



Unicode Management Implementing Procedures

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ucode Management Implementing Procedures

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Scope

This document specifies ucode states and procedures to initiate state transition, and discusses the requisite rules.

Target audience

This document targets the following companies, groups, and organizations that work with each other in matters involving ucode management and operations:

(1) Ubiquitous ID Center, (2) Ubiquitous ID Center/Local Branch, (3) companies, groups, and organizations (users) that put information services into practice, using ucodes, and (4) venders of the tag to store a ucode (ucode tag).

Glossary

ucode (ubiquitous code)

A ucode is an identifier assigned to the target you want to identify to identify physical objects, places, and concepts. The basic ucode width is 128 bits. An option rule would extend the width in 128-bit units (This option rule is not currently used.).

ucode Resolution

ucode resolution is a process for retrieving “information associated with the ucode” using the ucode as a key. For example, one would retrieve “the Internet URL (Unique Resource Locator) that publishes information on the hamburger associated with the ucode” from the ucode, that is, the identifier of the hamburger. This process is called ucode resolution.

ucode Resolution Server

The ucode resolution server is a server computer system storing both ucode and information associated with the ucode and capable of performing ucode resolution.

ucode Resolution Entry

The ucode resolution entry is a pair of the ucode and the information associated with the ucode existing on the ucode resolution server.

Ubiquitous Communicator

Ubiquitous Communicator is a user terminal with the following functions:

- (1) Lets you read ucode from the ucode tag (as will hereinafter be described)
- (2) Performs ucode resolution with the ucode resolution server

- (3) Receives information and services related to the ucode read using the ucode resolution results

Reservation/Allocation/Issue/Destruction of ucode

For more information, see “Chapter 2 ucode Life Cycle.”

ucode Tag

A ucode tag is a medium that stores the ucode by the method authorized by Ubiquitous ID Center. Many types of tags can be used as ucode tags such as printed codes such as bar codes and two-dimensional codes, passive tags (e.g., RFID tags), and active tags such as infrared beacons and radio markers.

ucode Tag Vendor

A ucode tag vendor refers to companies and groups that manufacture or sell ucode tags.

ucode Provider

A ucode provider refers to a company or group that sub-allocates part of the ucode space allocated by Ubiquitous ID Center to a third party.

Ubiquitous ID Center

Ubiquitous ID Center is a nonprofit organization that manages and operates the entire ucode.

Local Branch

Ubiquitous ID Center/Local Branch (referred to as Local Branch for short) is a nonprofit organization that is authorized by Ubiquitous ID Center and performs ucode allocation.

User

A user refers to companies or groups that receive ucode tags or ucode allocations, and then issue ucode.

References

- [1] T-Engine Forum, Ubiquitous ID Center. “Ubiquitous Code: ucode,” UID-00010, 2006.

- [2] T-Engine Forum, Ubiquitous ID Center. “Certified Standard Meta-code in ucode,” UID-00011, 2006-2007.
- [3] T-Engine Forum, Ubiquitous ID Center. “ucode Tag Architecture,” UID-00017, 2006.
- [4] T-Engine Forum, Ubiquitous ID Center. “ucode Encoding Specifications for QR Code Tags,” UID-00025, 2006.

Chapter 1 What is ucode?

1.1 Definition

ucode

A ucode is an identifier assigned to the target you want to identify to identify physical objects, places, and concepts. The basic ucode width is 128 bits. An option rule can extend the width in 128-bit units. This document covers the case of ucode consisting of 128 bits as provided for in the “Ubiquitous Code: ucode” [1] since the option rule is not currently used.

ucode Space

ucode space is a collection of ucodes, which consist of more than 0 ucode.

Domain

A domain is a unit that manages ucode space. The domain contains two stages: a Top Level Domain and a Second Level Domain. The ucode space is managed by the two-level hierarchy structure comprised of the Top Level and Second Level domains.

Top Level Domain (TLD)

The Top Level Domain (TLD) refers to the higher level domain comprising a two-level structure. The TLD is managed by organizations authorized by Ubiquitous ID Center.¹ This is called a **TLD management organization**. The ucode space managed by the TLD is 108 bits. The code identifying the TLD is called a **TLDC (Top Level Domain Code)**.

Second Level Domain

The Second Level Domain (SLD) refers to the lower level of the two domains comprising a two-level structure. The **TLD management organization** authorizes organizations that manage the SLD (users). There are six sizes in the ucode space occupied by the SLD, ranging from 16 bits to 96 bits in 16-bit increments. The code identifying the SLD is called an **SLDC (Second Level Domain Code)**.

¹ The methods, criteria, and procedures for authorizing organizations that manage the TLD will be provided separately.

1.2 ucode Hierarchy Structure

Figure 1 and Table 1 show the ucode code system, which is organized into the hierarchy described above [1].

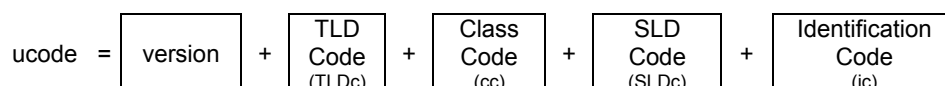


Figure 1: ucode (128-bit fixed width) Structure

Table 1: Field Name and Width of ucode

Field Name	Width
Version	4 bits
Top Level Domain Code (TLDC)	16 bits
Class Code (cc)	4 bits
Second Level Domain Code (SLDC)	Multiple Types
Identification Code (ic)	Multiple Types

The ucode space is divided into domains, which are subspaces, and managed. The domain consists of two levels: a Top Level Domain (TLD), which refers to a higher level domain and a Second Level Domain (SLD), which refers to a lower level domain. The TLD is a domain allocated to organizations authorized by Ubiquitous ID Center. The organization which manages a TLD is called a TLD management organization. The SLD is a domain allocated to organizations authorized by the TLD management organizations. The organization that manages an SLD is an SLD management organization.

The division method for the ucode space is shown Figure 2. Ubiquitous ID Center manages the entire space of 128 bits. Ubiquitous ID Center allocates the TLDC to TLD management organizations. Therefore, the version and TLDC fields, (the width of which is upper 20 bits), of the ucode managed by the TLD management organization are fixed. The TLD management organization can manage the other lower 108 bits freely.

The TLD management organization allocates the cc and SLD to the SLD management organizations. Therefore, the version, TLDC, cc, and SLDs fields of the ucode managed by an SLD management organization are fixed. The SLD

management organization can manage the other lower ic field (of either 16, 32, 48, 64, 80, or 96 bits) freely.

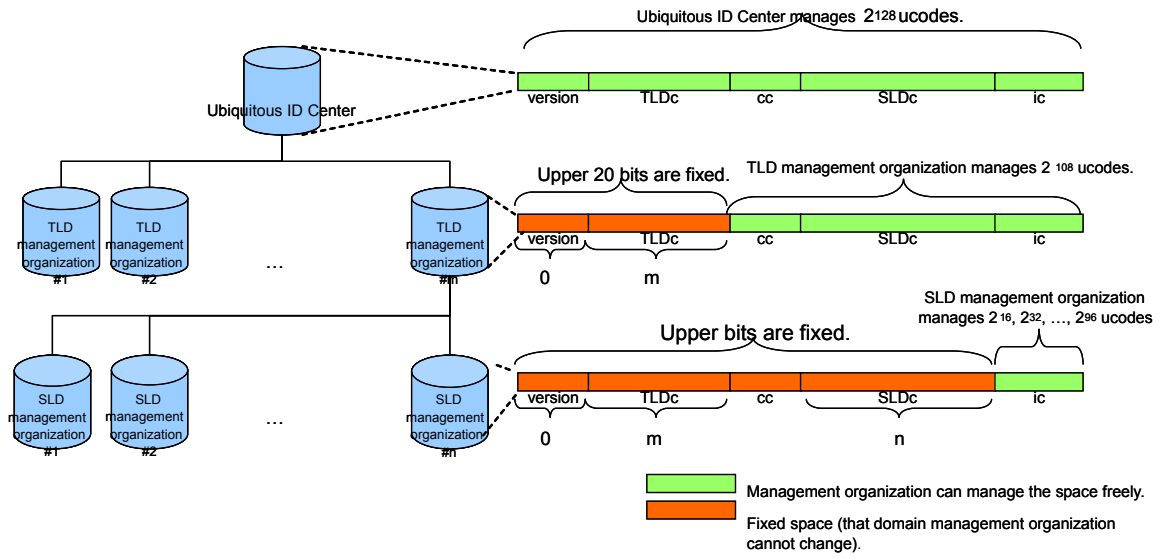


Figure 2: ucode Space Division

Chapter 2 Life Cycle of ucode

Described below is the ucode life cycle, wherein the ucode is unused, allocated, issued, actually used, and destructed.

(1) Unused

The state of a ucode that has not been used yet is called an unused state.

(2) Reserved

The state of a ucode that is reserved as an allocated area for a specific purpose in the future by Ubiquitous ID Center is called a reserved state. Reservation refers to the procedure for changing the unused state of the ucode to the reserved state.

(3) TLD-Allocated

The state in which the authority of ucode allocation is given to a Local Branch by Ubiquitous ID Center is called a TLD-allocated state. The procedure for changing the unused state of a ucode to the TLD-allocated state is a TLD-allocation.

(4) Allocated

The state in which the authority of issuing ucode is given to a user by Ubiquitous ID Center or a Local Branch is called an allocated state. The procedure for changing the reserved state or the TLD-allocated state of the ucode to the allocated state is called an allocation.

(a) Ubiquitous ID Center or the Local Branch usually allocates a series of ucodes to a user, called domains.

(b) When the user receives a ucode allocation, he/she can obtain the right to register the ucode resolution entry on the ucode resolution server.

(5) Sub-Allocated

The state in which a part of allocated ucode space is reallocated to other users by certain user is a sub-allocated state. This procedure is called a sub-allocation. The company performing a sub-allocation is called a ucode provider.

(6) Issued

The state in which a ucode can be used by a user is called an issued state. The procedure whereby the user changes the allocated state or the sub-allocated state of the ucode to the issued state is called an issue.

To issue a ucode, a user must complete the following two tasks: (1) Create a ucode

tag in which ucode is stored, and associate it with objects and places to be accessed by a certain person,¹ and (2) Register a ucode resolution entry.

(7) Destructed

The state in which a ucode cannot be used any more is called a destructed state. The procedure for changing the issued state of a ucode to the destructed state is called a destruction.

To destruct the ucode, you must complete the following two tasks: (1) Physically destruct the ucode tag to store the ucode, and (2) Delete the registration data for the ucode resolution entry.

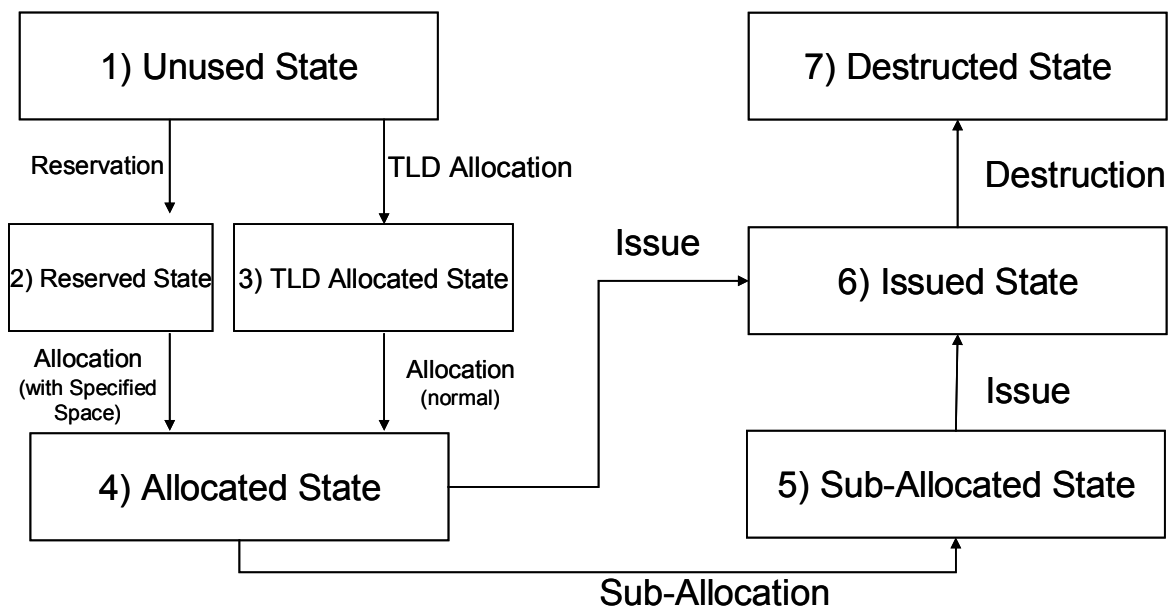


Figure 3: Life Cycle of ucode

¹ More precisely, print the image in which the ucode is presented in the ucodeQR code and attach it to a user's belongings, or write the ucode in the RFID and attach it in a place.

Chapter 3 ucode Management System

This chapter defines a ucode management system.

3.1 Parties Involved in ucode Management

The following parties are involved in the ucode management. Figure 4 shows the relationship among these parties.

(1) Ubiquitous ID Center

Ubiquitous ID Center is the nonprofit organization that manages and operates the entire ucode, authorizing Local Branches, performing TLD-allocations, handling ucode reservations based on ucode tag vendor applications, and handling ucode space-specified allocations based on user applications. It also operates the root node of the ucode resolution server and handles other administrative tasks.

(2) Local Branch

A Local Branch is a nonprofit organization that manages the TLD, inviting people to join as members in a certain area and allocating ucodes based on the user applications. It also operates the TLD node of the ucode resolution server and handles other administrative tasks.

Some Local Branches are operated by Ubiquitous ID Center.

(3) User

A user is a group receiving the ucode allocation and issuing ucodes.

(4) ucode Provider

A ucode provider is a user performing the sub-allocation.

(5) End User

An end user is a person or group providing information services using the issued ucodes or receiving such information services.

(6) ucode Tag Vendor

A ucode tag vendor is a group that manufactures or sells the ucode tag. If it manufactures or sells the ROM type RFID and needs to store the ucode in the ucode tag as factory defaults, it is entitled to obtain a ucode reservation.

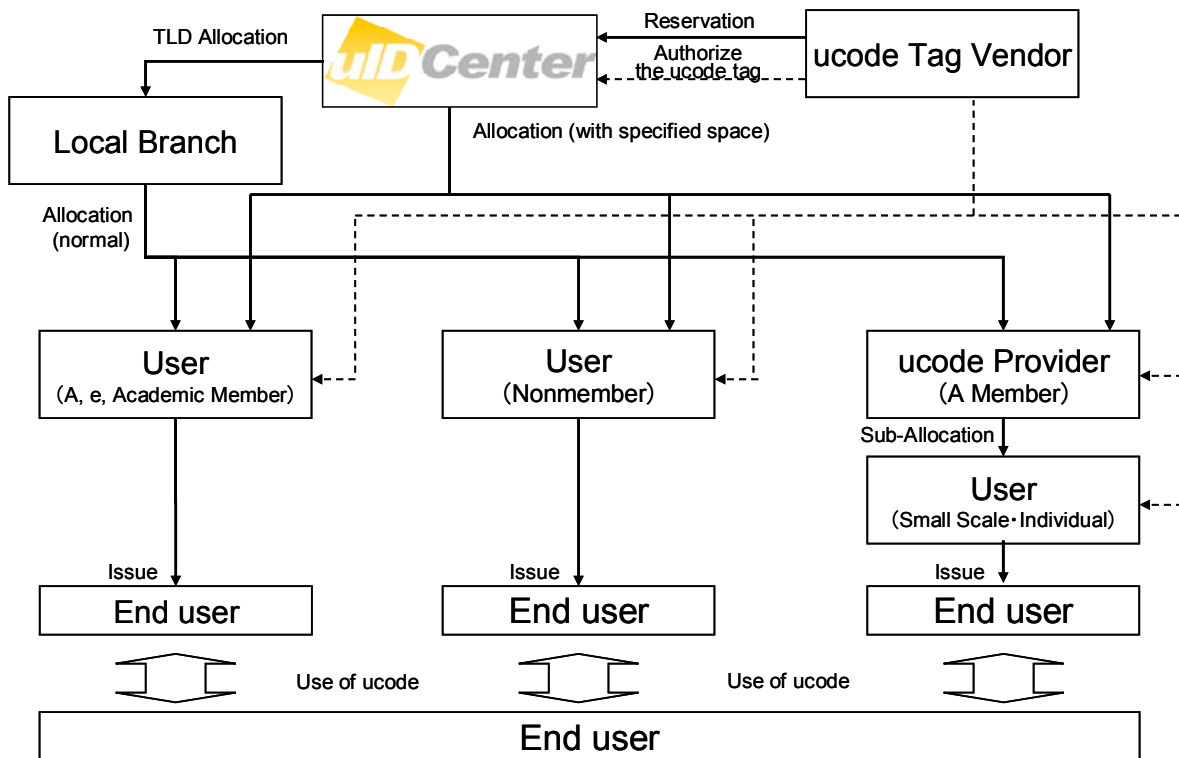


Figure 4: Relationship Among Parties Involved in ucode Management

3.2 Reservation

3.2.1 Case in which reservation is required

The ucode reservation is required when applying the certification of the ucode tag to store the ucode by the “unique tag ID use method,” as described below.

3.2.2 Storing a ucode in a ucode tag

There are two ways to store a ucode in a ucode tag such as RFIDs, infrared markers, etc. (Figure 5):

1. If the ucode tag has memory space in which the user can write, store any ucodes in that space (user memory store method).
2. Convert the unique ID assigned to the ucode tag as factory defaults and managed in a different system from that of the ucode into the ucode² (unique tag ID use method).

¹ Especially when using ROM-type RFIDs as the ucode tag, this is the applicable method.

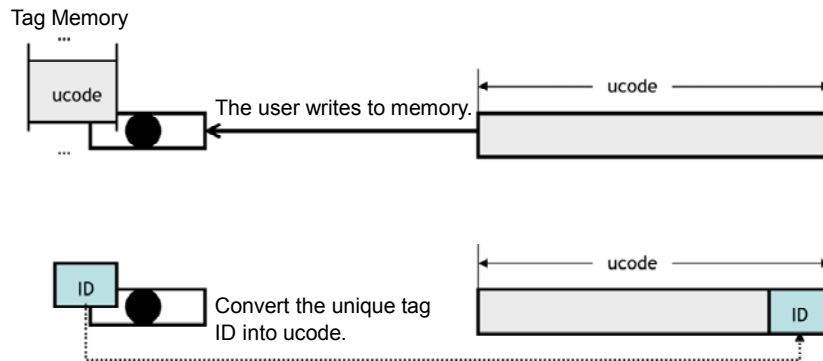


Figure 5: Storing the ucode in the ucode Tag

3.2.3 Applying for ucode tag certification

The ucode tag vendor must meet the following conditions in order to get their tag products certified as the ucode tag, in other words, to receive certification as formal ucode tag products to be assigned ucodes from Ubiquitous ID Center.

1. The vendor technically ensures that the tag stores the ucode by either the user memory store method or the unique tag ID use method.
2. The tag meets all conditions provided in the document, “ucode Tag System” [3].
3. For the unique tag ID use method, the ucode reservation must be performed as described below.

3.2.4 Significance of ucode reservation

If the vendor adopts the unique tag ID use method as its ucode store method, it must define the relationship between the unique tag ID and ucode. In addition, it must secure in advance a ucode space with which the unique ID is to be associated so that the space will not be allocated to other users. This procedure is called a reservation.

3.2.5 Reservation procedure

The ucode reservation procedure is specified in the document, “Certified Standard Meta-code in ucode” [2]. A reservation is made as described below (Figure 6):

1. The ucode tag vendor submits a “ucode Reservation Application Form” (Exhibit 1) to Ubiquitous ID Center.
2. Ubiquitous ID Center reviews the document submitted.

3. After Ubiquitous ID Center performs its review and issues certification, it reserves the ucode tag space in the reserved domain for which the vendor has applied. It then draws up a specification that specifies how to convert between IDs embedded in the ucode tag and the ucode and publishes it for use by all parties.

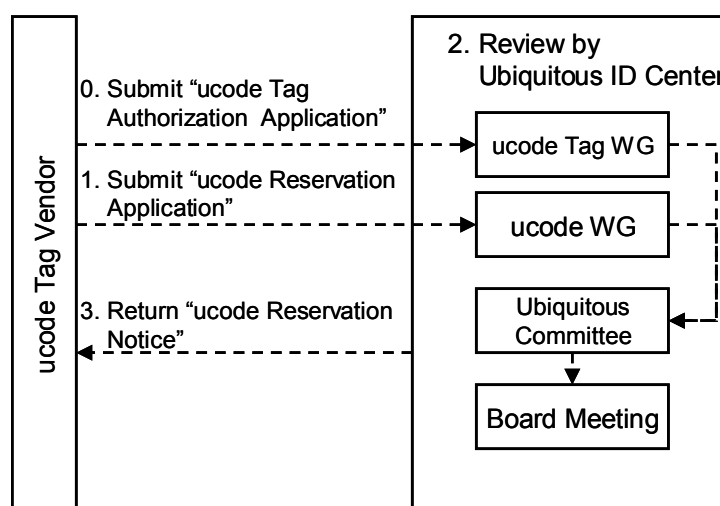


Figure 6: ucode Reservation Procedure

3.2.6 Conditions for ucode reservation permission

ucode reservation permission must meet all the following conditions:

1) Domain Applicant

The applicant must be a ucode tag vendor.³

2) Meeting the conditions of the ucode tag

The tag for the ucode reservation must be certified as a ucode tag or currently in the process of certification.

3) Guarantee of tag ID uniqueness

When issuing a tag ID associated with a ucode, the uniqueness of the specific tag ID must be assured (the condition of ucode tag certification).

4) Mechanism for issuing the tag ID (ucode) whose space does not overlap the space of another tag ID

The ucode tag vendor must ensure that the tag is issued so that the tag ID (corresponding ucode) of the tag set issued to a user meets the following conditions:

³ Reserving a ucode requires concurrent ucode tag certification.

- (a) The consecutive m bits from the top of the tag ID have the same values (b^0 - b^{m-1}).
- (b) The tag ID whose top m bits values match b^0 - b^{m-1} is not issued to other users (See Figure 7).
- (c) The minimum number of lots issued for the tag set, which meets the condition (b) above, is equal to or greater than 256.

5) Obligation for ucode issue notice

The tag vendor must undertake the predefined procedures provided in this document, including the tentative allocation procedure, to notify a user of the tag ID allocated to the user. The tag vendor must promptly notify Ubiquitous ID Center of the tentative allocation state.

6) Tag ID width and reserved ucode domain size

The reserved ucode domain space is of the same size as the tag ID space.

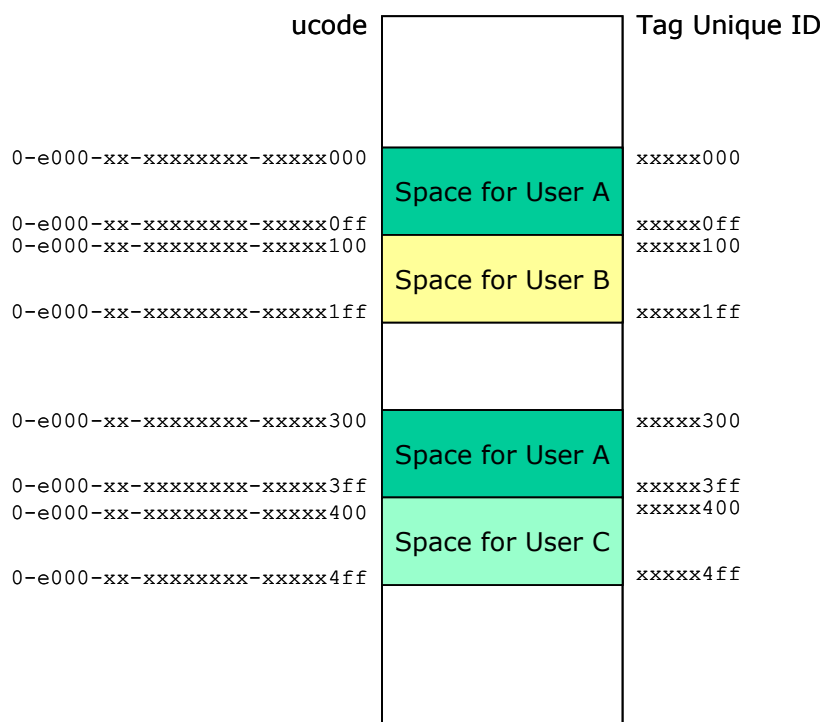


Figure 7: Example of Tag ID Allocation (in case in which the minimum number of tags is 256)

3.3 TLD Allocation

This section describes a TLD allocation procedure.

3.3.1 TLD allocation procedure

The Local Branch is a nonprofit organization that invites peoples to join to be members in a limited area and performs a ucode allocation procedure to users including members in the region. The qualification for Local memberships is specified separately. A part of the Local Branches is operated by Ubiquitous ID Center.

The application of TLD allocation is an application procedure in which the Local Branch applies for the TLDc allocation to Ubiquitous ID Center. The TLDc to be allocated is determined by Ubiquitous ID Center. The TLD allocation procedure is outlined as follows (Figure 8):

1. The Local Branch submits the “Local Branch establishment Application Form” to Ubiquitous ID Center.
2. Based on the application, Ubiquitous ID Center undertakes the following review steps:
 - (a) Preliminary examination by ucode WG
 - (b) Approval decision by the Ubiquitous Committee
 - (c) Approval decision by the Executive Committee
3. Ubiquitous ID Center returns the “TLDc Allocation Notice” to the Local Branch following examination and approval.

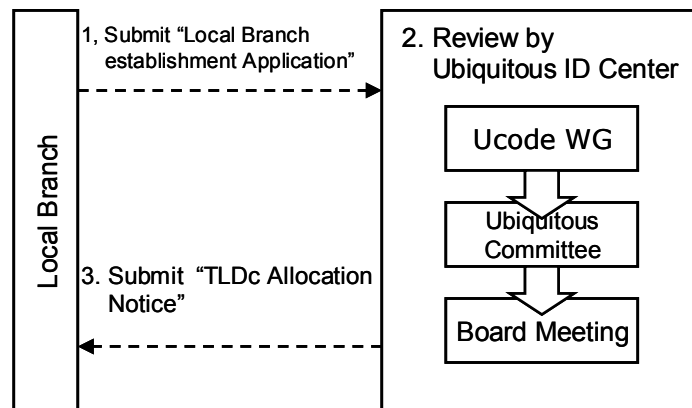


Figure 8: TLD Allocation Application Flow

3.3.2 Setting the ucode resolution server upon TLD allocation

By receiving a TLD allocation, the Local Branch assumes rights and obligations to manage the ucode resolution entry for the allocated TLD portion. The Local Branch itself must operate the ucode resolution server that manages the ucode resolution entry for the allocated TLD part (or outsource this task to another competent organization). Ubiquitous ID Center sets the ucode resolution entry to specify the

ucode resolution server managed by the Local Branch receiving the TLD allocation (Figure 9).

The ucode Resolution Entry of Ubiquitous ID Center

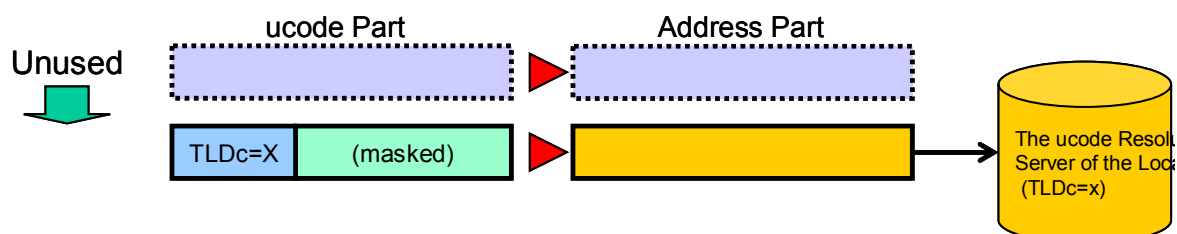


Figure 9: Setting the ucode Resolution Entry Managing the TLD (Managed by Ubiquitous ID Center)

3.4 Allocation

This section describes ucode allocation procedures.

3.4.1 Types of ucode allocation

There are two types of ucode allocation, depending on the nature of the use of the ucode tag.

1) Normal ucode Allocation Procedure

The normal ucode allocation is performed if a user writes a ucode to a ucode tag (user memory store method). When a user writes a ucode into a ucode tag, he/she prints the ucode in the ucodeQR (Category 0) as specified under the “ucode Encoding Specifications for QR Code Tags” [4], or a user stores a ucode in a RFID (Category 1) memory space which the user can overwrite.

The user submits the “ucode Allocation Application (Normal)” for the Local Branch. Based on the application, the user records or prints the ucode allocated into the ucode tag and issues it for his/her own use or other end users.

2) Procedure of ucode Allocation with the Specified Space

The ucode allocation with a specified space is performed if using the unique tag ID embedded as factory defaults as the ucode (the unique tag ID use method). The correspondence relation between the tag ID to be used and the ucode must be defined, and the corresponding ucode space must be reserved. The user specifies the ucode space corresponding to the tag ID which is set in the ucode tag purchased from the ucode tag vendor from the reserved ucode domain and then receives an allocation from Ubiquitous ID Center.

3.4.2 Normal ucode allocation procedure

In the normal ucode allocation, the user specifies only the size of the ucode space required and applies for the ucode allocation. The Local Branch determines which ucode space is allocated. Given below is an overview of the normal ucode allocation procedure (Figure 10).

1. The user submits the “ucode Allocation Application” to the Local Branch.
2. Based on the application, the Local Branch undertakes the following review steps:
 - (a) Approval decision by the Committee
 - (b) Approval decision by the Executive Committee
3. The Local Branch returns the “ucode Allocation Notice” to the user following examination and approval.

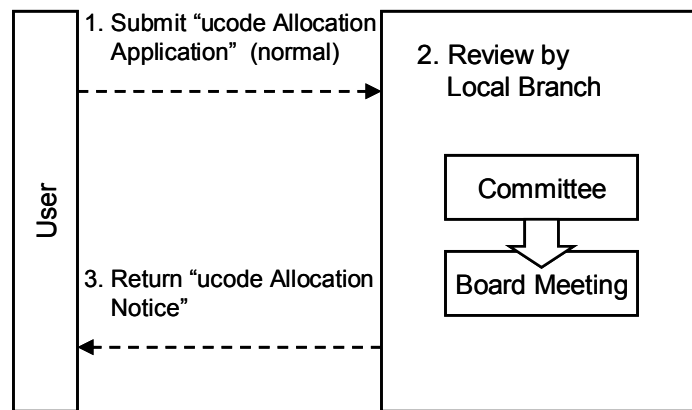


Figure 10: Normal ucode Allocation Application Flow

3.4.3 Procedure of ucode allocation with the specified space

The ucode allocation with the specified space is performed if using the unique tag ID embedded as factory defaults as the ucode.

This procedure of ucode allocation is described below (Figure 11).

1. A user orders a ucode tag to the ucode tag vendor.
2. The ucode tag vendor determines the ucode tag for sale and performs a tentative allocation for part of the reserved space corresponding to the tag ID stored in the ucode tag for sale.
3. The ucode tag vendor notifies Ubiquitous ID Center of the tentative allocation.
4. Ubiquitous ID Center confirms the tentative allocation and returns the confirmation notice if no problems arise.
5. The ucode tag vendor issues the “ucode Tentative Allocation Application Form,”⁴ which serves as a notification of the ucode tentative allocation, and delivers the ucode tag with the application.
6. The user applies to Ubiquitous ID Center for the ucode allocation by specifying the space which is tentatively allocated by the ucode tag vendor.
7. Based on the application, Ubiquitous ID Center undertakes the following review steps:
 - (a) Preliminary examination by ucode WG
 - (b) Approval decision by the Ubiquitous Committee
 - (c) Approval decision by the Executive Committee
8. Ubiquitous ID Center allocates the specified ucode space following examination and approval.

⁴ The “ucode Tentative Allocation Application Form” is a certification form issued by a ucode tag vendor which certifies the ucode in the delivered ucode tag, for which a certain space in the reserved domain is allocated by the ucode tag vendor.

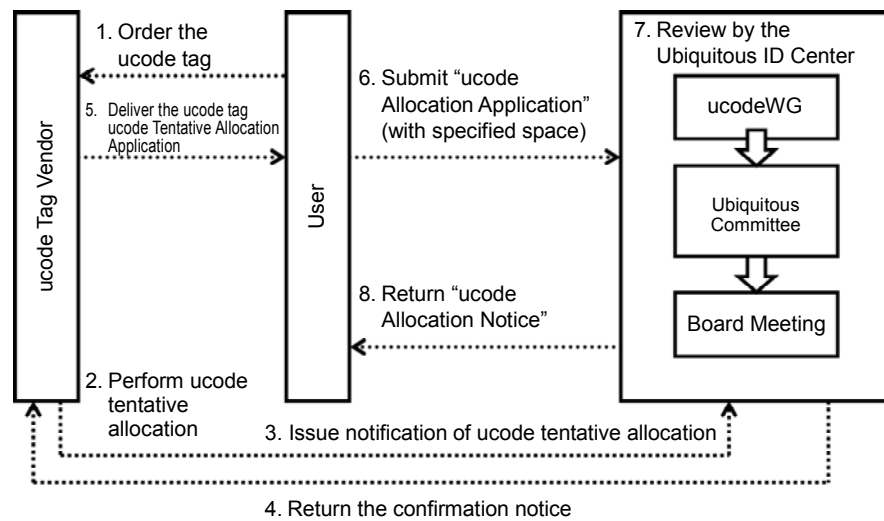


Figure 11: Application Procedural Flow for the ucode Allocation with the Specified Space

3.4.4 Setting the ucode resolution server upon ucode allocation

By receiving a ucode allocation, the user assumes rights and obligations to manage the ucode resolution entry for the allocated portion. The user him/herself must operate the ucode resolution server that manages the ucode resolution entry for the allocated part (or outsource this task to another competent organization). The Local Branch sets the ucode resolution entry to specify the ucode resolution server managed by the user receiving the allocation following the completion of the normal ucode allocation procedure (Figure 12). Likewise, Ubiquitous ID Center sets the ucode resolution entry to specify the ucode resolution server managed by the user receiving the allocation following the completion of the procedure of ucode allocation with the specified space.

Currently, Ubiquitous ID Center or the Local Branch may itself under exceptional circumstances set certain ucode resolution entries as transition measures.

The ucode Resolution Entry of the Local Branch (TLDC=X)

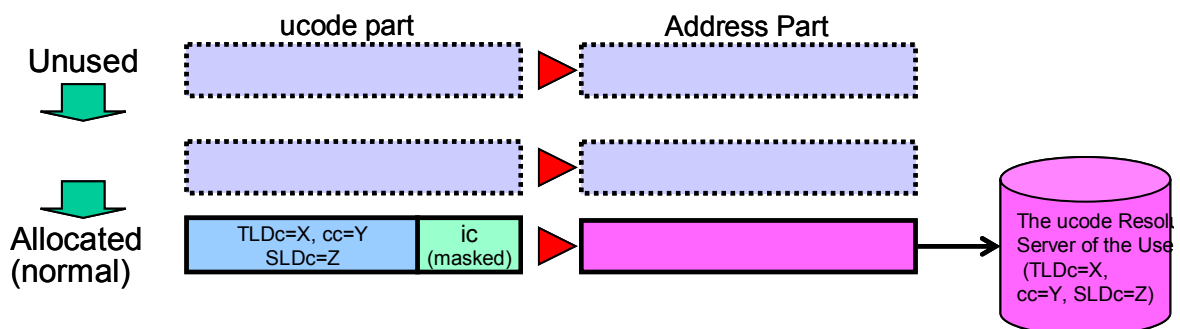


Figure 12: Setting the ucode Resolution Entry Managing an SLD
(Managed by the Local Branch)

3.5 Sub-Allocation

The ucode provider can sub-allocate the ucode in the ucode space allocated by Ubiquitous ID Center to another user (Sub-Allocation). This document does not describe the allocation procedure since this is the responsibility of the ucode provider.

3.6 Issue

Issuing a ucode means actually storing a ucode in the tag and attaching it to a physical object or place and setting the corresponding ucode resolution entry (Figure 13).

The ucode Resolution Entry of the User (TLDc=X, cc=Y, SLDc=Z)

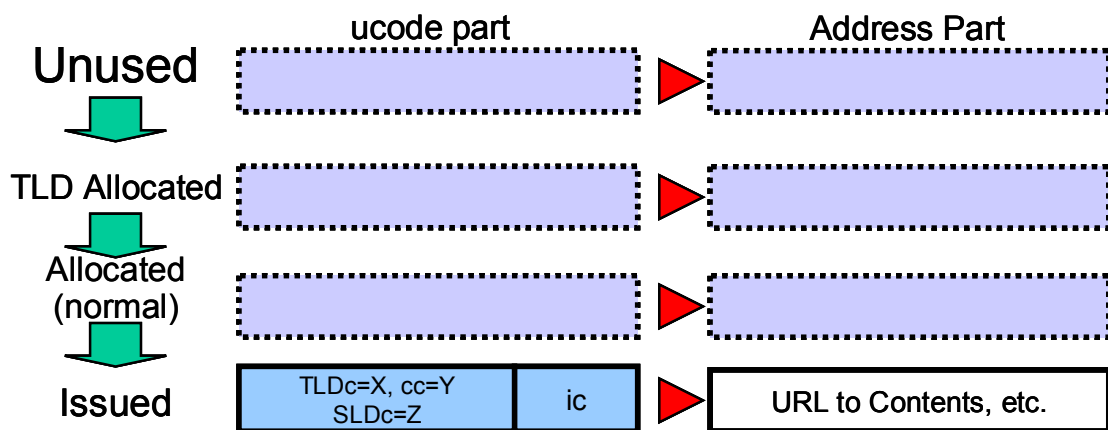


Figure 13: Setting the ucode Resolution Entry Managing the Identification Code (id) Part
(Managed by a User)

3.7 Destruction

This document does not address the ucode destruction procedure because it has yet to be determined.

Chapter 4 ucode Reservation Procedure

4.1 Target

ucode Tag Vendors

4.2 Application Qualification

You must have already undertaken the ucode tag certification procedure.

4.3 Application Procedure

To treat the tag developed by the ucode tag vendor as a ucode tag, the ucode tag vendor must first perform the “ucode Tag Certification” procedure. For rules concerning the ucode tag certification, see the document, “ucode Tag Architecture” [3] and each attached specification.

In addition, if the ucode embedded in the ucode tag is determined upon manufacture and may not be specified by a user (e.g., when associating the unique tag ID with the ucode), the ucode tag vendor may reserve the space for the ucode embedded in the ucode tag in advance. This ucode reservation procedure is described below (Figure 14).

1. The ucode tag vendor submits the “ucode Reservation Application Form” (Exhibit 1) to Ubiquitous ID Center.
2. The Ubiquitous ID Center performs a review based on the document submitted.
3. Ubiquitous ID Center reserves the ucode tag space for which the application is made in the certified standard meta-code space in ucode following examination and approval, then draws up the specification which addresses how to convert between IDs embedded in the ucode tag and ucodes, and publishes this information for use by all parties.

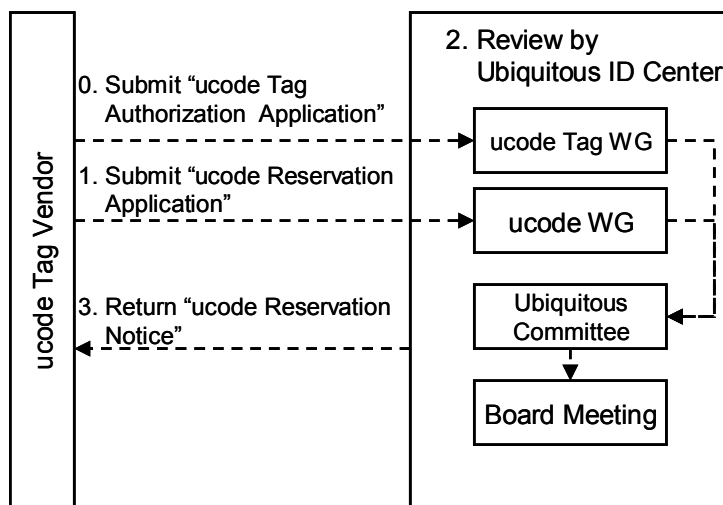


Figure 14: ucode Reservation Procedure

4.4 Conditions for ucode Reservation Authorization

ucode reservation certification (license) must meet all the following conditions:

1) Domain Applicant

The applicant must be a ucode tag vendor.

2) Meeting the conditions of the ucode tag

The tag for the ucode reservation must be certified as a ucode tag or currently in the process of certification.

3) Guarantee of tag ID uniqueness

When issuing a tag ID associated with a ucode, the uniqueness of the specific tag ID must be assured (the condition of ucode tag certification).

4) Mechanism for issuing the tag ID (ucode) whose space does not overlap the space of another tag ID

The ucode tag vendor must ensure that the tag is issued so that the tag ID (corresponding ucode) of the tag set issued to a user meets the following conditions:

- (a) The consecutive m bits from the top of the tag ID have the same values ($b^0 - b^{m-1}$).
- (b) The tag ID whose top m bits values match $b^0 - b^{m-1}$ is not issued to other users (See Figure 7) .
- (c) The minimum number of lots issued for the tag set, which meets the condition (b) above, is equal to or greater than 256.

5) Obligation for ucode issue notice

The tag vendor must undertake the predefined procedures provided in this document, including the tentative allocation procedure, to notify a user of the tag ID allocated to the user. The tag vendor must promptly notify Ubiquitous ID Center of the tentative allocation state.

6) Tag ID width and reserved ucode domain size

The reserved ucode domain space is of the same size as the tag ID space.

Chapter 5 TLD Allocation Procedure

5.1 Target

Local Branches

5.2 Application Qualification

The applicant must be a nonprofit organization in which Executive Committee member(s) of T-Engine Forum is/are involved.

5.3 Application Procedure

The application of TLD allocation is an application procedure in which the Local Branch applies for the TLDc allocation (See Figure 15). The TLDc to be allocated is determined by Ubiquitous ID Center.

1. The Local Branch submits the “Local Branch Establishment Application Form” to Ubiquitous ID Center.
2. Based on the application, Ubiquitous ID Center undertakes the following review steps:
 - (a) Preliminary examination by ucode WG
 - (b) Approval decision by Ubiquitous Committee
 - (c) Approval decision by the Executive Committee
3. Ubiquitous ID Center returns the “TLDc Allocation Notice” to the Local Branch following examination and approval.

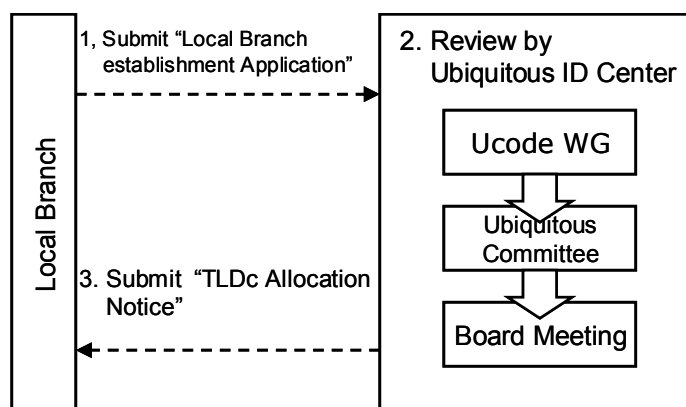


Figure 15: TLD Allocation Application Flow

5.4 Setting the ucode Resolution Server

The Local Branch assumes rights and obligations to operate the ucode resolution server for the allocated TLD. The Local Branch itself must operate the ucode resolution server on his/her own (or outsource associated tasks). At the time of TLDc allocation, Ubiquitous ID Center sets the ucode resolution entry with the

domain part that points at the ucode resolution server managed by the Local Branch which has received TLDC (Figure 16).

The ucode Resolution Entry of Ubiquitous ID Center

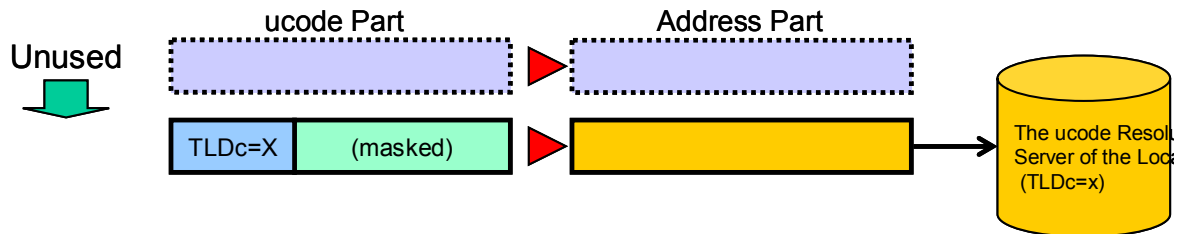


Figure 16: Setting the ucode Resolution Entry Managing the TLD (Managed by Ubiquitous ID Center)

5.5 Use

The Local Branch can use the ucode obtained under this procedure to allocate the ucode based on the application by its user.

Chapter 6 ucode Allocation (Normal) Procedure

6.1 Target

Users

6.2 Application Qualification

1) T-Engine Forum and Local Branch Member

If a user is an A-member, e-member, or academic member, he/she is entitled to receive the allocation of the 48-bit ucode domain at no charge. While the user can apply for a domain greater than or equal to 48 bits, approval in such cases is determined by the Local Branch (the T-Engine Forum in the area where Ubiquitous ID Center manages the Local Branch; thereafter the same) Executive Committee.

2) Local Branch

The Local Branch itself is entitled to receive the allocation of the ucode domain at no charge following approval by the Local Branch Executive Committee.

3) Non-Member

If a user is not a T-Engine Forum or Local Branch member, he/she can receive the domain allocation for a fee. (See Exhibit 5).

6.3 Application Procedure

In the application procedure of the normal ucode allocation, the applicant uses the method by which he/she specifies the space width and applies for ucode allocation (Figure 17). The Local Branch determines the ucode space to be allocated.

- 1) The user submits the “ucode Allocation Application Form” (Exhibit 3) to the Local Branch.
- 2) The Local Branch performs a review based on the document submitted.
- 3) The Local Branch returns the “ucode Allocation Notice” to the user following review and approval (The review could take approximately one to three months).

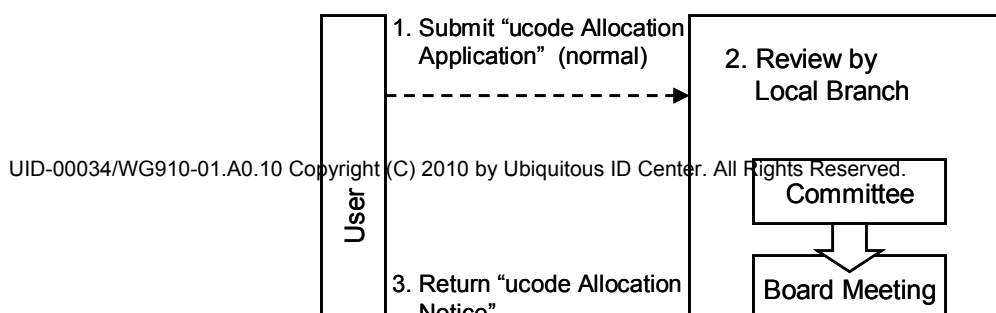


Figure 17: Normal ucode Allocation Application Flow

6.4 Setting the ucode Resolution Server

The user assumes rights and obligations to operate the ucode resolution server for the allocated ucode space. The user must operate the ucode resolution server on his/her own (or outsource associated tasks). The Local Branch sets the ucode resolution entry that the domain part to specify the ucode resolution server managed by the user receiving the allocation following the completion of the normal ucode allocation procedure (Figure 18). If the total number of ucode resolution entries can be made less than or equal to 10 by using the bitmask, the Local Branch can itself manage ucode resolution entries.

In addition, the Local Branch may itself under exceptional circumstances manage ucode resolution entries that exceed 10 as transition measures.

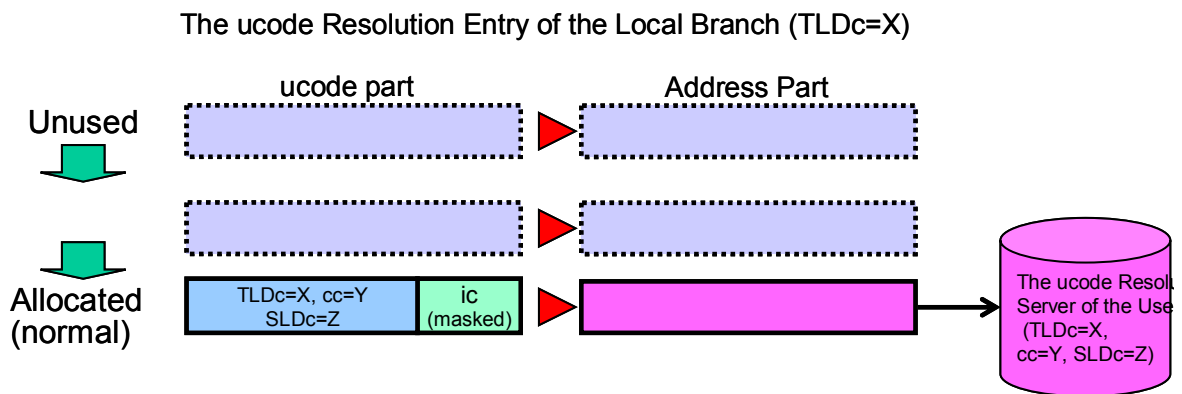


Figure 18: Setting the ucode Resolution Entry Managing an SLD (Managed by the Local Branch)

6.5 Use

The user can him/herself print ucode obtained under this procedure based on the specifications of the Category 0 print tag, including bar codes or ucodeQRs. Or the user can write the ucode into the memory space for electronic ucode tags (Category 1, 2, and 3) which the user can overwrite.

Chapter 7 Procedure for ucode Allocation (with the specified space)

7.1 Target

Users (the same as the ucode Allocation (Normal))

7.2 Application Qualification

1) T-Engine Forum and Local Branch Member

If the total ucode space allocated based on the ucode allocation with the specified space is less than or equal to 48 bits in addition to the normal allocation of the ucode space, the user may be allocated the ucode space in the reserved domain at no charge.

2) Local Branch

The Local Branch itself is entitled to receive the allocation of the ucode domain at no charge following approval by the Local Branch Executive Committee.

3) Non- Member

If a user is not a T-Engine Forum or Local Branch member, he/she can be allocated the ucode space in the reserved domain for a fee. (See Exhibit 5).

7.3 Application Procedure

Applications for allocation with the specified space are allocation applications in which the user specifies a ucode space from the reserved domain. For example, after the user who uses the ucode which has already been written into the ucode tag as factory defaults purchases the ucode from the ucode tag vendor, he/she applies for ucode allocation with the specified space to Ubiquitous ID Center and then receives the allocation. To apply for ucode allocation with the specified space, follow the steps described below (Figure 19):

1. The user orders the ucode tag to the ucode tag vendor.
2. - 4. The ucode tag vendor tentatively allocates a ucode while maintaining contact with Ubiquitous ID Center.
5. The user receives the “ucode Tentative Allocation Application Form” (Exhibit 2) for the ucode stored in the ucode tag with the ordered ucode tag from the tag vendor.⁵

⁵ The vendor can issue the “ucode Tentative Allocation Application Form” for the ucode tag to be delivered in advance to streamline the allocation procedure, based on which, the user can also submit the

6. The user submits the “ucode Allocation Application Form” (Exhibit 4) to Ubiquitous ID Center, based on the content described in the “ucode Tentative Allocation Application Form.”
7. Ubiquitous ID Center performs a review based on the document submitted.
8. Ubiquitous ID Center returns the “ucode Allocation Notice” to the user following review and approval (The review could take approximately one to three months).

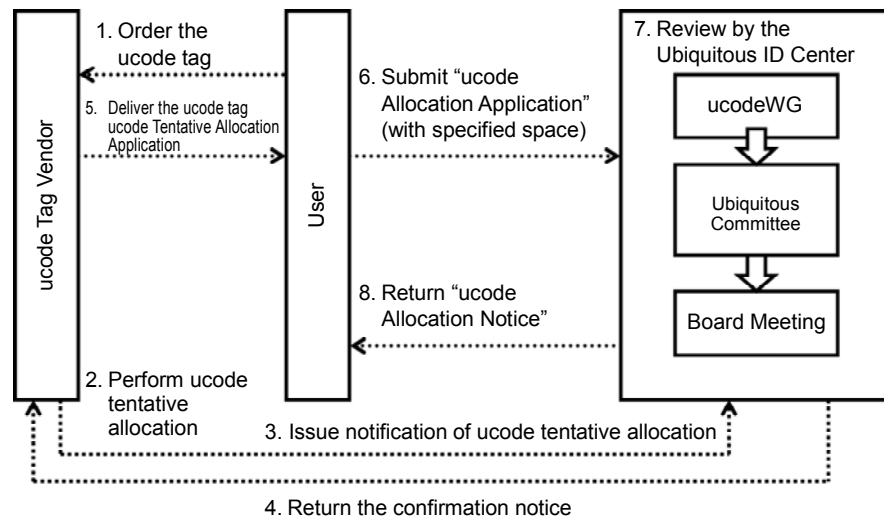


Figure 19: Application Flow for the ucode Allocation with the Specified Space

7.4 Setting the ucode Resolution Server

The same as the ucode Allocation (Normal)

7.5 Use

As soon as the “ucode Allocation Notice” is received from Ubiquitous ID Center, the user can use the purchased ucode tag without change or modification after completing the required tasks, including setting the entry on the ucode resolution server.

“ucode .Allocation Application Form” to Ubiquitous ID Center in advance.

Chapter 8 ucode Tentative Allocation Procedure

8.1 Target

ucode Tag Vendors who receive ucode reservations and supply ucode tags

8.2 Tentative Allocation Procedure

The ucode tag vendor allocates a certain portion of the ucodes in the reserved state to each user that received the ucode tag order. This process is called a ucode tentative allocation (Figure 20). The document guaranteeing that the ucode space is tentatively allocated is the “ucode Tentative Allocation Application Form.” The ucode tentative allocation is performed if a space must be newly allocated when embedding a ucode into a ucode tag.

1. The ucode tag vendor receives the ucode tag order from a user.
2. The ucode tag vendor determines the ucode tag for sale and performs the tentative allocation for part of the reserved space corresponding to the tag ID to be stored in the ucode tag for sale.
3. The ucode tag vendor notifies Ubiquitous ID Center of the tentative allocation state.
4. Ubiquitous ID Center confirms the tentative allocation state and returns a confirmation notice to the ucode tag vendor if no problems arise.
5. The ucode tag vendor issues the “ucode Tentative Allocation Application Form,” which serves as notification of the ucode tentative allocation, and delivers the ucode tag.
6. - 8. The user proceeds to implement ucode allocation with the specified space while maintaining contact with Ubiquitous ID Center.

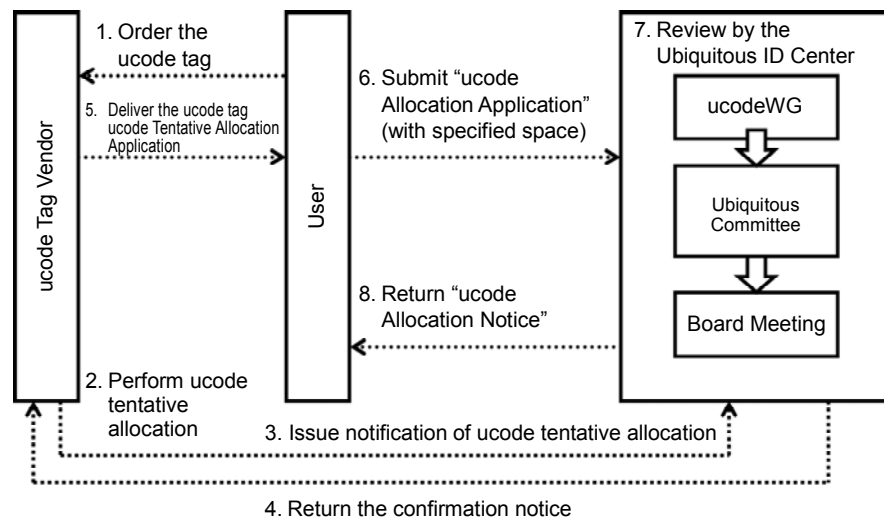


Figure 20: Application Procedural Flow of ucode Tentative Allocation and ucode Allocation with the specified space

8.3 Examples

- (1) The user A purchases 500 ucode tags from the ucode tag vendor T. At this time, T tentatively allocates 10-bit (1,024 ucodes) space to A and embeds 500 ucodes included in this space into tags. T sends 500 ucode tags, the ucode list, and the “ucode Tentative Allocation Application Form” to A.
- (2) The user A purchases 500 same ucode tags from the ucode tag vendor T once again. At this time, the remaining ucodes in the 10-bit space allocated in (1), which means ucodes are not embedded into tags yet, number 524. This exceeds the 500 ordered. T embeds 500 ucodes into the ucode tags from the space that is not embedded in tags in (1) of the 10-bit space allocated in (1). T sends 500 ucode tags and the ucode list to A. In cases like this, no “ucode Tentative Allocation Application Form” is attached.
- (3) The user A purchases 500 same ucode tags from the ucode tag vendor T again. At this time, only 24 ucodes remain in the 10-bit space allocated in (1). This is less than 500, the amount ordered. T once again tentatively allocates a 10-bit (1,024 ucodes) space to A and embeds 500 ucodes from this space into tags. T sends 500 ucode tags, the ucode list, and a “ucode Tentative Allocation Application Form” for the space newly tentatively allocated to A. When performing ucode tentative allocation, the vendor must submit a “ucode Tentative Allocation Application Form” to and obtain confirmation from Ubiquitous ID Center. On receiving confirmation from Ubiquitous ID Center, the vendor receives the “ucode Tentative Allocation Application Form” and then issues ucode tags together with the document to the user.

Lot minimum size with assured consecutive ucodes issued to a user)	()	
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For Official Use Only

Application Reception Number	
Contact Person	
Name, Title, Department	
Phone Number	
e-mail	
Acceptance Date	Month/Day/Year

Exhibit 2

To T-Engine Forum

Organization Name

Organization's Seal

Month/Date/Year

ucode Tentative Allocation Application Form

I have undertaken the ucode tentative allocation as described below and hereby seek your approval.

Tentative Allocation Performer's Information	
Organization Name	
Domain Name for Certification	
Department Name	
Name of the Contact Person	
Tentative Allocation Receiver's Information	
Organization Name	
Department Name	
Starting ucode	0-e000- - - - - - - - 00
Bit Width of Allocated Space	bits

Note

- The Organization and Department Names of the Tentative Allocation Receiver's Information must be those of the person receiving the relevant domain reservation.

For Official Use Only

Application Reception Number	
Contact Person	
Name, Title, Department	
Phone Number	
e-mail	
Acceptance Date	Month/Date/Year

Exhibit 3

To T-Engine Forum

ucode Allocation Application Form (General/Provider)

Application Type	<input type="checkbox"/> General <input type="checkbox"/> Provider		
Organization Name			
Department Name			
Department Manager			
Address			
Tel Number			
e-mail			
Member Type	<input type="checkbox"/> Executive Committee <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> e <input type="checkbox"/> Academic <input type="checkbox"/> Non-member		
ucode Class for Application	<input type="checkbox"/> class A (ic = 96 bits) <input type="checkbox"/> class C (ic = 64 bits) <input type="checkbox"/> class E (ic = 32 bits)	<input type="checkbox"/> class B (ic = 80 bits) <input type="checkbox"/> class D (ic = 48 bits) <input type="checkbox"/> class F (ic = 16bits)	× () number

I hereby apply for the ucode domain allocation and use of the management system, based on the ucode allocation and management system license agreement.

Organization Name

Organization's Seal

Month/Date/Year

For Official Use Only

Application Reception Number	
Contact Person	
Name, Title, Department,	

	Phone Number	
	e-mail	
Acceptance Date		Month/Day/Year

*The most updated form may be on the T-Engine Forum website.

Exhibit 4

To T-Engine Forum

Organization Name

Organization's Seal

Month/Date/Year

ucode Allocation Application Form (with the specified space)

I hereby apply for the ucode allocation and use of the management system, based on the ucode allocation and management system license agreement.

Application Type	<input type="checkbox"/> Specified Space/Provider <input type="checkbox"/> Specified Space/General	
Organization Name		
Department Name		
Department Manager		
Address		
Tel Number		
e-mail		
Member Type	<input type="checkbox"/> Executive Committee <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> e <input type="checkbox"/> Academic <input type="checkbox"/> Non-member	
ucode for Application	Starting ucode	0-e000- - - - - - - - 00
	Bit Width of Allocated Space	bits

Note

You must attach the tentative allocation application from the reserved domain holder to specify the ucode space to be allocated.

For Official Use Only

Application Reception Number	
Contact Person	
Name, Title, Department	
Phone Number	
e-mail	
Acceptance Date	Month/Day/Year

Exhibit 5

ucode (Domain) Allocation Fees

As of July 29, 2007

TBD

ucode Management Implementing Procedures (DRAFT)

Draft version issued on June 5, 2008

Author: Ubiquitous ID Center

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