UNIVERGE OW5000

Remote Call Control (RCC)
Configuration Guide
(Release 3.3)

NEC NEC Infrontia Corporation

Liability Disclaimer

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Introduction

UNIVERGE OW5000 Remote Call Control (RCC) Service can be configured to collaborate with Microsoft Office Communications Server 2007 (OCS2007). This collaboration enables your PBX system to reflect the call status on the presence information in Microsoft Office Communicator 2007 (MOC2007), and make phones served by the IP telephony server originate phone calls. In addition, when a new call is received, the caller information can be displayed in a pop-up window similar to an instant message.

This document explains the settings needed for the Remote Call Control Service to collaborate with the OCS2007 and MOC2007.

> **NOTE** *The Remote Call Control Service can also collaborate with Microsoft Live Communications Server 2005 (LCS2005), and Microsoft Office Communicator 2005 (MOC2005).*

How This Guide is Organized

Chapter 1
Introduction

This chapter gives an overview of the Remote Call Control Service and outlines how to use the manual, including the *System Architecture*, *tel URI*, *Phone Number Normalization*, *DialNumber Conversion*, and *Caller Number Normalization*.

Chapter 2
Microsoft OCS Configuration

This chapter outlines the procedures and configuration for Microsoft OCS.

Chapter 3
Configuration Examples

This chapter gives examples of OW5000 configurations required to collaborate with OCS and MOCs.

Chapter 4
Troubleshooting Guide

This chapter is a guide to troubleshooting any problems that might occur.

System Architecture

The basic architecture of Remote Call Control is shown in Figure 1-1. Using the SIP-based CSTA (Computer Supported Telecommunications Applications) interface, the MOC carries out status monitoring and call control on the extensions served by the PBX. The OCS transfers CSTA/SIP messages received from the MOC to the OW5000 Remote Call Control Service according to the preconfigured static route. The Remote Call Control Service converts CSTA/SIP messages into NEC OAI (Open Application Interface) messages, which are used to control the PBX. Conversely, the Remote Call Control Service converts OAI messages sent from the PBX into CSTA/SIP messages, transferring them to the OCS. The OCS transfers CSTA/SIP messages to the target MOC.

Figure 1-1 *Basic Architecture*
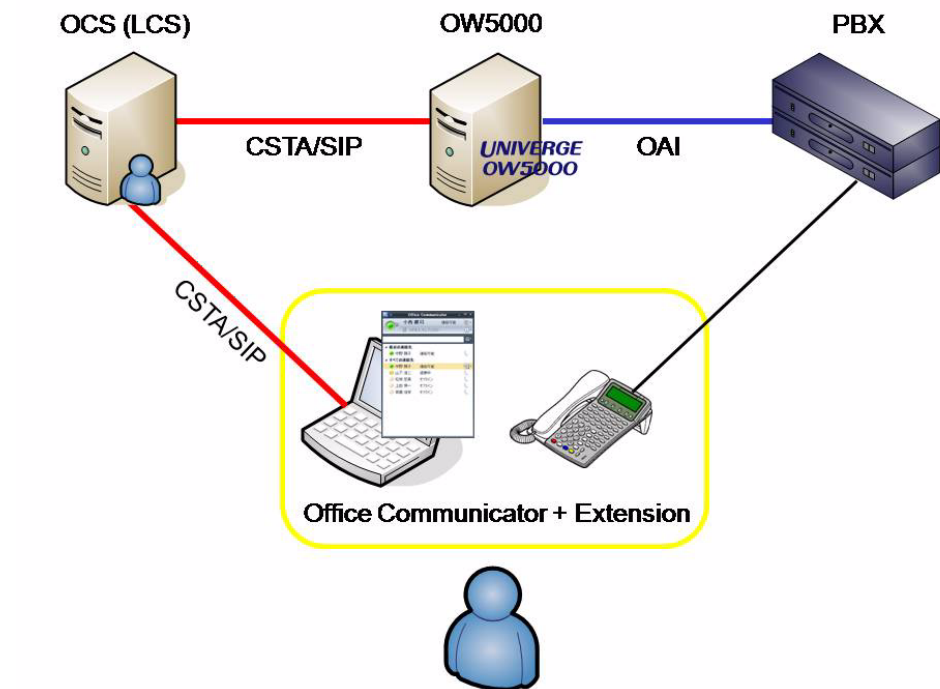
Simplified configuration patterns are shown in Figure 1-2. It is possible to configure an RCC environment flexibly in accordance with the PBX configuration and the number of extensions to be accommodated. In the multiple-PBX and multiple-OW5000 configuration examples below, each PBX is connected by a leased line. In a capacity-expanded/NetFusing configuration, each PBX is treated as one logical PBX by the OW5000 Remote Call Control Service.

Figure 1-2 Configuration Patterns
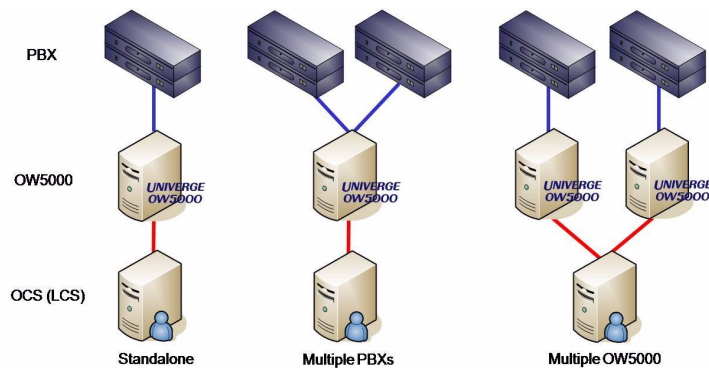
tel URI

In the CSTA/SIP interface, phone numbers are represented in tel URI formats. Standardized in RFC3966, tel URIs refer to formats for describing phone number resources, and can be described in global or local notation.

— Global notation

(1) tel:+<E.164 number>

Example) Phone number (Japan) 090-1234-5678
Tel:+819012345678

Example) Phone number (North America) 212-123-4567
tel:+12121234567

(2) tel:+<E.164 number>;ext=<extension>

Example) Private dial-in number 03-1234-2000 and
extension 2000 tel:+81312342000;ext=2000

Example) Private dial-in number 03-1234-5678 and extension 2000
tel:+81312345678;ext=2000

— Local notation

(3) tel:<local number>;phone-context=<scope>

Example) Extension 2000 at company's domain "nec.com"
tel:2000;phone-context=nec.com

(4) tel:<dial number>:phone-context=dialstring

Globally unique numbers (public numbers) are described in global notation according to E.164. The leading "+" character indicates that the number is unambiguous everywhere in the world. An E.164 number is a phone number within 15 digits, composed of a country number and a domestic phone number (excluding a national prefix). E.164 numbers cannot include "*" and "#". When an extension is associated with a global number, that extension can be included in the tel URI with the ext parameter added. When the ext parameter is added, the E.164 part can be shared by different users (e.g. as the sectional pilot number). However, when the MOC receives a tel URI with the ext parameter, it

displays only the E.164 part with the ext part removed on the termination pop-up. In addition, if an incoming call is from a tel URI that is not registered in the Active Directory (the corporate address book), the calling party cannot be identified. For these reasons, when the ext parameter is used, it is recommended to configure the E.164 part not to share the same number among different users.

Numbers unique within a specific organization (such as extensions) are described in local notation. Local numbers do not begin with the "+" character, and should contain the phone-context parameter. Normally, a company's domain name is specified in the phone-context parameter to identify the scope of local numbers. A tel URI as the combination of the contents of the phone-context parameter and a local number should be again globally unique. Local numbers can include "*" and "#".

A number that is directly entered by a user to place a call can be described in local notation by being followed by phone-context=dialstring. When a user originates a call by entering a dial number in the **Search** box of the MOC, the MOC generates a tel URI in this format (*only when the dial number does not match the normalization rules described later.)

With the OW5000 Remote Call Control Service, local notation (3) is recommended to represent extensions. When extensions and external lines have one-to-one correspondence, global notation (1) can also be used.

Phone Number Normalization

In this document, converting phone numbers into tel URI formats is referred to as "phone number normalization". When the MOC collaborates with PBX extensions, normalized numbers are required in the following situations.

— Originating a call by clicking a phone number displayed on the **Contact List** of the MOC

The Contact List of the MOC displays **Phone No**., **Phone No. (others)**, **Mobile Phone No**., and **Home Phone No**. of the target user, which are registered in the Active Directory. When one of these numbers is clicked to originate a call, the MOC generates a CSTA/SIP message with a normalized phone number. When a normalized phone number is already registered in the Active Directory, it can be used as is. However, phone numbers registered in the Active Directory are usually in such forms as "2000" and "090-1234-5678". To normalize these numbers, use the normalization rules described in the configuration for the OCS address book server. This enables conversion of phone numbers registered in the Active Directory into tel URI formats, and creation of the address book in which the user information is paired with a tel URI. This address book is generated on the OCS server. The MOC downloads this address book at the sign-in time, locally referencing it as the corporate address book. When a call is dialed from the **Contact List**, the MOC obtains the tel URI of the called

party from the corporate address book, and issues an origination request through a CSTA/SIP message.

Figure 1-3 *Call Origination from Contact List*

— Originating a call by user's entering a phone number in the **Search** box of the MOC

The corporate address book downloaded by the MOC contains the same normalization rules that are described in the configuration for the address book service. It is referenced when a phone number is entered in the **Search** box of the MOC. A character string that is obtained by extracting only 0 to 9 and * from the character string entered in the **Search** box is used as the input value for comparison with the normalization rules. When the input value matches a rule, an origination request is issued with the normalized tel URI. When no match is found, an origination request is issued in the tel:<input value>;phone-context=dialstring format.

*The string number **#** entered in the **Search** box is ignored.*

NOTE

When # is needed in dialing such as when # is used as the access code to dial an external number from the PBX, the configuration should ensure that the number entered in the **Search** box is normalized into a tel URI in E.164 format and # is automatically inserted by the OW5000 dial number conversion function.

Concerning the LCS, the normalization rules for the address book service are classified into general rules and corporate rules (only the corporate rules can be described for the OCS). For the LCS, the

phone number entered in the **Search** box of the MOC is compared with the general rules only.

— Displaying the caller name on the termination pop-up of the MOC when an incoming call is received by a phone

When a call is received by a phone collaborating with the MOC, a termination event is notified with the caller number in the following route: **PBX > OW5000 > OCS > MOC**. In this route, an ordinary phone number is transferred from the PBX to OW5000, so OW5000 converts this number into a tel URI. This normalization of the caller number is enabled by describing the normalization rules in the configuration for the OW5000 Remote Call Control Service, as well as for the OCS address book service. When a call is from an extension whose tel URI is registered with OW5000, the registered tel URI is directly used without comparison with the normalization rules. In order for the MOC to successfully search the corporate address book for the caller name using the notified tel URI as a key, the configuration should ensure that the tel URI contained in the corporate address book matches the normalization result in the OW5000 Remote Call Control Service.

Regular Expressions

The normalization rules are created using regular expressions. Table 1-1 lists representative regular expressions.

Table 1-1 *Regular Expressions*

Regular Expression	Meaning
^	The line head is matched.
$	The line end is matched.
()	Means to group, record, and call the content in the parentheses later.
[]	One character in the brackets is matched. A range can be specified using a hyphen.
.	Any one character is matched.
|	One character string or another is matched.
*	The immediately preceding expression appears zero or more times.
+	The immediately preceding expression appears one or more times.
?	The immediately preceding expression appears zero or one time.
{m}	The immediately preceding expression appears m times.
{m,}	The immediately preceding expression appears m times or more.
{m,n}	The immediately preceding expression appears m times or more, n times or less.
\d	Digits 0 to 9 are matched. Same as [0-9].
\s	A space character is matched.

When a special character used in regular expressions, ^, $, [,], *, +, ?, |, (, or) is to be treated as a normal character, each one needs to be preceded by \ as follows: \., \^, \$, \[, \], *, \+, \?, \|, \(, or \). When a special character is treated as a normal character within [ ], \ need not be appended (except for \, ^, and]). When - is used as a normal character within [ ], it is represented as \-.

A character string grouped by () can be referenced by $n. $n means that the nth group from the line head is to be referenced. $0 means that the whole line is to be referenced.

Table 1-2 and Table 1-3 show examples of normalization rules, which are only for reference and need not be followed to create the normalization rules for your system.

Table 1-2 *Normalization Rules (Global Numbers)*

Regular Expression	Conversion	Examples
^0([0-9]{10})$	+81$1	09012345678 -> +819012345678
^0([0-9]{9})$	+81$1	0312345678 -> +81312345678
^0(\d\d)-(\d\d\d\d)-(\d\d\d\d)$	+81$1$2$3	090-1234-5678 -> +819012345678
^\(*0(\d)[()\-](\d\d\d\d)[()\-](\d\d\d\d)$	+81$1$2$3	03-1234-5678 -> +81312345678 (03)1234-5678 -> +81312345678 03(1234)5678 -> +81312345678
^\+(\d)-(\d\d\d)-(\d\d\d)-(\d\d\d\d)$	+$1$2$3$4	+1-212-345-6789 -> +12123456789
^0(\d)-(\d\d\d\d)-(\d\d\d\d)\sX(\d\d\d\d)$	+81$1$2$3;ext=$4	03-1234-5678 X2000 -> +81312345678;ext=2000

Table 1-3 *Normalization Rules (Local Numbers)*

Regular Expression	Conversion	Examples
^([0-9*#]{4})$	$1;phone-context=nec.com	2000 -> 2000;phone-context=nec.com
^2([0-9*#]{4})$	2$1;phone-context=nec.com	20000 -> 20000;phone-context=nec.com
^8([0-9*#]{7})$	$0;phone-context=nec.com	81070000 -> 81070000;phone-context=nec.com

Regular Expression	Conversion	Examples
^8-(\d\d)-([0-9*#]{5})$	8$1$2;phone-context=nec.com	8-10-70000 -> 81070000;phone-context=nec.com
^$	notknown;phone-context=nec.com	No caller number (anonymous) -> notknown;phone-context=nec.com

^$indicates a blank line. When the caller number cannot be acquired at termination, the regular expression for a blank line is matched. When the conversion result is tel:notknown;phone-context=~, "unknown" is displayed on the MOC.

DialNumber Conversion

To send an origination direction to a PBX, OW5000 must convert a tel URI number into a dialable number before passing it to the PBX. Table 1-4 shows examples of tel URI conversion. In the following examples, the external line origination access code and the international origination number of the PBX are assumed to be "0" and "010", respectively.

Table 1-4 tel URIs and Dialable Numbers

Type	tel URI	Dialable numbers
Global number (domestic)	tel:+819012345678	009012345678
Global number (international)	tel:+862112345678	0010862112345678
Global number (domestic) ext	tel:+819012345678;ext=2000	2000
Global number (international) ext	tel:+862112345678;ext=3000	3000
Local number	tel:2000;phone-context=nec.co.jp	2000
Local number	tel:3000;phone-context=dialstring	3000

Every extension using MOC must be registered in the Extension Database of OW5000 with its tel URI. Extensions that do not use MOC normally need not be registered in the Extension Database of OW5000.

The table below lists whether or not MOC is used and if registration in OW5000 is required (Table 1-5).

Table 1-5 *MOC Usage and OW5000 Registration Requirement*

tel URI Formats Used		OW5000 Registration Required?
Extensions using MOC	tel:+>E.164> tel:+>E.164>;ext=<extension> tel:<extension>;phone-context=>scope>	Required
Extensions not using MOC	tel:+>E.164> tel:+>E.164>;ext=<extension> tel:<extension>;phone-context=>scope>	Required Normally not required (Required depending on the configuration *)

* The cases in which extensions not using MOC need to be registered in OW5000 are described below.

- (1) When multiple access codes for an identical PBX exist within one voice network

  Example) To call extension 2000 of PBX 810, 8102000 must be dialed from PBX 820, but 6152000 must be dialed from another PBX 830.

  In such a configuration, an appropriate access code must be appended at origination by preassigning the access code to each PBX in **PBX > PBX Dialing** (Destination PBX) of OW5000. Therefore, extensions which do not use MOC are also required to be registered in OW5000.

- (2) When the conversion from the caller number into the tel URI format is difficult

  Example 1) When a call is received from extension 2000 of PBX 810, PBX 820 is notified of 8102000, but PBX 830 is notified of 6152000.

  Example 2) When the "tel:+<E.164>;ext=<extension>" or "tel:<extension>;phone-context= <scope>" format is used, the <E.164> number or <scope> needs to be decided for every caller number.

  The caller number must be converted into a unique tel URI to be notified to OCS/MOC. If the conversion is not possible using the caller number normalization rules (AniTranslate.txt), the extensions not using MOC must be registered in OW5000.

Figure 1-4 shows the procedure for converting a dial number.

Figure 1-4 *Dial Number Conversion*
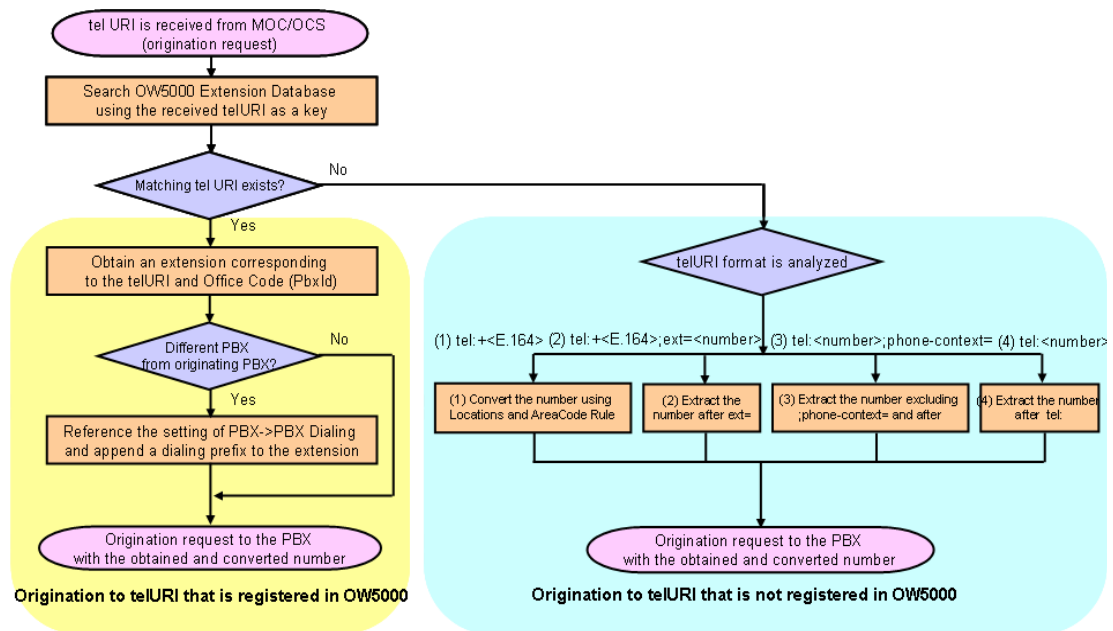
If the tel URI specified by the origination request of MOC matches a tel URI registered in OW5000, the destination PBX and the called extension are identified and the dial number is decided. When the destination PBX is different from the local PBX, the call is originated after appending the access code for the destination PBX to the extension by referencing the setting of **PBX > PBX Dialing** of OW5000. When the destination PBX is not registered in **PBX > PBX Dialing**, the call is originated with no access code appended.

If the tel URI specified by the origination request of MOC is not registered in OW5000, analysis of the tel URI format is executed. When the format "tel:+<E.164>" is used, the call is judged as an external line origination and the tel URI is converted into the dial number. When the format "tel:+<E.164>;ext=<number>", "tel:<number>;phone-context=<scope>", or "tel:<number>" is used, the part of "number" is extracted and it is directly used as the dial number for origination.

The rules according to which a global number specified in the "tel:+<E.164>" format (not registered in the Extension Database) is converted into a dial number should be configured in **Locations** and **AreaCode Rules** under **Administrator > PBX Management** of OW5000. In **Locations**, six types of information are configured: the country code of the destination PBX, the city/area code, the external line origination access code (long distance), the external line origination access code (local), the international origination number, and the operator identification number. In **AreaCode Rules**, the list of the city/area codes which are referenced during conversion is registered as additional information to **Locations**.

The procedure for converting an external line dial number is shown in Figure 1-5.

Figure 1-5 *External Line Dial Number Conversion Logic*
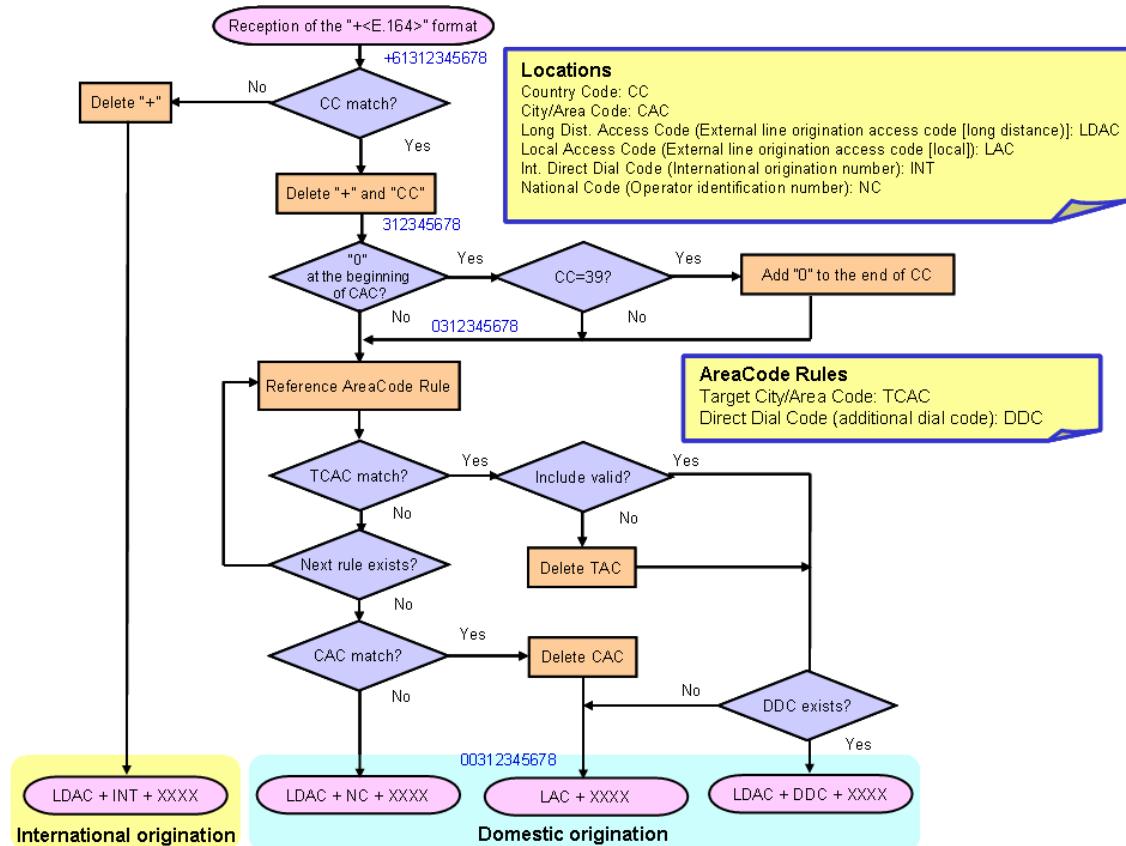
Whether the country code following "+" matches the country code of the local PBX is checked determines whether or not the call is of international origination. The conversion into a dial number is then executed following the rules shown below.

- International origination

  External line origination access code (long distance) + international origination number + E.164 number

  Example) +12141234567 -> 0 010 121412345678

- Domestic origination (when the city/area code is registered in **Locations** and **AreaCode Rule**)

  External line origination access code (local) + 0 + E.164 number excluding the country code

  Example) +61312345678 -> 0 0 312345678

- Domestic origination (when the city/area code is registered in **Locations** and **AreaCode Rule** (**with DDC**))

  External line origination access code (long distance) + additional dial code (DDC) + 0 + E.164 number excluding the country code

  Example) +61312345678 -> 0 00XY 0 312345678 (where DDC is 00XY)

- Domestic origination (when the city/area code is not registered in **Locations** or **AreaCode Rule**)

  External line origination access code (long distance) + operator identification number + 0 + E.164 number excluding the country code

  Example) +61412345678 -> 0 00XY 0 412345678 (where the operator identification number (NC) is 00XY)

Caller Number Normalization

A caller number received from the PBX needs to be converted into a tel URI format by the OW5000 Remote Call Control Service, and sent to OCS.

If this is a closed numbering configuration (including standalone PBX configuration), the procedure for normalizing a caller number is shown in Figure 1-6.

Figure 1-6 *Caller Number Normalization (In Case of Closed Numbering)*
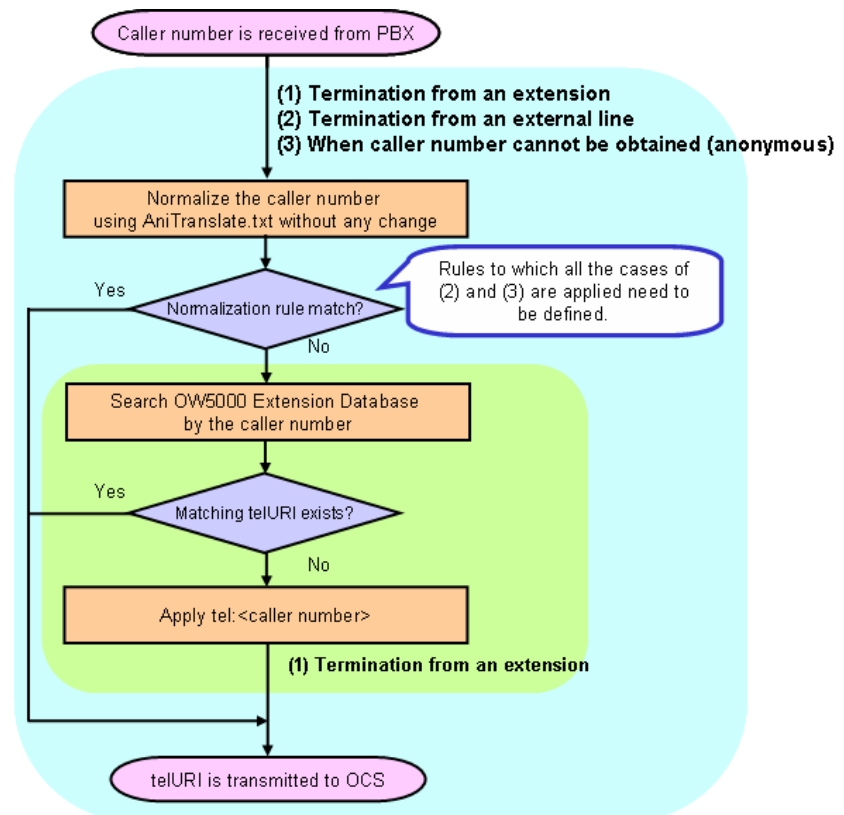
Caller numbers are converted into tel URI formats according to the normalization rules described in AniTranslate.txt, and then sent to OCS.

A caller number may be involved in one of the following three types of termination:

(1) Termination from an extension

(2) Termination from an external line

(3) Caller number cannot be obtained (anonymous)

Unless otherwise defined (*), define the normalization rules so that all caller numbers of (1) to (3) can be normalized according to AniTranslate.txt.

* If the rule definition in AniTranslate.txt is difficult such as when the tel:+<E.164> format is used, define rules not to match AniTranslate.txt normalization rules so that a tel URI registered in the OW5000 Extension Database is sent to OCS.

Figure 1-7 shows the procedure for normalizing a caller number when in an open numbering configuration.

Figure 1-7 *Caller Number Normalization (for Open Numbering)*
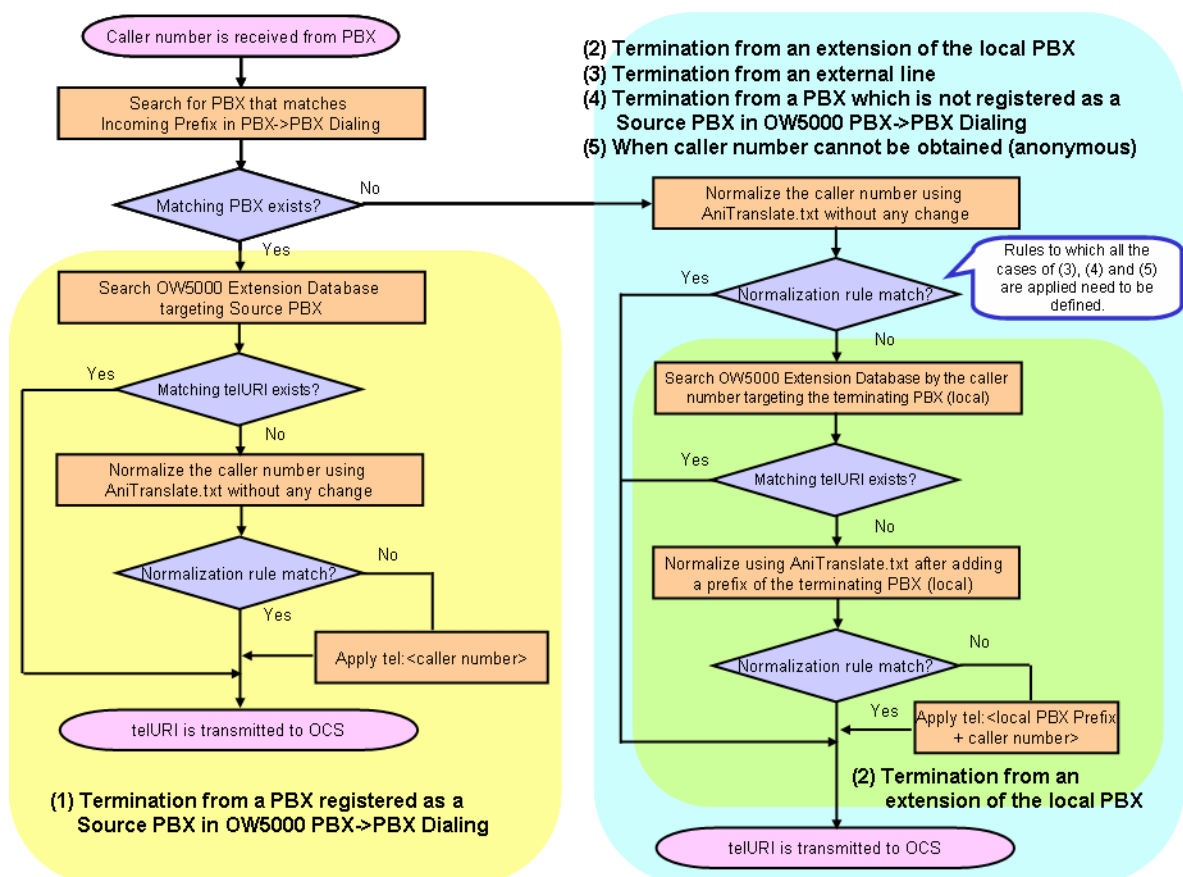
If the first digit of the caller number matches Incoming Prefix set in **PBX > PBX Dialing**, search for the target extension of the target PBX. If a matching tel URI is found, send the registered tel URI to OCS. If a tel URI match is not found, convert the caller number into a tel URI according to the normalization rule described in AniTranslate.txt and send it to OCS.

If the first digit of the caller number does not match the Incoming Prefix set in **PBX >PBX Dialing** the caller number may be involved in one of the following four types of termination:

(2) Termination from an extension of the local PBX

(3) Termination from an external line

(4) Termination from a PBX which is not registered as a **Source PBX** in OW5000 **PBX > PBX Dialing**

(5) Caller number cannot be obtained (anonymous)

Define the normalization rules so that all caller numbers of (3) to (5) are converted into tel URIs according to AniTranslate.txt.

Caller numbers that do not match normalization rules are treated as (2) call termination from extensions of the local office. Search for the target extension of the local PBX. If a matching tel URI is found, send the registered tel URI to OCS. If no tel URI match is found, append the local PBX prefix to the caller number, convert it to a tel URI as per the normalization rule described in AniTranslate.txt, and send it to OCS.

In addition, with the OW5000 Remote Call Control Service, if a call is originated to an external/leased line using MOC or if the other party is switched from an extension to an outside line, the information of the other party cannot be obtained correctly, and an 8- to 10-digit outside trunk identifier may be displayed on the MOC screen.

Example 1) When a phone number for an external/leased line is entered in the **Search** box of MOC to originate a call, an outside trunk identifier (22510251 in the example below) is displayed as the called party after the called party answers the call. In addition, when the other party is switched to an external/leased line through an unattended call transfer (direct transfer), an outside trunk identifier is displayed as well.

Figure 1-8 *Trunk Identifier*

Example 2) When an outside phone number such as a mobile phone is selected from the **Contact List** to originate a call, the "i" symbol is displayed on the right side of the called party's name after the called party answers the call. When the mouse pointer is placed on the "i" symbol, the following message displays, *The participant has attended the phone meeting from outside trunk identifier XXXXXXX*. A similar display also appears when the termination side forwards a call from an extension to an outside line such as a mobile phone by redirection operation (forwarding during termination).

An outside trunk identifier is an 8- to 10-digit number created based on the PBX internal trunk information. Just like the normalization of caller

numbers, an identifier is normalized into a tel URI format by the procedure in Figure 1-6, and notified to the caller.

Caller Number Normalization Rules

Caller number normalization rules (AniTranslate.txt) are installed in the following folder in the OW5000 server.

C:\Program Files\NEC\OW5000\RCC\AniTranslate.txt

Open AniTranslate.txt. Note that rules for country number "1" (North America) are described in this file. Add # at the line head to make it a comment line and describe a necessary normalization rule.

In the following description format, describe a country code, regular expression, and conversion pattern on a single line. ? indicates [tab]. A line beginning with # is treated as a comment line. For country code, describe the country number (that matches the Country Code in **Locations** for the PBX installation location. In <conversion pattern>, describe a pattern including the tel: scheme.

Description format (Caller number normalization rules)
Comment line
<Country code> ▲<Regular expression (Line head^ and line end$ are required)> ▲<Conversion pattern (Including tel:scheme) >
Comment line
<Country code> ▲<Regular expression (Line head^ and line end$ are required)> ▲<Conversion pattern (Including tel:scheme)>

Description format (Caller number normalization rules)
Convert a 10-/11-digit number beginning with 0 into tel:+<E.164>.
81   ^0([0-9]{9,10})$ tel:+81$1
Convert an 8-digit extension beginning with 8 into tel:
<extension number>;phone-context=univerge.com.
81   ^8([0-9*#]{7})$ tel:$0;phone-context=univerge.com

NOTE

The above description format is different from the following description format for phone number normalization rules for the OCS address book server (address book service).

Description format (Phone number normalization rules)
Comment line
<Regular expression (Line head^ and line end$ are unnecessary)>
<Conversion pattern (not including tel:scheme)>
Comment line
<Regular expression (Line head^ and line end$ are unnecessary)>
<Conversion pattern (not including tel:scheme)>

2

Microsoft OCS Configuration

This chapter describes additional configurations for OCS and MOC which are required for collaborating with the OW5000 Remote Call Control. This document is created on the assumption that the setup of OCS and MOC has been done and MOC is ready for presence confirmation and instant message transmission/reception. Confirm that all the Microsoft software patches have been applied to all OCS servers and computers which execute MOC.

OCS/MOC2007 Configuration

Log into the Windows server on which OCS is running. Select **Start** > **Management Tool** > **Office Communications Server 2007**. Right-click on the computer name and select **Property** to open an Office Communications Server 2007 dialog box.

Figure 2-1 *Office Communications Server 2007 dialog box*
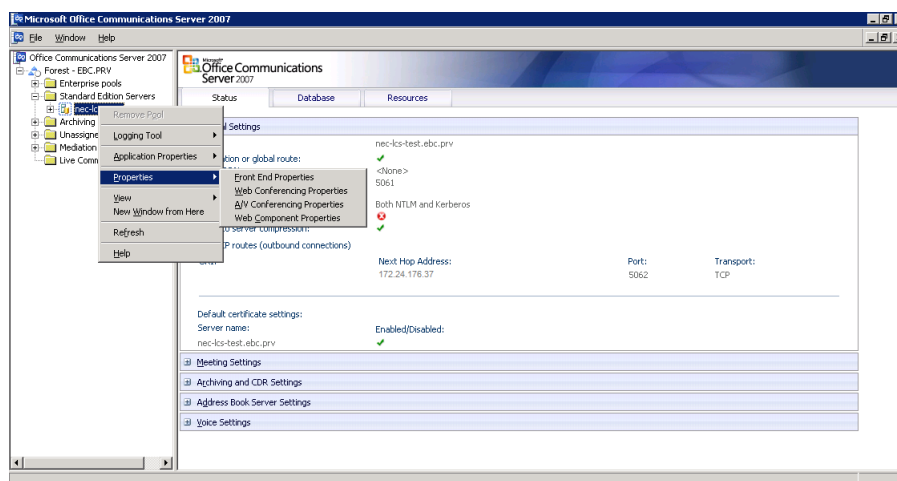
Adding Static Route

Step 1   To register the routing conditions and destination for CSTA/SIP messages, select the **Routing** tab on the property screen.

Figure 2-2 *Property of Front End dialog box*
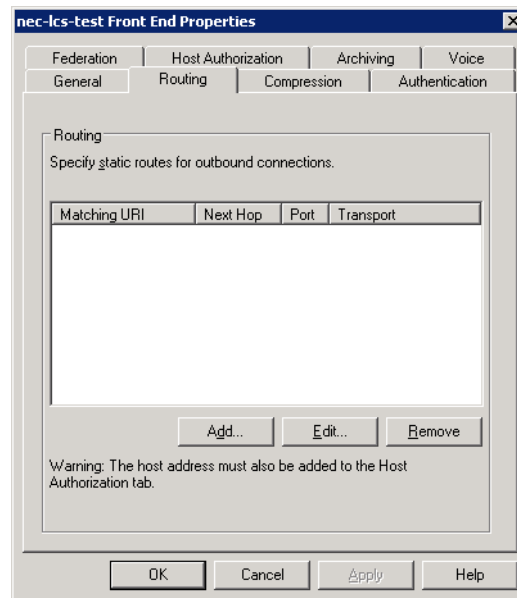
Step 2   Click **Add**. An Edit Static Route dialog box displays (Figure 2-3).

Figure 2-3 *Edit Static Route dialog box*
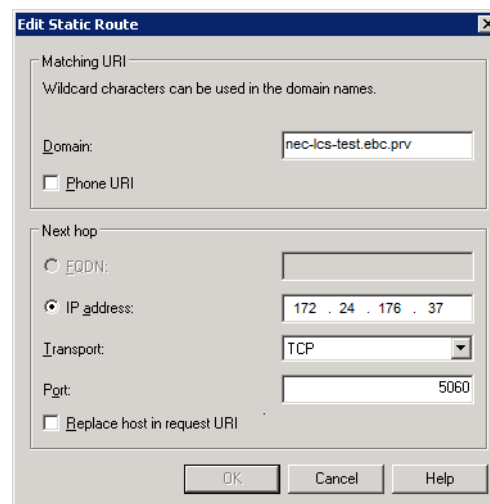
Step 3   Enter the matching URI of the OW5000 Remote Call Control server into the **Domain** field.

If the configuration has two or more OW5000 units, a different domain name is required for each OW5000 server to enable routing.

NOTE *Specifying FQDN of the OW5000 server is recommended.*

Step 4   In the **Next hop** field, enter the address of the server on which the OW5000 Remote Call Control Service runs.

Step 5   Select **TCP** for Transport.

Step 6   Enter the **Port** number, which has been set at RCC Setting of OW5000 Administrator (default: 5060).

Step 7   Click **OK**.

Adding Approved Host

Follow the steps below to add an approved host.

Step 1   Select the **Host Authorization** tab on the property screen.

Figure 2-4 *Host Authorization Tab*
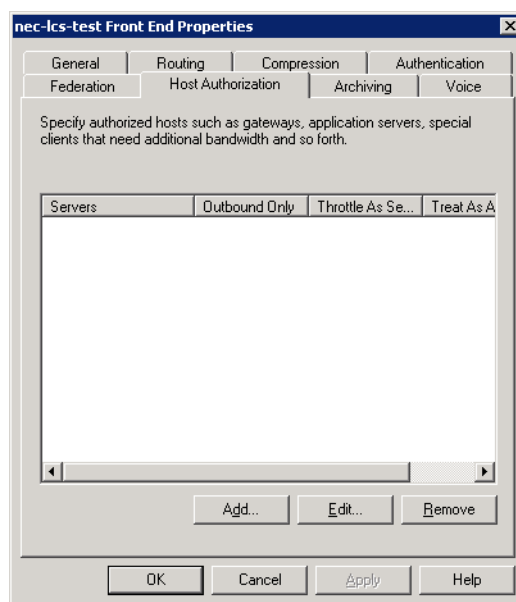
Step 2   Click **Add**. An Edit Authorized Host dialog box displays (Figure 2-5).

Figure 2-5 *Edit Authorized Host dialog box*
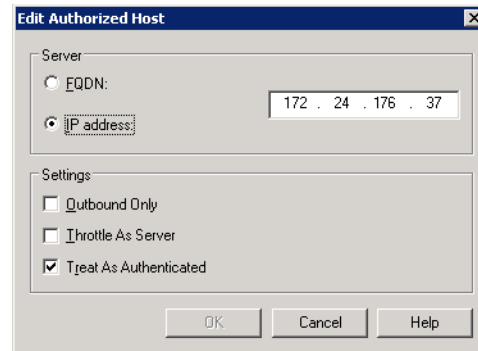
Step 3 In the **Server** field, enter the address of the server on which the OW5000 Remote Call Control Service runs. The address should be added as the static route beforehand.

Step 4 Check **Treat As Authenticated** in the **Setting** field.

Step 5 Click **OK**.

Phone Number Setting

Select **Start** > **Management Tool** > **Active Directory User and Computer** to display the properties of the RCC user.

Figure 2-6 *RCC User Properties*
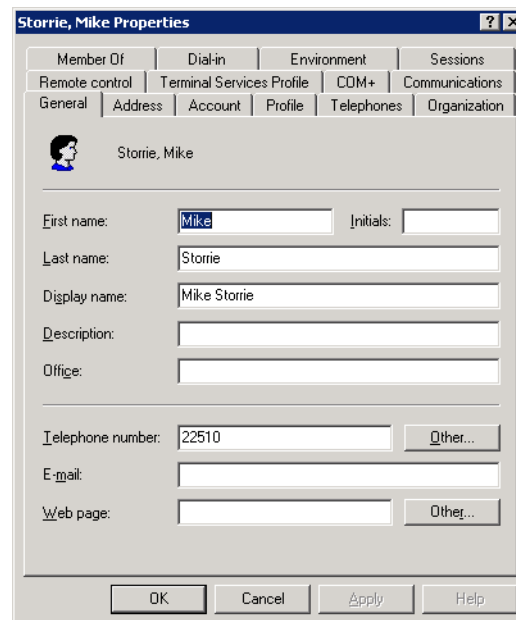
Step 1 Enter the main phone number into the **Telephone number** field from the **General** tab.

The input value for this field needs to be a value that can be converted into the line URI, which will be set in the next section, by normalization. Therefore, this value should be the extension number itself of the collaborating PBX phone or the value from which the extension number can be derived. For an open numbering network configuration, the local prefix (access code + exchange number) should be educible as well as the extension number.

Step 2 To enter another phone number, click **Other**, or the mobile/home phone number in the **Telephones** tab, as needed.

User Option Settings

Follow the steps below to display the properties of the RCC user from the Microsoft Office Communication Server 2007 dialog box (Figure 2-7).

Figure 2-7 *Microsoft Office Communication Server 2007 dialog box*
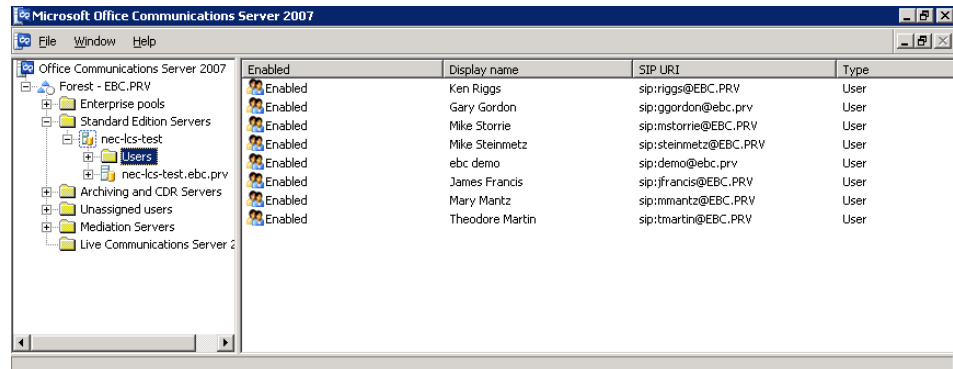
A Property dialog box for the user displays (Figure 2-8).

Figure 2-8 *Property dialog box*
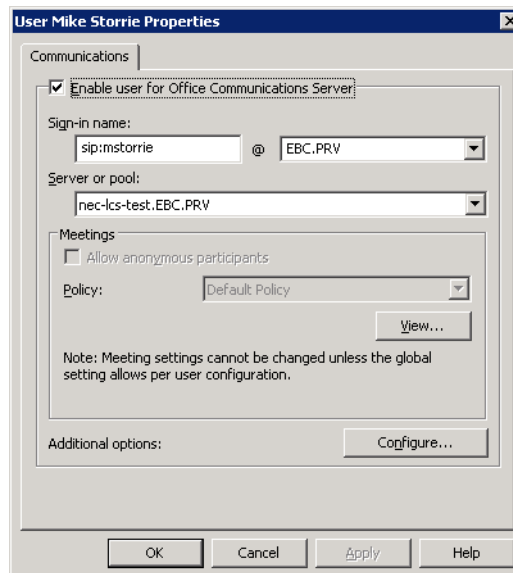
Step 1   Click the **Configure** button. A User Options dialog box displays (Figure 2-9)

Figure 2-9 *User Options dialog box*

> *Step 2* Select **Enable Remote call control** in the **Telephony** field and then enter the server URI and Line URI.

NOTE

Enterprise Voice, including the PBX integration, is not supported.

> *Step 3* Enter the **Server URI** in the format of sip:<user identifier>@<domain name>. The part of <domain name> needs to be the same as the domain name entered on the Edit Static Route dialog box (Figure 2-3). Enter an extension number into <user identifier>.

> *Step 4* Enter the **Line URI** in the format of tel:<extension number>;phone-context=<scope>. Enter the domain name of the company into <scope>.
>
> For an open numbering network configuration, the local prefix (access code + exchange number) should also be included in <extension number>. The line URI needs to match the tel URI set through OW5000 Administrator—Extension Management. Refer to the UNIVERGE OW5000 System Manual for more information.

> *Step 5* Click **OK**.

Address Book Server Setting

To edit the normalization rules for the OCS address book server, follow the steps below.

When the application has been installed to the default location, the configuration file is located in the following directory:

C:\Program Files\Microsoft Office Communications Server 2007\Web Components\Address Book Files\Files

Figure 2-10 *Address Book Files Folder*

Step 1 Copy the file *Sample_Company_Phone_Number_Normalization_Rules.txt* and name it *Company_Phone_Number_Normalization_Rules.txt*"

Step 2 Open the file *Company_Phone_Number_Normalization_Rules.txt*, and delete the sample descriptions for Microsoft Corporation and describe the necessary normalization rules.

> **NOTE** *^ and $, which indicates the beginning and end of a line, does not need to be described*

Step 3 Describe a regular expression on one line and describe a conversion pattern on the next line. Lines beginning with **#** are treated as comment lines.

> **NOTE** *tel: does not need to be described in the conversion pattern.*

Figure 2-11 *Example of Normalization Rules Text File*
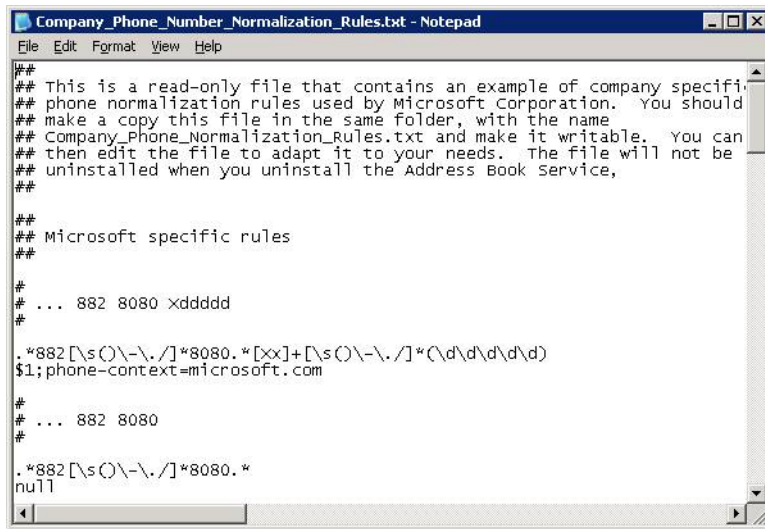
Step 4 Save the file *Company_Phone_Number_Normalization_Rules.txt*" after editing.

You can verify if the normalization rules have been appropriately described by using the normalization rule tests described at the end of the file.

Figure 2-12 *Verify the Normalization Rules*
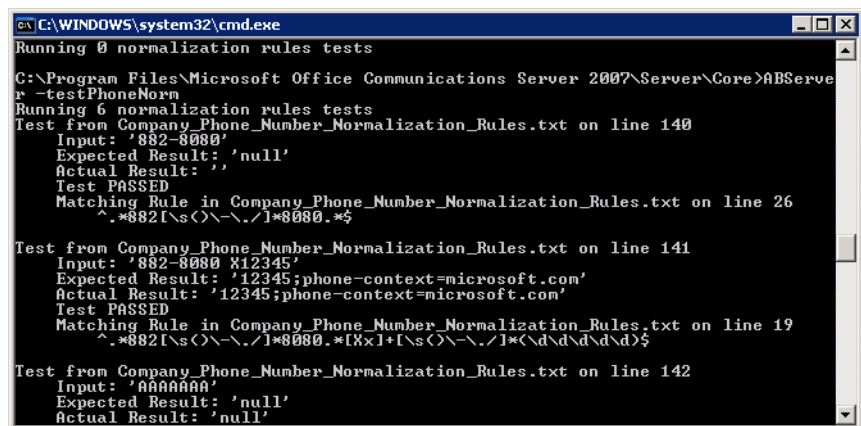
Step 5 To update the address book file with the normalization rules applied, execute the following command via the command prompt screen.

C:\Program Files\Microsoft Office Communications Server 2007\Server\Core\ABServer -syncNow

Figure 2-13 *Update the Address Book File*
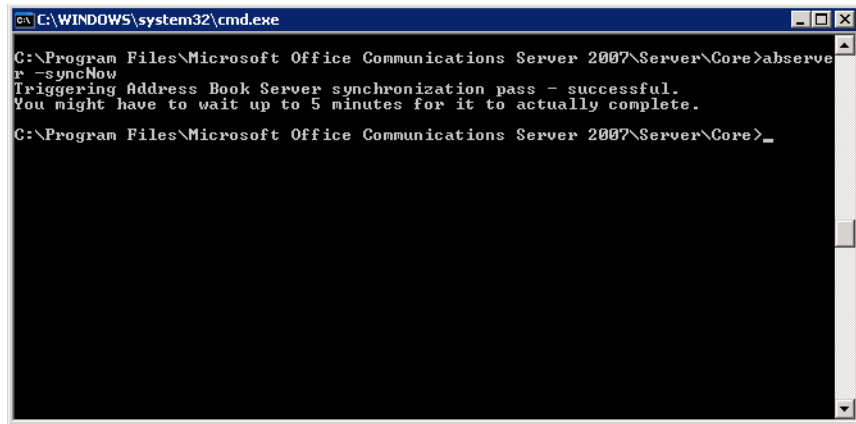
When this operation is completed, an address book file is created in the directory listed below. If a phone number does not match the normalization rules, a file named *Invalid_AD_Phone_Numbers.txt* is created. Check the file content and edit the normalization rules appropriately.

C:\Program Files\Microsoft Office Communications Server 2007\Web Components\Address Book Files\Files

MOC obtains the address book data at the time you sign-in and retains them in the *galcontacts.db* file located under the following directory.

C:\Documents and Settings\<username>\Local Settings\Application Data\Microsoft\Communicator

To update the address book data on the MOC side immediately, delete *galcontacts.db* and then sign into MOC again.

MOC2007 Policy Settings

To use Remote Call Control, the policy setting is required for MOC2007. Set the following registry value to 2 or 4.

Name: TelephonyMode Type: REG_DWORD Data: 2 or 4

0 = Enables calls between computers only. Call control is not enabled (predetermined)

1 = Enables the enterprise VoIP telephony function

2 = Enables calls between RCC and computer

3 = Enables both the enterprise VoIP and RCC

4 = Enables RCC for calls other than between computers

5 = Enables IM and presence only. Voice is not enabled

Figure 2-14 *Set Policy Setting Using Registry Editor*
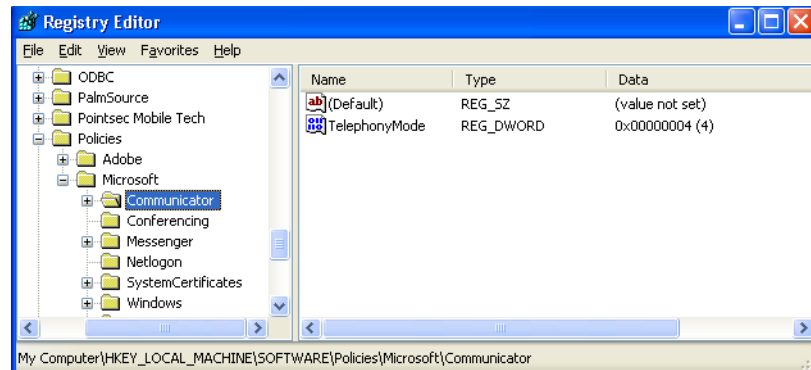
MOC2007 Option Settings

Display the MOC2007 option screen by selecting **Tools** > **Options**.

Figure 2-15 *Display MOC2007 Option Screen*
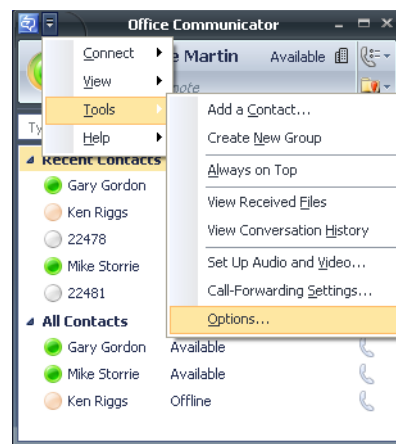
An Options—Phones Tab dialog box displays (Figure 2-16).

Figure 2-16 *Options—Phones Tab*

Step 1   Check **Enable integration with your phone system** in the **Phone integration** field.

Step 2   Click the **Advanced** button.

Step 3   Select **Automatic configuration** on the **Advanced phone Integration Configuration** screen.

Figure 2-17 *Advanced Phone Integration Configuration dialog box*

Step 4   When selecting **Configure settings**, enter the Remote Call Control URI and Phone URI.

Step 5   Enter the server URI and the line URI which have been entered in user option settings for Remote Call Control URI and Phone URI, respectively.

Operation Check

This is the end of the OCS and MOC2007 configurations. Check the operation after configuring the OW5000 Remote Call Control Service.

After you sign-in, if the phone-shaped mark is displayed on the right side of your name, as shown below, the Remote Call Control has appropriately been configured.

Figure 2-18 *MOC2007 Screen*

If the following error displays, confirm the settings again.

Figure 2-19 *Confirm MOC2007 Setting*

3
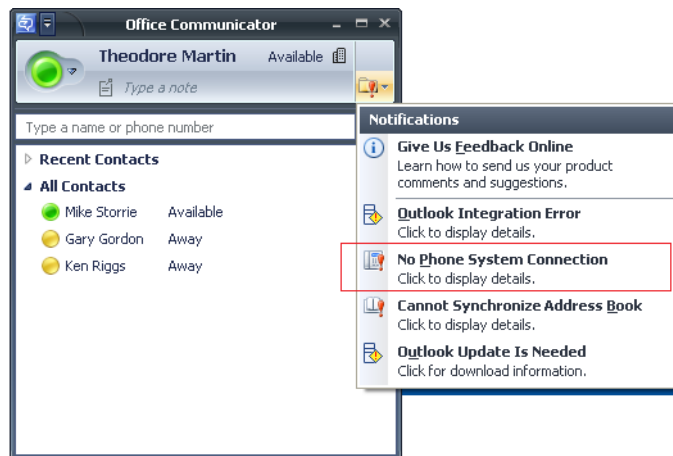
Configuration Examples

This chapter provides examples of the OW5000 configurations required to collaborate with OCS and MOC.

Managing Single IP Telephony Server

Standalone PBX

Figure 3-1 *Standalone PBX Environment*
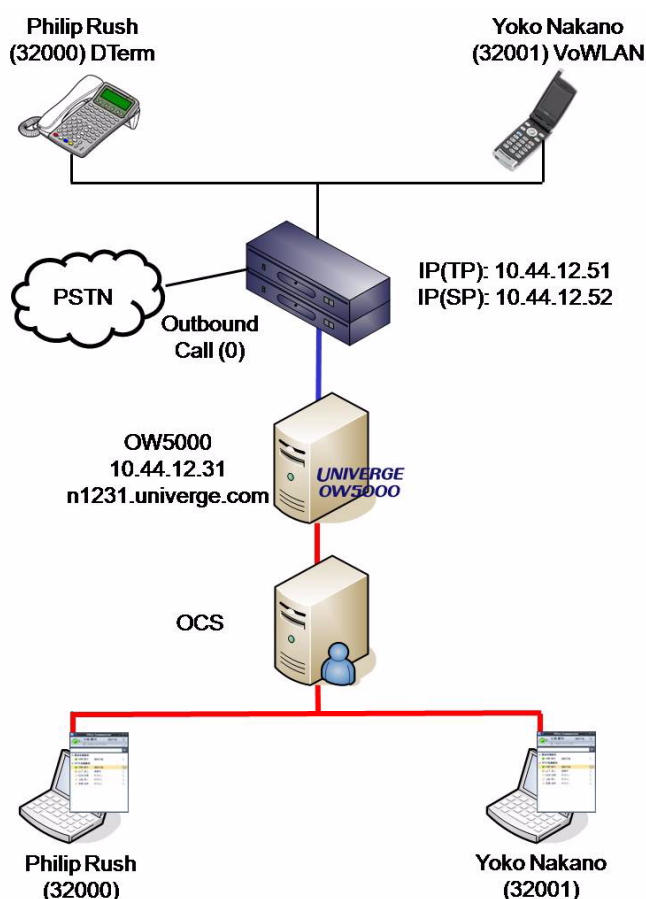
Table 3-1 *OCS side configuration*

Active Directory				
Name	**Phone No.**	**Mobile phone No.**	**Server URI**	**Line URI**
Phillip Rush	32000	090-1234-5678	sip:32000@n1231.univerge.com	tel:32000;phone-context=univerge.com
Yoko Nakano	32001	080-1234-5678	sip:32001@n1231.univerge.com	tel:32001;phone-context=univerge.com

Address Book Server (normalization rules)
0(/d/d)-(/d/d/d/d)-/d/d/d/d)
+81$1$2$3
([0-9*#]{5}]
$1;phone-context=univerge.com

Static Route		
Domain	**Next Hop IP Address**	**Next Hop Port**
n1231.univerge.com	10.44.12.31	5060

Table 3-2 *OW5000 Side Configuration*

PBX Management							
PBX Name	**IP Address**	**Office Code**	**PBX Type**	**Locations**	**UGN**	**Prefix**	**Sip Server**
Kanda	10.44.12.51	1	UNIVERGE SV7000	Tokyo	False		

PBX Management - Locations						
Location Name	**Country Code**	**City/Area Code**	**Long Dist Access Code**	**Local Access Code**	**Int. Direct Dial Code**	**National Code**
Tokyo	81	03	0	0	010	

PBX Management - Area Code Rule				
Location Name	**Area Code**	**Exchange**	**Access Code**	**Include Area Code**
Tokyo	0			

PBX Management - Reserved Number				
PBX	**Number**	**Tenant**	**Reserved Type**	**Application**
Kanda	39000	1	Monitored Number	OW5000 API

Extension Management						
Extension	**PBX**	**Phone Type**	**Tenant**	**Tel URI**	**SIP URI**	**Is Monitored**
32000	Kanda	DTerm	1	32000;phone-context=univerge.com		(False)
32001	Kanda	DTerm	1	32001;phone-context=univerge.com		(False)

License Management		
PBX	**Extension**	**CSTA**
Kanda	32000	TRUE
Kanda	32001	TRUE

Caller Number Normalization Rules
External termination (domestic)
81   ^0([0-9]{9,10})$ tel:+81$1
Extension termination (5 digits)
81   ^([0-9*#]{5})$ tel:$1;phone-context=univerge.com
Anonymous termination
81   ^$ tel:notknown;phone-context=univerge.com
For the trunk identifier
81   ^([0-9]{8,10})$ tel:$1;phone-context=univerge.com
International termination
81   ^(1|20|21\\d|22\\d|23\\d|24\\d|25\\d|26\\d|27|28\\d|29\\d|30|31|32|33|34|35\\d|36|37\\d|38\\d|39|40|41|42\\d|43|44|45|46|47|48|49|50\\d|51|52|53|54|55|56|57|58|59\\d|60|61|62|63|64|65|66|67\\d|68\\d|69\\d|7|80\\d|81|82|83\\d|84|85\\d|86|87\\d|88\\d|89\\d|90|91|92|93|94|95|96\\d|97\\d|98|99\\d)(\\d+)tel:+$1$2

FCCS Network

Figure 3-2 *FCCS Network Environment*
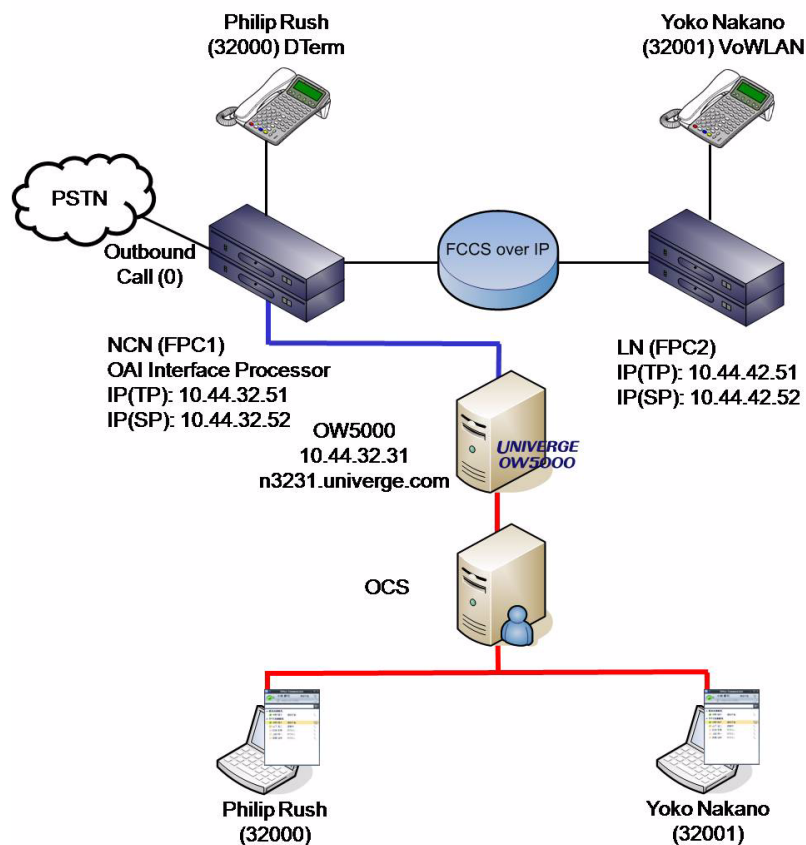
Table 3-3 *OCS Side Configuration*

Active Directory				
Name	**Phone No.**	**Mobile phone No.**	**Server URI**	**Line URI**
Phillip Rush	32000	090-1234-5678	sip:32000@n1231.univerge.com	tel:32000;phone-context=univerge.com
Yoko Nakano	32001	080-1234-5678	sip:32001@n1231.univerge.com	tel:32001;phone-context=univerge.com

Address Book Server (normalization rules)
0(/d/d)-(/d/d/d/d)-/d/d/d/d)
+81$1$2$3
([0-9*#]{5})
$1;phone-context=univerge.com

Static Route		
Domain	**Next Hop IP Address**	**Next Hop Port**
n3231.univerge.com	10.44.32.31	5060

Table 3-4 *OW5000 Side Configuration*

PBX Management							
PBX Name	**IP Address**	**Office Code**	**PBX Type**	**Locations**	**UGN**	**Prefix**	**Sip Server**
Kanda	10.44.32.51	1	UNIVERGE SV7000	Tokyo	False		

PBX Management - Locations						
Location Name	**Country Code**	**City/Area Code**	**Long Dis-tAccess Code**	**Local Access Code**	**Int. Direct Dial Code**	**National Code**
Tokyo	81	03	0	0	010	

PBX Management - Area Code Rule				
Location Name	**Area Code**	**Exchange**	**Access Code**	**Include Area Code**
Tokyo	0			

PBX Management - Reserved Number				
PBX	**Number**	**Tenant**	**Reserved Type**	**Application**
Kanda	39000	1	Monitored Number	OW5000 API

Extension Management						
Extension	**PBX**	**Phone Type**	**Tenant**	**Tel URI**	**SIP URI**	**Is Monitored**
32000	Kanda	DTerm	1	32000;phone-context=univerge.com		(False)
32001	Kanda	DTerm	1	32001;phone-context=univerge.com		(False)

License Management		
PBX	**Extension**	**CSTA**
Kanda	32000	TRUE
Kanda	32001	TRUE

Caller Number Normalization Rules
External termination (domestic)
81   ^0([0-9]{9,10})$ tel:+81$1
Extension termination (5 digits)
81   ^([0-9*#]{5})$ tel:$1;phone-context=univerge.com
Anonymous termination
81   ^$ tel:notknown;phone-context=univerge.com
For the trunk identifier
81   ^([0-9]{8,10})$ tel:$1;phone-context=univerge.com
International termination
81   ^(1|20|21\d|22\d|23\d|24\d|25\d|26\d|27|28\d|29\d|30|31|32|33|34|35\d|36|37\d|38\d|39|40|41|42\d|43|44|45|46|47|48|49|50\d|51|52|53|54|55|56|57|58|59\d|60|61|62|63|64|65|66|67\d|68\d|69\d|7|80\d|81|82|83\d|84|85\d|86|87\d|88\d|89\d|90|91|92|93|94|95|96\d|97\d|98\d|99\d)(\d+) tel:+$1$2

IP Centrex

Figure 3-3 *IP Centrex Environment*
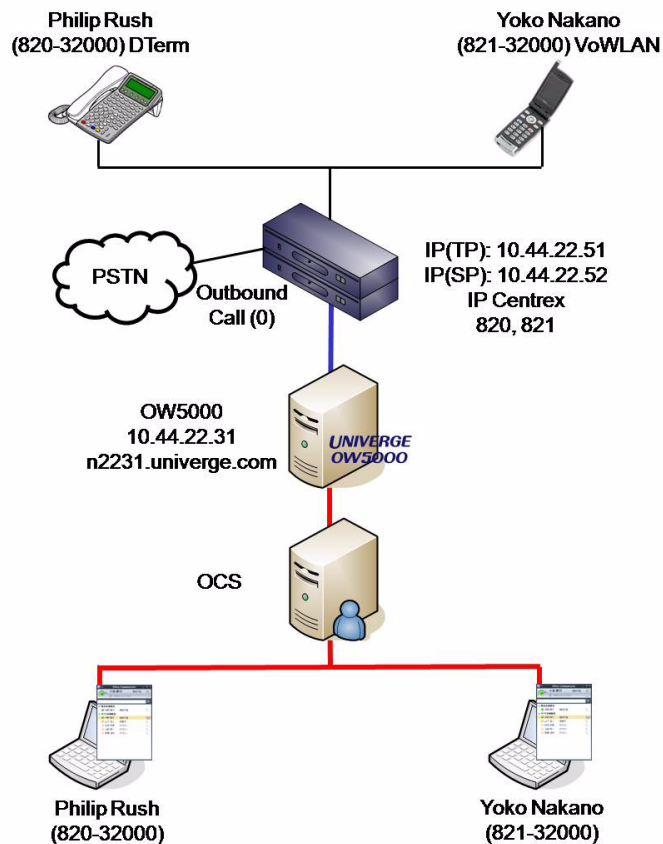
Table 3-5 *OCS Side Configuration*

Active Directory				
Name	**Phone No.**	**Mobile phone No.**	**Server URI**	**Line URI**
Phillip Rush	820-32000	090-1234-5678	sip:82032000@n2231.univerge.com	tel:82032000;phone-context=univerge.com
Yoko Nakano	821-32000	080-1234-5678	sip:82132000@n2231.univerge.com	tel:82132000;phone-context=univerge.com

Address Book Server (normalization rules)
0(\d\d)-(\d\d\d\d)-(\d\d\d\d)
+81$1$2$3
([0-9*#]{3})-([0-9*#]{5})
$1$2;phone-context=univerge.com

Static Route		
Domain	**Next Hop IP Address**	**Next Hop Port**
n2231.univerge.com	10.44.22.31	5060

Table 3-6 *OW5000 Side Configuration*

PBX Management							
PBX Name	**IP Address**	**Office Code**	**PBX Type**	**Locations**	**UGN**	**Prefix**	**Sip Server**
Takatsu	10.44.22.51	1	UNIVERGE SV7000	Tokyo	False		

PBX Management - Locations						
Location Name	**Country Code**	**City/Area Code**	**Long DistAccess Code**	**Local Access Code**	**Int. Direct Dial Code**	**National Code**
Tokyo	81	03	0	0	010	

PBX Management - Area Code Rule				
Location Name	**Area Code**	**Exchange**	**Access Code**	**Include Area Code**
Tokyo	0			

PBX Management - Reserved Number				
PBX	**Number**	**Tenant**	**Reserved Type**	**Application**
Takatsu	82039000	1	Monitored Number	OW5000 API

Extension Management						
Extension	**PBX**	**Phone Type**	**Tenant**	**Tel URI**	**SIP URI**	**Is Monitored**
82032000	Takatsu	DTerm	1	82032000;phone-context=univerge.com		(False)
82132000	Takatsu	VoWLAN	1	82132000;phone-context=univerge.com		(False)

License Management		
PBX	**Extension**	**CSTA**
Takatsu	82032000	TRUE
Takatsu	82032000	TRUE

Caller Number Normalization Rules

External termination (domestic)

81   ^0([0-9]{9,10})$ tel:+81$1

Extension termination (8 digits)

81   ^8([0-9*#]{7})$ tel:$0;phone-context=univerge.com

Anonymous termination

81   ^$ tel:notknown;phone-context=univerge.com

For the trunk identifier

81   ^([0-9]{8,10})$ tel:$1;phone-context=univerge.com

International termination

81   ^(1|20|21\d|22\d|23\d|24\d|25\d|26\d|27|28\d|29\d|30|31|32|33|34|35\d|36|37\d|38\d|39|40|41|42\d|43|44|45|46|47|48|49|50\d|51|52|53|54|55|56|57|58|59\d|60|61|62|63|64|65|66|67\d|68\d|69\d|7|80\d|81|82|83\d|84|85\d|86|87\d|88\d|89\d|90|91|92|93|94|95|96\d|97\d|98|99\d)(\d+) tel:+$1$2

Managing Multiple IP Telephony Servers

Open Numbering Network

Figure 3-4 *Multi-PBX Environment*
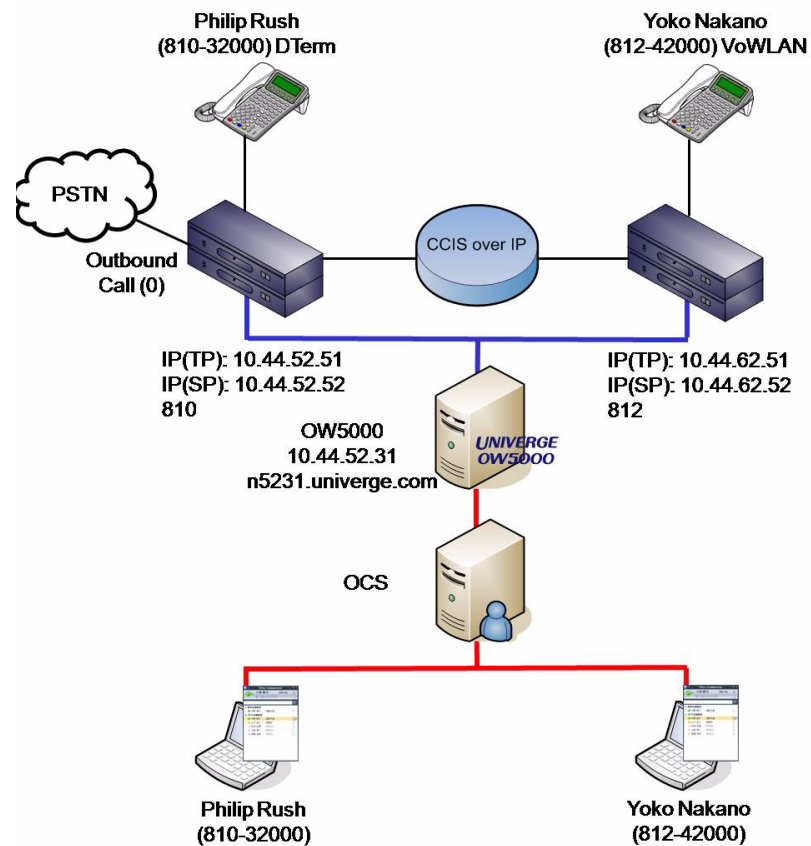
Table 3-7 *OCS Side Configuration*

Active Directory				
Name	**Phone No.**	**Mobile phone No.**	**Server URI**	**Line URI**
Phillip Rush	8-10-32000	090-1234-5678	sip:81032000@n1231.univerge.com	tel:81032000;phone-context=univerge.com
Yoko Nakano	8-12-42000	080-1234-5678	sip:81242000@n1231.univerge.com	tel:8124000;phone-context=univerge.com

Address Book Server (normalization rules)
0(\d\d)-(\d\d\d\d)-(\d\d\d\d)
+81$1$2$3
8-([0-9*#]{2})-([0-9*#]{5})
8$1$2;phone-context=univerge.com

Static Route		
Domain	**Next Hop IP Address**	**Next Hop Port**
n5231.univerge.com	10.44.52.31	5060

Table 3-8 *OW5000 Side Configuration (n5231.univerge.com)*

PBX Management							
PBX Name	**IP Address**	**Office Code**	**PBX Type**	**Locations**	**UGN**	**Prefix**	**Sip Server**
Kanda	10.44.52.51	10	UNIVERGE SV7000	Tokyo	False	810	
Kanda	10.44.62.51	12	UNIVERGE SV7000	Tokyo	False	812	

PBX Management - Locations						
Location Name	**Country Code**	**City/Area Code**	**Long Dist-tAccess Code**	**Local Access Code**	**Int. Direct Dial Code**	**National Code**
Tokyo	81	03	0	0	010	

PBX Management - Area Code Rule				
Location Name	**Area Code**	**Exchange**	**Access Code**	**Include Area Code**
Tokyo	0			

PBX Management - PBX -> PBX Dialing					
PBX	**Destination PBX**	**Dialing Prefix**	**Extension**	**Source PBX**	**Incoming Prefix**
Kanda	Sumida	812		-	-
Kanda	-	-	-	Sumida	812
Kanda	-	-	-	Kanda	810
Sumida	Kanda	810		-	-
Sumida	-	-	-	Kanda	810

PBX Management - PBX -> PBX Dialing					
PBX	**Destination PBX**	**Dialing Prefix**	**Extension**	**Source PBX**	**Incoming Prefix**
Sumida	-	-	-	Sumida	812

PBX Management - Reserved Number				
PBX	**Number**	**Tenant**	**Reserved Type**	**Application**
Kanda	39000	1	Monitored Number	OW5000 API
Sumida	39000	1	Monitored Number	OW5000 API

Extension Management						
Extension	**PBX**	**Phone Type**	**Tenant**	**Tel URI**	**SIP URI**	**Is Monitored**
32000	Kanda	Dterm	1	81032000;phone-context=univerge.com		(False)
42000	Sumida	Dterm	1	81242000;phone-context=univerge.com		(False)

License Management - Enable PBXs	
PBX	**Enabled**
Kanda	True
Sumida	True

License Management - Enable PBXs		
PBX	**Enabled**	**CSTA**
Kanda	32000	True
Sumida	42000	True

Caller Number Normalization Rules
External termination (domestic)
81   ^0([0-9]{9,10})$ tel:+81$1
Extension termination (8 digits)
81   ^8([0-9*#]{7})$ tel:$0;phone-context=univerge.com
Anonymous termination
81   ^$ tel:notknown;phone-context=univerge.com
For the trunk identifier
81   ^([0-9]{8,10})$ tel:$1;phone-context=univerge.com
International termination
81   ^(1|20|21\d|22\d|23\d|24\d|25\d|26\d|27|28\d|29\d|30|31|32|33|34|35\d|36|37\d|38\d|39|40|41|42\d|43|44|45|46|47|48|49|50\d|51|52|53|54|55|56|57|58|59\d|60|61|62|63|64|65|66|67\d|68\d|69\d|7|80\d|81|82|83\d|84|85\d|86|87\d|88\d|89\d|90|91|92|93|94|95|96\d|97\d|98|99\d)(\d+) tel:+$1$2

Configuring with Multiple OW5000 Units

Open Numbering Network

Figure 3-5 *Multi-OW5000 Server Environment*
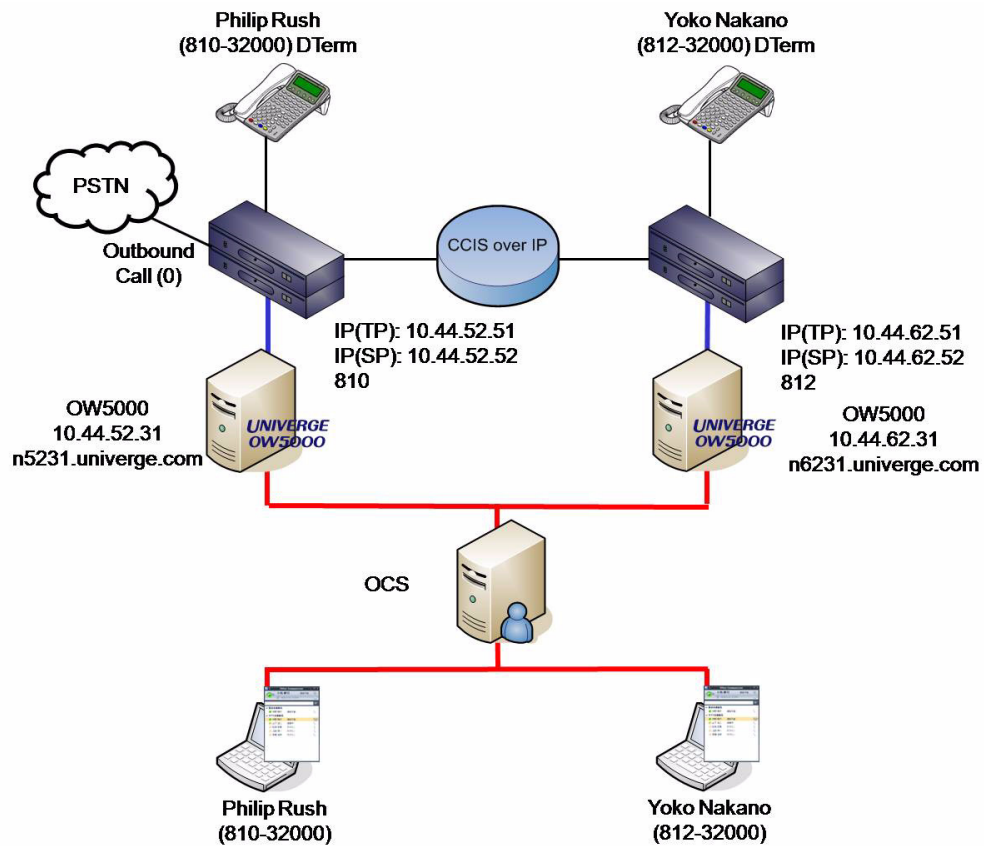
Table 3-9 *OCS Side Configuration*

Active Directory				
Name	**Phone No.**	**Mobile phone No.**	**Server URI**	**Line URI**
Phillip Rush	810-32000	090-1234-5678	sip:81032000@n5231.univerge.com	tel:81032000;phone-context=univerge.com
Yoko Nakano	812-32000	080-1234-5678	sip:81232000@n6231.univerge.com	tel:81232000;phone-context=univerge.com

Address Book Server (normalization rules)
0(\d\d)-(\d\d\d\d)-(\d\d\d\d)
+81$1$2$3
([0-9*#]{3})-([0-9*#]{5})
$1$2;phone-context=univerge.com

Static Route		
Domain	Next Hop IP Address	Next Hop Port
n5231.univerge.com	10.44.52.31	5060
n6231.univerge.com	10.44.62.31	5060

Table 3-10 *OW5000 Side Configuration (n5231.univerge.com)*

PBX Management							
PBX Name	IP Address	Office Code	PBX Type	Locations	UGN	Prefix	Sip Server
Kanda	10.44.52.51	10	UNIVERGE SV7000	Tokyo	False	810	

PBX Management - Locations						
Location Name	Country Code	City/Area Code	Long Dist-Access Code	Local Access Code	Int. Direct Dial Code	National Code
Tokyo	81	03	0	0	010	

PBX Management - Area Code Rule				
Location Name	Area Code	Exchange	Access Code	Include Area Code
Tokyo	0			

PBX Management - PBX -> PBX Dialing					
PBX	Destination PBX	Dialing Prefix	Extension	Source PBX	Incoming Prefix

PBX Management - Reserved Number				
PBX	Number	Tenant	Reserved Type	Application
Kanda	39000	1	Monitored Number	OW5000 API

Extension Management						
Extension	PBX	Phone Type	Tenant	Tel URI	SIP URI	Is Monitored
32000	Kanda	Dterm	1	81032000;phone-context=univerge.com		(False)

License Management - Enable PBXs	
PBX	**Enabled**
Kanda	True

License Management - Enable Extensions		
PBX	**Extension**	**CSTA**
Kanda	32000	True

Caller Number Normalization Rules
External termination (domestic)
81   ^0([0-9]{9,10})$ tel:+81$1
Extension termination (8 digits)
81   ^8([0-9*#]{7})$ tel:$0;phone-context=univerge.com
Anonymous termination
81   ^$ tel:notknown;phone-context=univerge.com
For the trunk identifier
81   ^([0-9]{8,10})$ tel:$1;phone-context=univerge.com
International termination
81   ^(1|20|21\d|22\d|23\d|24\d|25\d|26\d|27|28\d|29\d|30|31|32|33|34|35\d|36\d|37\d|38\d|39|40|41|42\d|43|44|45|46|47|48|49|50\d|51|52|53|54|55|56|57|58|59\d|60|61|62|63|64|65|66|67\d|68\d|69\d|7|80\d|81|82|83\d|84|85\d|86|87\d|88\d|89\d|90|91|92|93|94|95|96\d|97\d|98\d|99\d)(\d+) tel:+$1$2

Table 3-11 *OW5000 Side Configuration (n6231.univerge.com)*

PBX Management							
PBX Name	IP Address	Office Code	PBX Type	Locations	UGN	Prefix	Sip Server
Sumida	10.44.62.51	12	UNIVERGE SV7000	Tokyo	False	812	

PBX Management - Locations						
Location Name	Country Code	City/Area Code	Long Dist-Access Code	Local Access Code	Int. Direct Dial Code	National Code
Tokyo	81	03	0	0	010	

PBX Management - Area Code Rule				
Location Name	Area Code	Exchange	Access Code	Include Area Code
Tokyo	0			

PBX Management - PBX -> PBX Dialing					
PBX	Destination PBX	Dialing Prefix	Extension	Source PBX	Incoming Prefix

PBX Management - Reserved Number				
PBX	Number	Tenant	Reserved Type	Application
Sumida	39000	1	Monitored Number	OW5000 API

Extension Management						
Extension	PBX	Phone Type	Tenant	Tel URI	SIP URI	Is Monitored
32000	Sumida	Dterm	1	81232000;phone-context=univerge.com		(False)

License Management - Enable PBXs	
PBX	Enabled
Sumida	True

License Management - Enable Extensions		
PBX	Extension	CSTA
Sumida	32000	True

Caller Number Normalization Rules
External termination (domestic)
81   ^0([0-9]{9,10})$ tel:+81$1
Extension termination (8 digits)
81   ^8([0-9*#]{7})$ tel:$0;phone-context=univerge.com
Anonymous termination
81   ^$ tel:notknown;phone-context=univerge.com
For the trunk identifier
81   ^([0-9]{8,10})$ tel:$1;phone-context=univerge.com
International termination
81   ^(1|20|21\d|22\d|23\d|24\d|25\d|26\d|27|28\d|29\d|30|31|32|33|34|35\d|36|37\d|38\d|39|40|41|42\d|43|44|45|46|47|48|49|50\d|51|52|53|54|55|56|57|58|59\d|60|61|62|63|64|65|66|67\d|68\d|69\d|7|80\d|81|82|83\d|84|85\d|86|87\d|88\d|89\d|90|91|92|93|94|95|96\d|97\d|98|99\d)(\d+) tel:+$1$2

4

Troubleshooting Guide

Check the table below to find possible solutions to any problems you might encounter while using the OW5000 Remote Call Control.

Table 4-1 *Troubleshooting Examples*

Trouble	Cause	Action
The Remote Call Control Service does not start	The OAI function is not valid on the PBX side.	Apply the OAI option software and verify the system data.
	The OAI connection with the PBX cannot be established.	Verify the network continuity.
	The USB dangle of OW5000 is not inserted.	Insert the USB dangle into the OW5000 server.
	The USB dangle of OW5000 is not identified.	Activate SerurityDeviceDlg.exe of OW5000 and verify that an ID in 16 digits is displayed in Security Device IDs.
		If not, remove the USB dangle and insert it again. Then, click the **Refresh Security ID List** button and verify that the ID is displayed.
	PBX Configuration of OW5000 Administrator is wrong.	Verify the settings of the PBX IP address and the OAI port number.
	No Reserved Number is assigned to OW5000 API in PBX Configuration of OW5000 Administrator (when the used PBX is either APEX7600i or SV7000).	On the Reserved Numbers tab of PBX Configuration, register Reserved Number (the monitor number) and assign it to OW5000 API.
		* Register Reserved Number to the PBX by using the AMNO command.

Trouble	Cause	Action
The Remote Call Control Service does not start (cont'd)	The license of the used PBX is not valid in License Manager of OW5000 Administrator.	On the screen of Select PBX, verify that "Enabled" of the PBX which uses RCC is checked. If the PBX screen has been configured before installing RCC, **Apply** must be clicked again after installing RCC.
	SQL Server has not started.	Verify the SQL Server(SQLEXPRESS) service status by using the service manager of Windows Server 2003. If the status is other than **Start**, start the service.
The phone-shaped icon with the string **Communicator is not properly configured for originating a call** is displayed on Communicator and the PBX integration function does not works	The Remote Call Control Service of OW5000 has not started.	Verify the Remote Call Control Service status by using the service manager of Windows Server 2003. If the status is other than **Start**, start the service.
	The OAIMonitor service of OW5000 has not started.	Verify the OAIMonitor service status by using the service manager of Windows Server 2003. If the status is other than **Start**, start the service.
	There is a competition between the port number used by the Remote Call Control Service of OW5000 and the one used by another application.	Verify if the port number configured in **Applications** > **OW5000 API** > **RCC Setting** of OW5000 Administrator is competing with other application by using means like as the netstat command. Then, change the port number to an appropriate one.
	The license of the extension which uses Communicator is not valid in License Manager of OW5000 Administrator.	On the screen of Set License, verify that the CTSA license (API license in the case of Asian market) of the extension which uses Communicator is valid.

Trouble	Cause	Action
	The routing configuration of OCS is wrong.	Verify that the IP address and the port number of the OW5000 RCC service are configured as the routing destination.
Forwarding during termination cannot be executed by Communicator	The Reserved Number is not registered to the PBX (if the PBX being used is either APEX7600i or SV7000).	Register the Reserved Number by using the AMNO command.
When originating a call toward the associated PBX (CCIS) by using Communicator, the display of Communicator remains as **Calling** even after the response of the called party	The applied OAI option software is inappropriate.	Apply the specified OAI option software to the PBX.
In the termination pop-up of Communicator, the caller name is displayed in his/her extension instead of his/her name	The address book server (address book service) of OCS is not constructed correctly.	Construct the address book server (address book service) correctly.
The termination pop-up of Communicator is not displayed (only for OCS collaboration)	The caller number normalization rules are not configured correctly.	Edit AniTranslate.txt correctly.

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