

# ETSI TS 102 483 V11.0.0 (2019-02)



**Smart cards;  
UICC-Terminal interface;  
Internet Protocol connectivity between UICC and terminal  
(Release 11)**

*iTeh STANDARDS PREVIEW  
(Standard: TS 102 483 V11.0.0-2019-02)  
Full standard: https://standards.iteh.ai/catalog/standards/sist/6fa35870-1a40-435f-81bb-8557e3e6523f/etsi-ts-102-483-v11-0-2019-02*

---

**Reference**RTS/SCP-T0311v1100

---

**Keywords**internet, protocol, smart card

---

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

---

The present document can be downloaded from:  
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

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 ETSI documents is available at <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:  
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

---

**Copyright Notification**

---

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2019.  
All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.  
**3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

**GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

# Content

Intellectual Property Rights .....	4
Foreword.....	4
Modal verbs terminology.....	4
Introduction .....	5
1 Scope .....	6
2 References .....	6
2.1 Normative references .....	6
2.2 Informative references.....	8
3 Definition of terms, symbols and abbreviations.....	8
3.1 Terms.....	8
3.2 Symbols.....	9
3.3 Abbreviations .....	9
4 Terminal-UICC IP configuration .....	9
4.0 General .....	9
4.1 Local client on UICC .....	10
4.2 Local server on UICC.....	10
4.3 Remote client UICC .....	11
4.4 Remote server on UICC .....	11
5 Protocol Stack .....	12
6 UICC and Terminal components requirements.....	13
6.0 Introduction .....	13
6.1 UICC IP layer.....	13
6.1.0 General.....	13
6.1.1 IPv4/IPv6 interworking .....	13
6.1.2 Address allocation .....	13
6.1.2.0 General .....	13
6.1.2.1 Local Connection .....	14
6.1.2.2 Remote Connection.....	14
6.1.2.2.0 General .....	14
6.1.2.2.1 IPv4 address allocation.....	14
6.1.2.2.2 IPv6 address allocation.....	15
6.2 Local naming.....	15
6.2.0 General.....	15
6.2.1 Predefined names.....	15
6.2.2 Names provided by the UICC.....	15
6.3 Summary of terminal and UICC configuration .....	16
6.3.1 UICC Configuration .....	16
6.3.1.1 IP v4.....	16
6.3.1.2 IP v6.....	16
6.3.2 Terminal Configuration .....	16
6.3.2.1 IP v4.....	16
6.3.2.2 IP v6.....	17
6.4 Terminal IP Components.....	17
6.4.1 Connection setting .....	17
6.4.2 Routing, Network Address Translation and port forwarding.....	17
<b>Annex A (informative): Connection of a local equipment to the terminal and UICC.....</b>	<b>18</b>
<b>Annex B (informative): Example of activation parameters.....</b>	<b>19</b>
<b>Annex C (informative): Bibliography .....</b>	<b>20</b>
<b>Annex D (informative): Change history .....</b>	<b>21</b>
History .....	22

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

---

# Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Smart Card Platform (SCP).

The contents of the present document are subject to continuing work within TC SCP and may change following formal TC SCP approval. If TC SCP modifies the contents of the present document, it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 0 early working draft;
  - 1 presented to TC SCP for information;
  - 2 presented to TC SCP for approval;
  - 3 or greater indicates TC SCP approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

---

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

---

## Introduction

The present document defines how an Internet Protocol connection may be established between a UICC and a terminal connected through a UICC-Terminal Interface able to carry Internet Protocol packets, and how the UICC resources defined in ETSI TS 102 221 [11] may be accessed over this connection. Most telecommunication infrastructures rely on the Internet Protocol and therefore telecommunication terminals commonly implement the IP layers as standardized by the IETF RFC 791 [1] and by the new version in IETF RFC 2460 [7]. Connecting the UICC and the terminal at this level is expected to bring the following advantages:

- Leverage on existing standardization efforts: Applicative protocols relying on IP, e.g. running over TCP or UDP, have already been standardized for a wide variety of applications and may be used by UICC applications.
- Minimize UICC-specific developments on the terminals; reuse what is already available on terminals rather than forcing specific developments.
- Facilitate connectivity of the UICC with standard network elements such as remote servers, etc.

The present document focuses on the establishment and configuration of a generic IP connection between the UICC and terminal, without addressing specific applications that may use this connection capability.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/6fa35870-1a40-435f-81bb-8557e3e6523f/etsi-ts-102-483-v11.0.0-2019-02>

---

# 1 Scope

The present document specifies the establishment and configuration of an Internet Protocol connection between a UICC and a terminal interfaced through a protocol that supports the transport of Internet Protocol packets.

The way the Internet Protocol packets (or similar packets such as ARP) are transported over the UICC-Terminal interface is part of the UICC-Terminal interface specification and not within the scope of the present document. The present document focuses on the configuration and establishment of the Internet Protocol connection between the UICC and the terminal.

The Internet Protocol connectivity defined in the present document may be used by applications such as the Smartcard Web Server [i.7].

---

## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- In the case of a reference to a TC SCP document, a non specific reference implicitly refers to the latest version of that document in the same Release as the present document.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] IETF RFC 791: "Internet Protocol".

NOTE: Available from <http://www.ietf.org/rfc/rfc791.txt>.

[2] IETF RFC 826: "An Ethernet Address Resolution Protocol".

NOTE: Available from <http://www.ietf.org/rfc/rfc826.txt>.

[3] IETF RFC 792: "Internet Control Message Protocol".

NOTE: Available from <http://www.ietf.org/rfc/rfc792.txt>.

[4] IETF RFC 793: "Transmission Control Protocol".

NOTE: Available from <http://www.ietf.org/rfc/rfc793.txt>.

[5] IETF RFC 2449: "POP3 Extension Mechanism".

NOTE: Available from <http://www.ietf.org/rfc/rfc2449.txt>.

[6] IETF RFC 1122: "Requirements for Internet Hosts - Communication Layers".

NOTE: Available from <http://www.ietf.org/rfc/rfc1122.txt>.

[7] IETF RFC 2460: "Internet Protocol, Version 6 (IPv6) Specification".

NOTE: Available from <http://www.ietf.org/rfc/rfc2460.txt>.

- [8] IETF RFC 2463: "Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification".  
NOTE: Available from <http://www.ietf.org/rfc/rfc2463.txt>.
- [9] IETF RFC 3022: "Traditional IP Network Address Translator (Traditional NAT)".  
NOTE: Available from <http://www.ietf.org/rfc/rfc3022.txt>.
- [10] IETF RFC 3314: "Recommendations for IPv6 in Third Generation Partnership Project (3GPP) Standards".  
NOTE: Available from <http://www.ietf.org/rfc/rfc3314.txt>.
- [11] ETSI TS 102 221: "Smart Cards; UICC-Terminal interface; Physical and logical characteristics (Release 7)".
- [12] IETF RFC 4861: "Neighbor Discovery for IP Version 6 (IPv6)".  
NOTE: Available from <http://www.ietf.org/rfc/rfc4861.txt>.
- [13] IETF RFC 4862: "IPv6 Stateless Address Autoconfiguration".  
NOTE: Available from <http://www.ietf.org/rfc/rfc4862.txt>.
- [14] IETF RFC 4294: "IPv6 Node Requirements".  
NOTE: Available from <http://www.ietf.org/rfc/rfc4294.txt>.
- [15] IETF RFC 4291: "IP Version 6 Addressing Architecture".  
NOTE: Available from <http://www.ietf.org/rfc/rfc4291.txt>.
- [16] IETF RFC 2136: "Dynamic Updates in the Domain Name System (DNS UPDATE)".  
NOTE: Available from <http://www.ietf.org/rfc/rfc2136.txt>.
- [17] IETF RFC 1035: "Domain names - Implementation and Specification".  
NOTE: Available from <http://www.ietf.org/rfc/rfc1035.txt>.
- [18] IETF RFC 3490: "Internationalizing Domain Names in Applications (IDNA)".  
NOTE: Available from <http://www.ietf.org/rfc/rfc3490.txt>.
- [19] IETF RFC 2131: "Dynamic Host Configuration Protocol".  
NOTE: Available from <http://www.ietf.org/rfc/rfc2131.txt>.
- [20] ETSI TS 102 600: "Smart Cards; UICC-Terminal interface; Characteristics of the USB interface".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- In the case of a reference to a TC SCP document, a non specific reference implicitly refers to the latest version of that document in the same Release as the present document.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] IETF RFC 2060: "Internet Message Access Protocol", version 4rev1.

NOTE: Available from <http://www.ietf.org/rfc/rfc2060.txt>.

[i.2] IETF RFC 2246: "The TLS Protocol", version 1.0.

NOTE: Available from <http://www.ietf.org/rfc/rfc2246.txt>.

[i.3] IETF RFC 2616: "Hypertext Transfer Protocol - HTTP/1.1".

NOTE: Available from <http://www.ietf.org/rfc/rfc2616.txt>.

[i.4] IETF RFC 959: "File Transfer Protocol (FTP)".

NOTE: Available from <http://www.ietf.org/rfc/rfc959.txt>.

[i.5] IETF RFC 821: "Simple Mail Transfer Protocol".

NOTE: Available from <http://www.ietf.org/rfc/rfc821.txt>.

[i.6] IETF RFC 1034: "Domain Names - concepts and facilities".

NOTE: Available from <http://www.ietf.org/rfc/rfc1034.txt>.

[i.7] OMA-TS-Smartcard-Web-Server-V1-0.

NOTE: Available from <http://www.openmobilealliance.org>.

[i.8] IETF RFC 768: "User Datagram Protocol".

NOTE: Available from <http://www.ietf.org/rfc/rfc768.txt>.

[i.9] ETSI TS 102 223: "Smart Cards; Card Application Toolkit (CAT)".

[i.10] IETF RFC 4632: "Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan".

---

## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the following terms apply:

**application:** computer program that defines and implements a useful functionality on a smart card or in a terminal

NOTE: The term may apply to the functionality itself, to the representation of the functionality in a programming language, or to the realization of the functionality as executable code.



**file:** directory or an organized set of bytes or records in the UICC

## 3.2 Symbols

Void.

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ARP	Address Resolution Protocol
ASCII	American Standard Code for Information Interchange
DHCP	Dynamic Host Configuration Protocol
FTP	File Transfer Protocol
HTTP	HyperText Transport Protocol
ICMP	Internet Control Message Protocol
IMAP	Internet Message Access Protocol
IP	Internet Protocol
NAT	Network Address Translation
POP	Post Office Protocol
HTTPS	Secure HyperText Transport Protocol
SMTP	Simple Mail Transfer Protocol
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UDP	User Datagram Protocol
URI	Universal Resource Identifier

---

## 4 Terminal-UICC IP configuration

### 4.0 General

This clause is an introduction to the various configurations and uses of the IP UICC. A UICC supporting IP will be deployed with at least a local address. This address relates to a private network established between the UICC and the terminal, independently from other networks to which the terminal may be connected.

The UICC shall be able to act as a combination of the following basic configurations:

- A TCP/IP or UDP/IP client of a server located on the terminal.
- A TCP/IP or UDP/IP server for a client located on the terminal.
- A TCP/IP or UDP/IP client of a server located in a network reachable through the terminal.
- A TCP/IP or UDP/IP server for a client located in a network reachable through the terminal.

Depending on the final applications, the actual configuration may be a combination of these basic configurations.

In the present document, the wording TCP/IP or UDP/IP\_protocol includes any application protocol such as HTTP, FTP, POP, SMTP that may be enabled by TCP or UDP, i.e. the configuration targeted is not restricted to having a web server and web client on the card.

### 4.1 Local client on UICC

In this configuration the UICC is a client for TCP/IP servers located on the terminal. This configuration is the simplest and does not require any routing or address translation. It requires however naming resolution inside the UICC, so that the UICC applications can resolve the server IP address from the terminal name (localterminal).

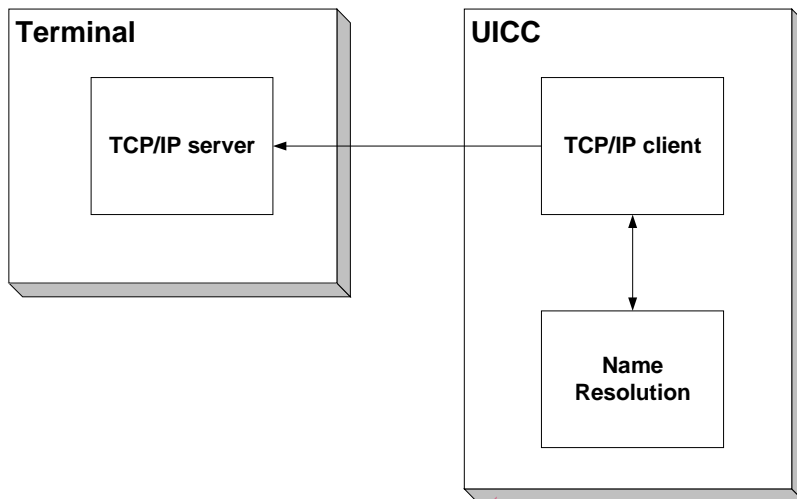


Figure 1: Local TCP/IP Client on UICC

### 4.2 Local server on UICC

In this configuration the UICC is a local server for a TCP/IP protocol, e.g. HTTP. The server is accessed only from the terminal. This configuration requires proper configuration of the terminal naming services, so that the terminal can resolve the UICC name (localuicc) to the UICC IP address.

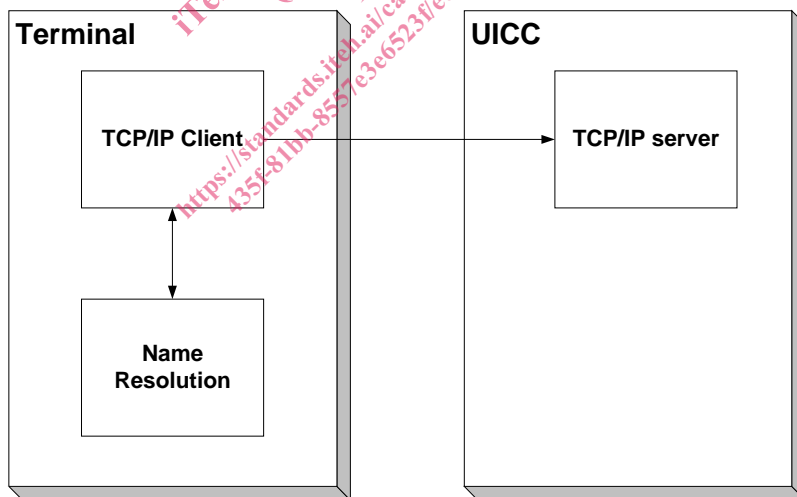


Figure 2: Local TCP/IP server on UICC