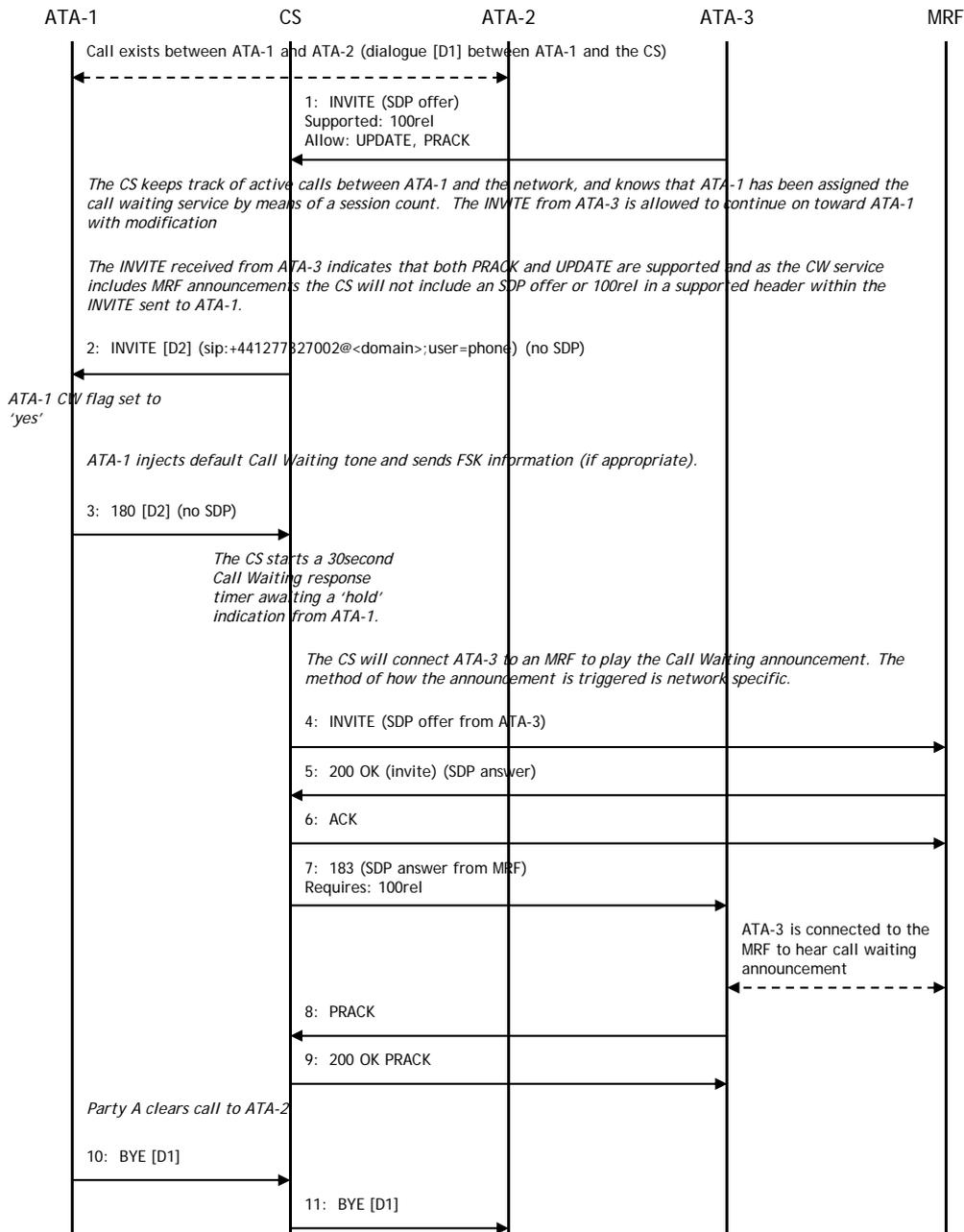
A.3.3 Simplified Call Waiting

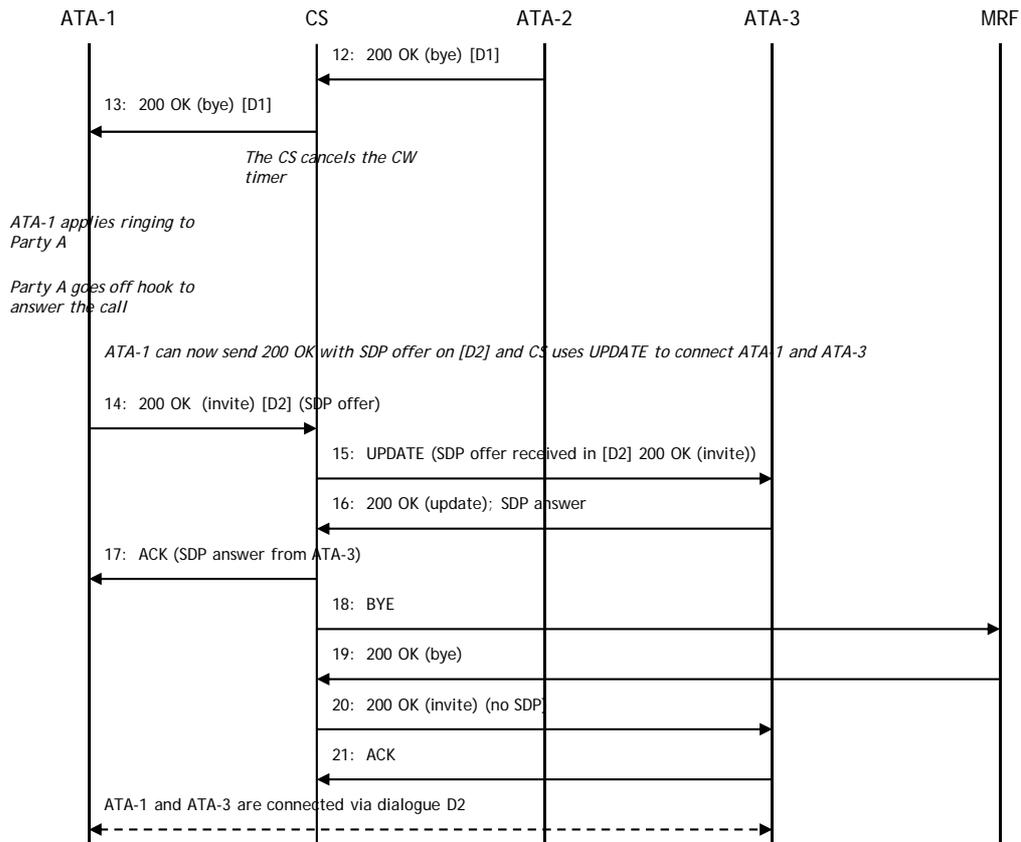
A.3.3.1 User A flashes to accept waiting call (With Waiting Announcement)



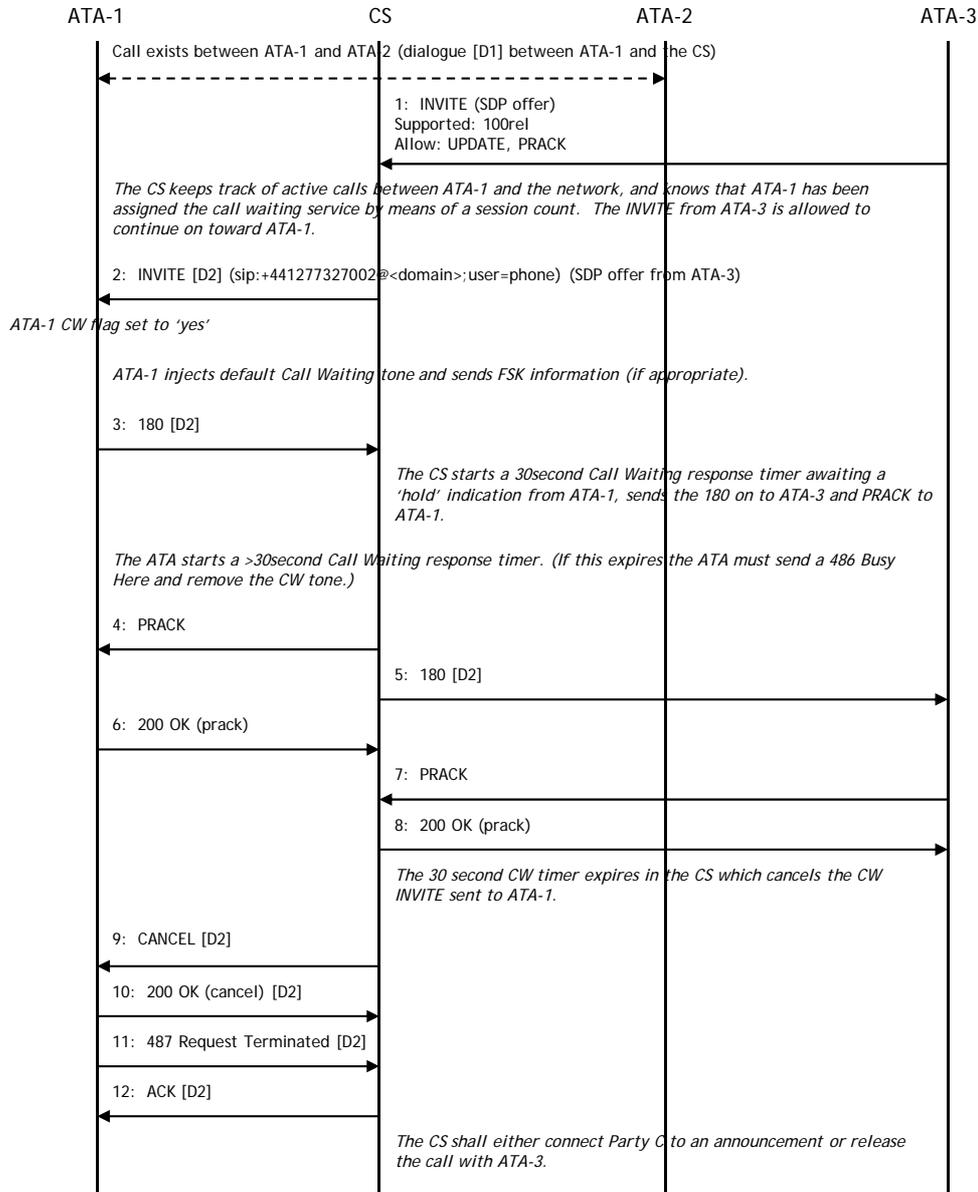


A.3.3.2 User A hangs up to accept waiting call

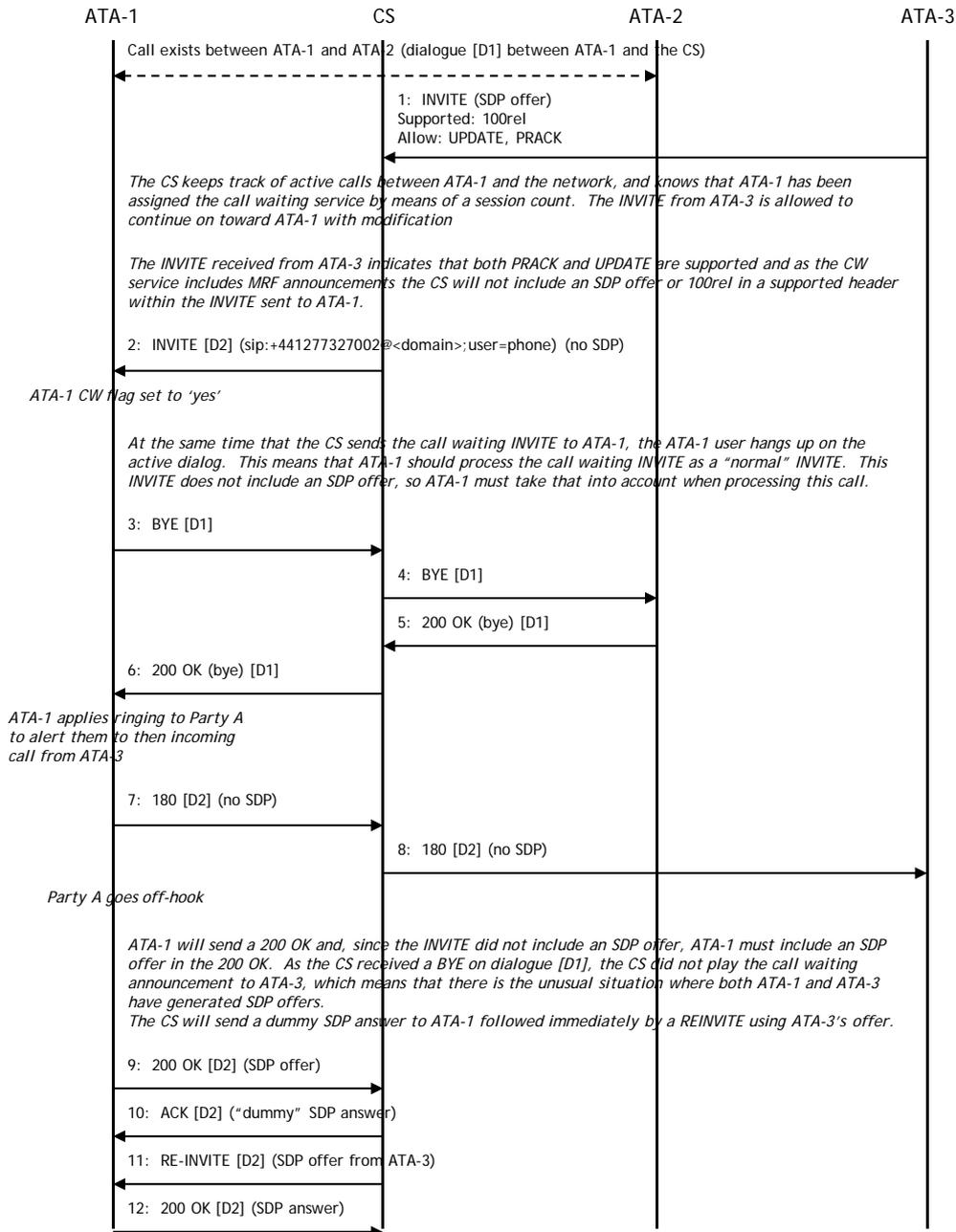


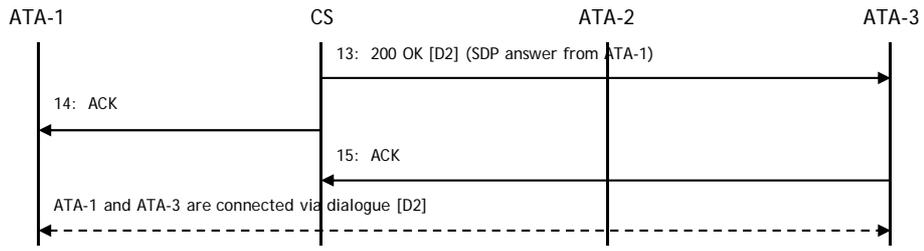


A.3.3.3 User A ignores waiting call

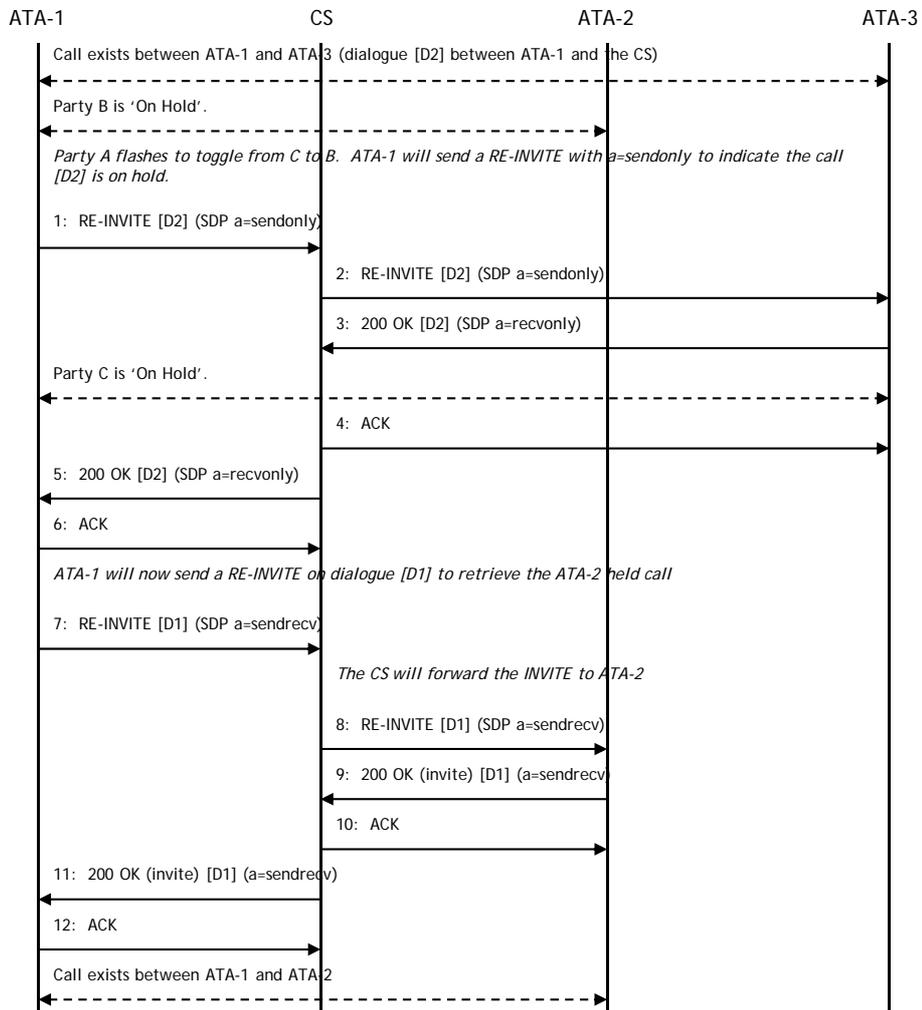


A.3.3.4 User A clears as waiting call arrives





A.3.3.5 User A flashes to toggle between active and held users



History

Document history		
Version	Date	Milestone
1.1.1	25/11/2012	Initial publication