

MiVoice MX-ONE

Customer Group, Operational Directions

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General

NOTE: Customer group can also be configured with MX-ONE Service Node Manager (SNM).

Functions

This document describes the O&M handling of customer group data. The same, and more detailed, information can be found in the different operational directions in the Reference clause.

An MX-ONE system - MX-ONE Service Node can contain 1 **Customer Group**, also called a Multi Tenant group, with a large number of different customers.

The customer group feature provides for companies to subdivide their resources or make it possible for several smaller companies to share the same system. Each subdivision or company is defined as a customer.

A customer can be assigned to a group of PBX operators, a day/night service answering position, outgoing and incoming routes.

The customer group feature makes it possible for the users of a customer group to, for example, reach the affiliated PBX operator group, only by dialing the same common PBX operator number. This provides for the subdivisions or companies to use the exchange independently of each other.

The customer group feature is only available for voice users, except for incoming external line traffic, which can also be data calls.

It is preferable that the different customers have separate incoming and outgoing routes, but this is not mandatory.

By the use of function customer number plan, it is possible for several customers to have identical internal number plans.

The customer group feature can be divided into six major functions:

- Customer-dependent selection of PBX operator group for calls to the customer group's common PBX operator number.
- Customer-dependent selection of centralized operator, that is, customer centralized operator, for rerouted calls and calls to PBX operator group.
- Customer-dependent day-service and night-service position.
- Customer-dependent route selection.
- Customer number plan.

The "Zero Customer"

1.1.1 The "Zero Customer"

It is possible for a device or resource to have no customer affiliation even when customers are used throughout the system. This is referred to as the "zero customer". Resources assigned to the "zero customer" are used a default by other customers when no resources with matching affiliation exists.

Zero customer extensions may when there is choice not use resourced affiliated a non zero customer.

Terminals

It is possible to assign a customer affiliation for all types of extensions, generic, analog, digital and ISDN S0. Great care shall be taken when changing the customer affiliation since the change does not alter other customer affiliations automatically.

Customer Numbering Plan

In addition to the normal number analysis data this function uses an additional data base, "Customer Number Data".

The Customer Number Data Properties

The customer number plan contains following properties:

- Customer number (mandatory).
- Customer name or acronym (optional). All alphanumerical characters except white space are allowed. The last character must not be numeric. The name will be inserted in the beginning of the SIP terminals user ID.
- Financial ID (optional). Any alphanumerical characters, including white space are allowed. The financial ID is used in customer's license usage reports.
- Number range data (optional). This property consist of the following sub-properties:
 - Start. The start of the number range (mandatory).
 - Stop. The stop of the number range (mandatory).
 - Depth. The depth of the prefix part of the number range (mandatory).
 - Extra digits. Digits to insert between the prefix part and the station part (optional).
 - Trim. Number of digits to truncate from the new string (optional only valid for type 1).
 - Type of range. (Optional default 0).
 - Conflict. States whether the number conflicts with its own range. That is, 1234561234 with 1234 (Optional default 0).
 - Text. Explanatory text for range (optional).

Each customer may have several ranges. The start and stop number in a range must be of the same length. The start and the stop number in a range must be identical up to "depth" digits. The extra digits must be different for every range.

The depth may be 0 up to number of digits.

- Exceptions (optional). Exceptions are numbers that will be excluded from number crunching. There may be several exceptions.
- IP Domains (optional). There could be several IP Domains. This is the same IP domain as defined by command "ip_domain".
- Open dialing (optional). Normally a customer can not dial outside it's range or exceptions, but if the Open dialing properties are set to YES, any number can be dialed. The range check and number expansion will be done in both cases.
- Bar foreign domains (optional). This property prevents registration of terminals from unrecognized IP domains.
- Domain owner (optional). This property prevents registration of terminals to a foreign customer (in the same domain as the terminal), regardless if the target customer allows foreign domains or not.

- Short user format (optional). This property forces short user ID on the idle display of SIP terminals at logon.

The Range Property and Exceptions

The range property determines how numbers are displayed and dialed. It can be looked upon as having several parts:

- Long number, the full number of start, stop and all numbers in between.
- Prefix number, the long number up to depth digits.
- Short number, the long number excluding the prefix number, and with the possible extra digits added.
- Extra digits, digits that can be inserted before the short number to make it unique (see below for extended description).

The long numbers shall be used for all programming in MX-ONE. They are recommended to be as close as possible to one digit plus the full national DID number plan.

The short numbers are used for dialing and for display purposes.

NOTE: This display functionality is ONLY supported for SIP phones and DTS phones. Other extension types will display the long number, but can dial the short one.

Special numbers such as operator, external and emergency number access codes may be programmed as exceptions.

Example:

A customer shall use number series 856867000 – 856867999.

We add one extra digit in the beginning to denote extension number, i.e. the digit 1. We then get the internal numbers 1856867000 – 1856867999.

The customer wants the internal dialing plan to use 5 digits, 67000 - 67999. The operator external access code is 09 and the external access code is 00 and emergency number is 112. The programming shall then be:

start = 1856867000, stop = 1856867999, depth = 5, exceptions = 00 & 09 & 112

The numbers 1856867000 - 1856867999 are programmed as type EX in the internal number analysis.

No numbers outside the existing ranges or exceptions can be dialed unless the open dialing property is set to yes.

In this case ALL dialing is allowed.

NOTE: A simultaneous use of the function BASIC HOSTING will bar all inter customer dialing.

The Range Property Type

The type of a range determines the range behavior. There are 3 different types:

- Type 0 (default). Used for both dialing and display purposes. This type does not allow parameter trim.
When dialing: Extra digits are inserted at depth digits **before** range match of dialed number.
When displaying: The entire range is matched and extra digits are inserted after match.
 This type is primarily used for a terminal's native range.
- Type 1. Used for dialing purposes only.
 This type does not allow parameter depth, but requires parameter trim.
 The range match is done on entire string. The extra digits are inserted at the beginning **after** range match.

This type is primarily used when a terminal is dialing outside its range the number needs manipulation.

- Type 2. Used for display purposes only.
This type does not allow parameter trim.
The functionality is the same as for type 0, but will not be considered when dialing.
This type is primarily used when numbers outside a terminals range needs manipulation.

The Range Property Conflict

This property is for ranges where both short and long numbers is needed to be dialled. When the last digit of the short number is reached, a timer is started. If another number is dialled, the timer is stopped and the number is accepted as dialled. If a timeout occurs, the dialled number is converted before continuing.

An example of a conflict:

Range - Depth1234 1000 - 1234 9999 4

Here, dialling 1234 xxxx is a conflict.

The Range Property and Inter Customer Dialing

If you want to dial outside a number range it is important that the short number range does not conflict with the number outside the ranges. That is, range 8568 67000 – 8568 67999 depth 4. For example, if you have a number outside the range, that is, 678650000 that you want to dial. This would conflict with 8568 67865 in the range. In this case, the range must be split into two parts: 8568 61000 – 8568 67864 and 8568 67866 – 8568 67999. The number 67865 is now not within the range anymore.

The Range Property and Service Codes

Service codes beginning with * or # are NOT range/exception checked and shall not be programmed in customer number data properties. Service codes that begin with a digit (1-9) must be programmed as a range or as an exception.

The Range Property and IP Domain

The IP domain are connected to the domains used in the command ip_domain. The connection is done via a name match. It is used to find customer affiliation at logon and registration. If the customers IP domains can be separated it is possible to log on or register with the short number. The IP address presented by the terminal will then identify an IP domain. The name of this domain will then be matched with a customer number plan.

The Range Property and IP Company Name/Acronym

This is a short text string that can be attached to a terminals user ID before the number. I.e user 1234 has acronym Mitel_.

The user may then log on and register with Mitel_1234 instead of the full long number. From this point the user ID will be with company acronym and be shown on idle display. If a logon (only logon not registration) takes place using a short number and a separate customer IP domain is available, the company acronym will be inserted and pushed to the terminal. This is valid for all instruments using the Mitel XML log on method only.

The Range Property and the Extra Digits

The extra digits is a method of avoiding conflicts. Within a customer number plan all short numbers must be unique or it will not be possible to identify the proper terminal. This function is very useful in a system with many small customers that are slowly growing larger.

If we have a customer numbering plan with the following range type 0 data:

start	stop	depth
18 568 67000	18 568 67999	5

This will make the internal short numbers 5 digits, 67000 - 67999. Now this customer wants to add 10 users and unfortunately the only available numbers are 8 668 67000 - 8 668 67999. In this case the first option would be to add the new number range and set depth in both ranges to 2. This would make the short numbers unique but it would force the internal dialing to 8 digits.

If we instead were to "wedge in" an extra digit to the ranges, let's say 1 and 2.

start	stop	depth	digits
18 568 67000	18 568 67999	5	1
18 668 67000	18 668 67999	5	2

This would effectively make the internal numbers 167000 - 167999 and 267000 - 267999. This will give a 6 digit internal dialing rather than 8 digits.

The preferred way is of course to find a number that does not conflict, but in the worst case this method may be used.

The Range Property and the Open Dialing Option

When this option is yes, there is no range/exception check performed and any number can be dialed. However if the function basic hosting is used in conjunction to this another check is done and if the resulting number was a terminal belonging to a different customer, the call is still barred.

The Bar Foreign Domains Option

When this option is yes, At registration a match of the terminals IP address is made against the group's IP domains. If the match was unsuccessful the registration is rejected.

The Domain Owner Option

When this option is yes, and the terminal's IP address belongs to a customer, the terminal is not allowed to register to any foreign customer. The option can be used to prevent terminals from registering to foreign customers, from within a domain, when full number is used, and the foreign group is open.

The Short User Format Option

When this option is yes, short user ID format is forced on SIP terminals when logging on using Mitel XML log on method.

The Financial ID Property

When this data is used, the financial ID will be appearing in the customer report part in the license usage report. It is intended to be used for billing/charging purposes. Each customer may have a unique financial ID.

The Customer Number Data and Number Conversion

When dialing the customer data number crunching normally takes place before any other number changing feature. There is one exception to this. If the dialed number is of type international, inbound number conversion will take place first. The reason for this is that so it will be possible to replace a + sign with an access code before doing the customer data number crunching.

Hunt Groups

It is recommended that the group hunt numbers belong to a range in the same way as extension numbers. It is recommended to avoid cross customer assignments. Use separate groups and use the CUST parameter to affiliate each group to the appropriate customer.

Routing

Routes and route access codes may be affiliated to customers, however it is recommended to use common routing for the entire system. The main reason for this is that there are limited resources and with many customers, it is not possible for each customers to have their own resources.

Attendant

It is recommended to use Mitel InAttend with SIP trunks for attendant and operator services. Should TDM operators be required, it is not possible for each customer to have there own set of operators due to the limited number of resources.

The Zero Customer

If a extension belongs to the zero there is no range check at all and unless other restrictions apply it is possible for such an extension to dial extensions belonging to other customers.

Forking with Customer Numbering Plan Using SIP Terminals

When two or more SIP terminals are registering to the same number at the same time (forking), and customer numbering plan is used in the system, they must register with the same user identity. This applies also to the user ID part of the terminal ID of a SIP trunk based Mobile Extension.

The CUST/Customer Parameter

If the customer group feature is used, the CUST/customer parameter shall be used in all the commands wherever it could be used. The involved command groups are listed below:

AC, AU, CB, EX, IT, KS, OP, RA, RO.

In the Generic Extension (`extension`), `extension group`, `diversion`, and `resource_status` commands, the parameter is called `--customer`.

In the below command, the *CUST* parameter is given as an output in a print command:

LC

Calls to Common PBX Operator Number of a Customer

Calls to a common PBX operator number are routed to the PBX operator group which serves the calling party's customer affiliation.

It is also possible to redirect a call to a customer centralized operator, **which is defined per PBX operator group**, if all operators serving the called operator group are absent. Up to two customer centralized operators can be defined for a PBX operator group. In selecting an answer position for calls to an operator group which has no present operators in service, the customer centralized operator has higher priority than the centralized operator, if defined.

NOTE: In a VPN scenario, the number of customer centralized operator supported depends on the number of USER INFO messages which can be sent in Service 2. If two USER INFO messages are allowed in Service 2, then only one customer centralized operator is supported. When more than two USER INFO messages are allowed, both customer centralized operator 1 and 2 are supported. Notice that in an H.323 VPN scenario, the USERINFO messages are embedded in H.225 FACILITY messages.

Customer Centralized Operator for Rerouted Calls

Each customer can be allocated up to two customer centralized operators for rerouted calls (direct-in-dialing). In selecting an answer position for a rerouted call with customer affiliation, the customer centralized operator has higher priority than the centralized operator, specific to route, if defined.

NOTE: In a VPN scenario, the number of customer centralized operator supported depends on the number of USER INFO messages which can be sent in Service 2. If two USERINFO messages are allowed in Service 2, then only one customer centralized operator 1 and 2 are supported. Notice that in an H.323 VPN scenario, the USERINFO messages are embedded into H.225 FACILITY messages. For customer's common PBX operator number, Calls to Common PBX Operator Number of a Customer.

Customer Dependent Day/Night Service

Each customer can be allocated to an own specific day-service and night-service connection position for new calls as for rerouted calls (direct-in-dialing). If rerouting is carried out to a customer who does not have a day-service or night-service connection position, the direct-in-dialing route's day-service or night-service connection is selected according to existing routines.

Customer Route Selection

All customers can have the same or individual access code to the outgoing route related to the customer. If no customer route selection function has been initiated for the called route access code, the ordinary route is selected according to existing routines.

Customer Diversion Position

Each customer can have its own common diversion positions.

If a customer has not initiated its own common diversion positions the common diversion position for the whole system is used.

For detailed descriptions, see the operational directions for *CALL DIVERSION*.

Pick up Group

Pick up groups may also be affiliated to a customer. It is not necessary to have unique numbers for all groups. The groups are identified by customer and group number. Extension with a customer affiliation may not be assigned to a pickup group belonging to a different customer. Any extension may be assigned with a “zero customer/no customer” affiliation.

TCD Tables

It is possible for each customer to have it's own TCD table. If a table for this customer is not found, the zero customer table will be used.

Examples

Figure 1 shows a PBX, with customers A and B. The customers have separate routes to, for example, a PSTN.

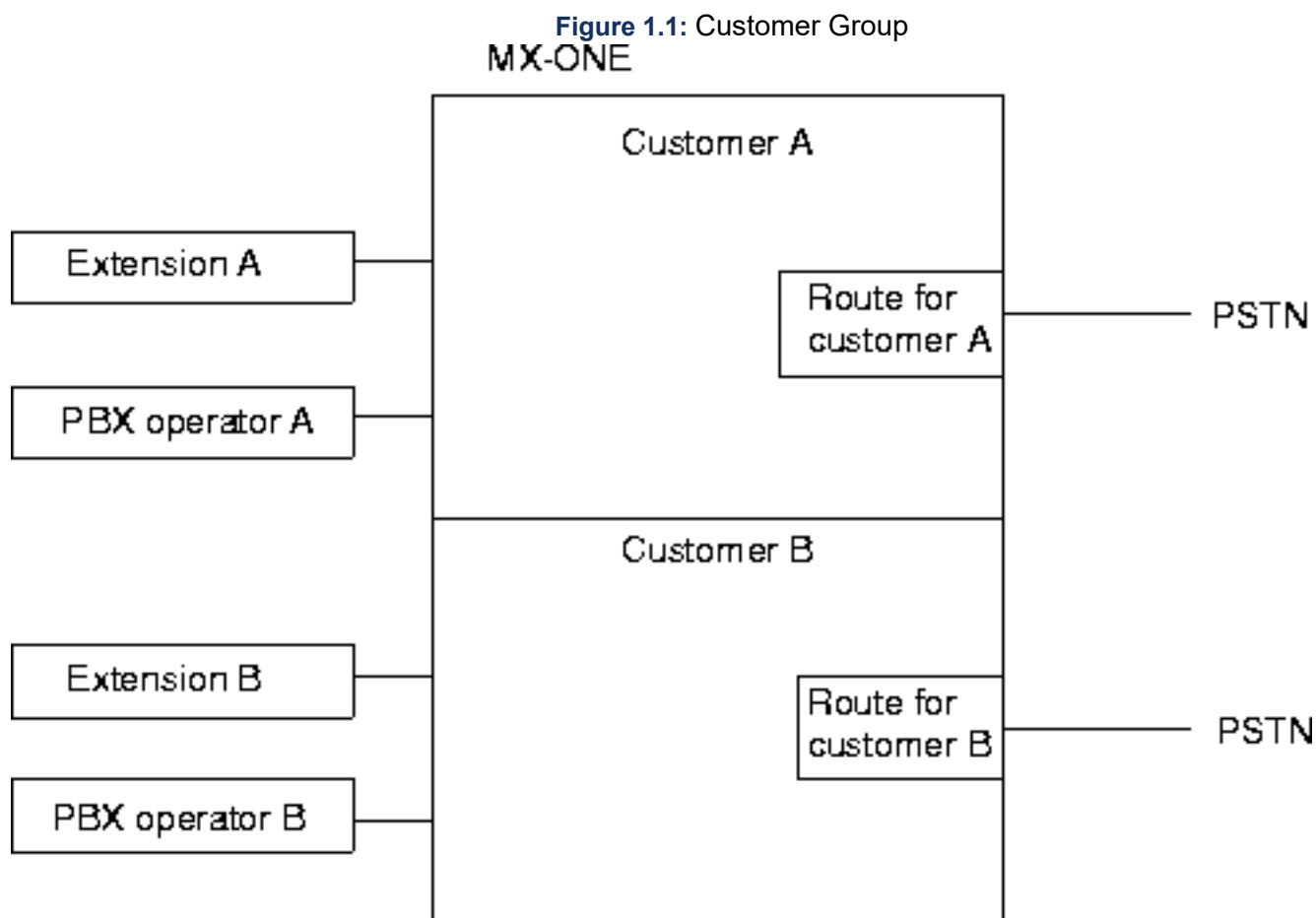
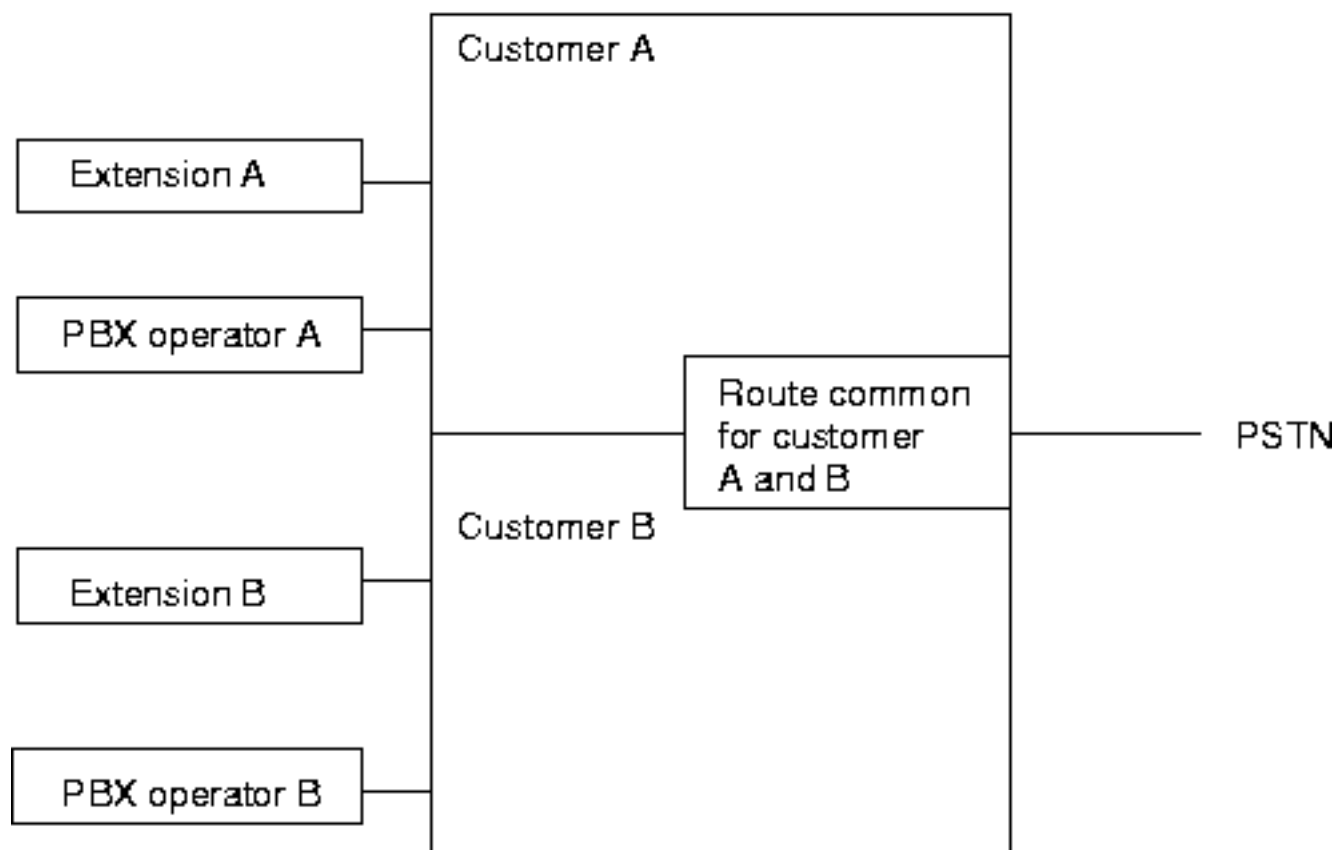


Figure 2 shows a PBX, with customers A and B. The customers have a common route to, for example, a PSTN.

Figure 1.2: Common Route
P B X



Abbreviations

For a complete list of abbreviations and glossary, see the description for *ACRONYMS, ABBREVIATIONS, AND GLOSSARY*.

Prerequisites

The number series for the following parties must be initiated:

- Extension numbers
- Route access codes
- PBX operator numbers
- Common abbreviated numbers

Tools

I/O terminal

References

In this Operational Directions references are made to the following documents:

- *TECHNICAL REFERENCE GUIDE, MML COMMANDS, 200/19082-ANF90114.*
- *TECHNICAL REFERENCE GUIDE, UNIX COMMANDS, 201/19082-ANF90114.*

Procedure

1. Initiate ATS, DTS, ITD, or Generic Extension
2. Initiate route data
3. Initiate PBX operator traffic
4. Other activities
5. If customer number plan is to be used, the internal dialing plan shall be decided upon.

Execution

Initiate Customer Affiliated Extensions

Refer to the Analog extension, Digital key system telephone, ISDN terminal, and Generic extension O&M documents for detailed descriptions.

Initiate one or more ATS, DTS, ITD, or Generic extension to a customer.

Initiate an Analog Extension with Customer Affiliation

Initiate the ATS by using the `EXTEI` command and then the `EXCUC` command with the `CUST` parameter. The `CUST` parameter affiliates the ATS to the specified customer.

Key `EXDDP` to verify the result.

Initiate a Digital Key System Telephone with Customer Affiliation

Initiate the DTS by using the `KSEXI` command and then the `KSCUC` command with the `CUST` parameter. The `CUST` parameter affiliates the DTS to the specified customer.

Key `KSDDP` to verify the result.

Initiate an ISDN Terminal Directory Number with Customer Affiliation

Initiate the ITD by using the `ITNUI` command and then the `ITCUC` command with the `CUST` parameter. The `CUST` parameter affiliates the ITD to the specified customer.

Key `ITDAP` to verify the result.

Initiate a Generic Extension Directory Number with Customer Affiliation

Initiate the Generic extension (for example, an IP extension, or a remote mobile extension) directory number by using the command `extension -i -d --customer`. The `--customer` parameter affiliates the Generic extension directory number to the specified customer.

Key `extension -p` to verify the result.

Initiate Route Data

Refer to the Route data O&M documents for detailed description.

It is preferable, but not mandatory, that the different customers have separate incoming and outgoing routes. There are several advantages to use separate routes. Incoming and outgoing calls can be custom-

ized, for example, by incoming external calls to a common PBX operator, by calls to the customers own PBX operator, and that outgoing external calls select the customers own route, and so on.

Initiate a Customer Day/Night Service Answer Position

Initiate a day/night service answer position for a customer with the command `ROCDI`. It is possible to initiate a day or night number (or both) for a customer.

Key `ROCDP` to verify the result.

Initiate External Route Destination Data

General

-

Prerequisites

Routes must be initiated.

Execution

Initiate the regular or the alternative path to an external route with the command `RODDI`. Use the `CUST` parameter to assign a specific path to a customer.

Key `RODDP` to verify the result.

Initiate a Customer Centralized Operator Number

General

Refer to the operational directions for *CENTRALIZED ANSWER POSITION* for detailed description. Redirecting a rerouted call to a customer centralized operator is only possible in an ISDN/H.323 network. The customer centralized operator number shall be an external number in the rerouting exchange and a common PBX operator number in the destination exchange.

Prerequisites

Routes and lines must be initiated.

The customer centralized operator is reached via a common abbreviated number whose translated number contains the external number to the customer centralized operator. The abbreviated number must be initiated with command `ADCOI`.

Execution

Key the command `RORNI` to initiate a customer centralized operator for a customer. It is possible to initiate two customer centralized operators for a customer.

Key the command `RORNP` to verify the result.

PBX Operator Traffic

Refer to the PBX operator traffic O&M documents for detailed description.

A PBX operator can be affiliated to a customer number so that the customer's route will be selected for outgoing traffic from the PBX operator.

A call to a common PBX operator can be initiated so that the calling party's call is routed to the PBX operators which serve the calling party's customer affiliation.

Affiliate a PBX Operator to a Customer

Initiate the PBX operator by using the `OPCUC` command with the `OCUST` parameter. The `OCUST` parameter affiliates the PBX operator to a customer for an outgoing call. When the PBX operator makes an outgoing call, the PBX operator will use the customer facilities and route for outgoing call.

Key `OPDDP` to verify the result.

PBX Operator Call Type Data Set

Initiate a call origin group by using the `OPCTS` command with the `CUST` parameter. The `CUST` parameter affiliates a call origin group to a customer. The `OPCTS` command must be set for respective call types.

Key `OPCTP` to verify the result.

Key afterwards command `OPCGS` to assign one or several PBX operators to one or more call origin groups.

Key `OPCGP` to verify the result.

Initiate Common PBX Operator Access Code

General

-

Prerequisites

A call origin group has to be initiated with a common PBX operator number to the affiliated customers. This is initiated with the commands `OPCTS` and `OPCGS`, see the [PBX Operator Call Type Data Set](#).

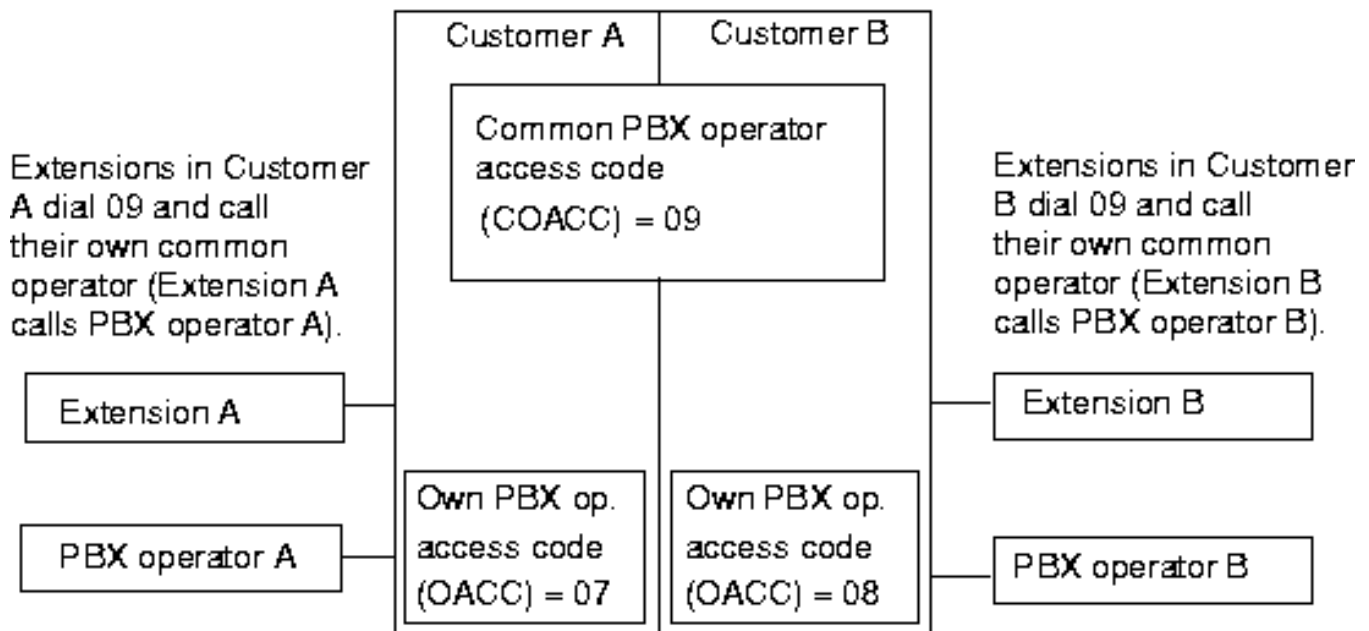
Each customer could then call their own common PBX operator with a PBX operator access code (OACC), but each access code is different from customer to customer in the customer group.

Execution

Initiate a common PBX operator access code (COACC) with the `OPCOI` command with the `COACC` parameter. This number is used to allow all customers in the customer group to have the same common PBX operator call number. Nevertheless each customer access their own PBX operator.

Key `OPCTP` to verify the result.

Figure 6.1: Members in the customer group
MX-ONE



The above figure shows a PBX, with customers A and B. The customer group has been assigned a common PBX operator access number 09.

Initiate Customer Centralized Operator

General

See operational directions for *CENTRALIZED ANSWER POSITION* for a detailed description.

The customer centralized operators are associated to the PBX operator group. If different customers are served by separate PBX operator groups, it is possible for each customer to have its own centralized operators.

Redirecting call to a customer centralized operator is only possible in an ISDN/H.323 network. The customer centralized operator number shall be an external number in the exchange where the operator group is called and a common PBX operator number in the destination exchange.

Prerequisites

Routes and lines must be initiated. The operator group must be defined, by command `OPCTS`.

The customer centralized operator is reached via a common abbreviated number whose translated number contains the external number to the customer centralized operator. The abbreviated number must be initiated with command `ADCOI`.

Execution

Key the command `OPCEI` to initiate a customer centralized operator for a PBX operator group. It is possible to initiate two customer centralized operators for a PBX operator group.

Key commands `OPCEP` and `OPCTP` to verify the result.

Common Bell Group

Refer to the Common Bell Group O&M documents for detailed instructions.

The facility Common bell means that a number of extensions (members) are assigned to a signal device. Calls to the common number are queued and the signal device will be activated. Members of the common bell group can pick-up calls from the queue by dialing a code.

Internal Group Hunting

Refer to the Internal group hunting O&M documents for detailed description.

The facility Internal group hunting means that a number of extensions are assigned to a common call number. When this number is called one of the extensions (members) is selected.

Initiation of Internal Group Hunting Group

An internal group hunting group and a customer to whom the internal group hunting group shall belong to is initiated with the command `extension_group -i`.

Key `extension_group -p` to verify the result.

Assign members to an internal group hunting group with the command `extension_group_member -i`.

Key `extension_group_member -p` to verify the result.

Authorization Code for Extension

Refer to the Authorization code for extension O&M documents for detailed description.

Authorization code provides two different functions:

- the locking of an extension, in which case a lower class of service is used
- the dialing of an authorization code enables the calling party to use other categories, than those with which the extension is programmed.

The customer group function is valid both for common authorization code and for individual authorization code.

Initiation of Authorization Code

An authorization code may be affiliated to a customer number with the command `auth_code`

Use the command `auth_code` to verify the result.

Automatic Call Distribution

Refer to the Automatic call distribution O&M documents for detailed description.

Automatic call distribution allows several individuals (agents) to handle a large quantity of incoming calls. The agents can be selected in different ways, for example, in the order they were initiated or the agent who has been free the longest time.

Initiation of Automatic Call Distribution

Initiate an automatic call distribution group and affiliate it to a customer with the command `ACGRI`. Key `ACGCP` to verify the result.

Call Diversion

Refer to the Call Diversion O&M documents for detailed description.
Common diversion numbers can be set per customer.

Initiation of Common Diversion Numbers

Initiate Common diversion numbers and affiliate them to Customer with the command `diversion_common -i`. Key in `diversion_common -p` to verify the result.

Recorded Voice Announcement

Refer to the Recorded Voice Announcement O&M documents for detailed description.

The Recorded voice announcement feature provides recorded voice announcement to the calling party for certain call cases like incoming call to PBX operator and operator answers the call, diverted calls, calls to PBX operator queue, calls to ACD groups, calls to PBX groups etc. The RVA feature is also used to provide vocal guidance announcements for certain traffic cases. This vocal guidance enables analog, digital and integrated mobile users to receive a recorded voice message in addition to the tone messages about the traffic case/condition.

Initiation of Voice Announcements

Initiate an announcement to a traffic case (vacant, busy, or blocked number) and affiliate it to a customer with the command `RACEI`.

Key `RACEP` to verify the result.

Initiate Customer Number Plan

initiate necessary customer number plan data with command `number_intiate -customer`

Key `number_print -customer`

Termination

If any data have been altered then a dump onto back up media should be done.

Use Case

NOTE: System planning recommendations for many small customers consisting of different companies.

When planning a system for many small customers it is for logistic purposes important to use as many resources as possible on a common base for all customers. Most of what is covered here will automatically be handled by Provisioning Manager (PM) and SNM, but it could be a good idea to study some parts already now.

Exceptions

The first thing to decide is the exception dialing. The recommendation is to address following numbers as exceptions:

- External dialing
- Emergency dialing
- Operator/attendant dialing
- Service codes that start with a digit.

We do not yet have any customer number plan to program, but now we know approximately how the exception data will look like.

Routing and TCD

After the exceptions it is a good idea to look at the routing, both incoming and outgoing. It is recommended to use a common base for all customers. More about routing can be found under Operation & Maintenance Route Data. It is recommended to configure a common TCD matrix that covers internal, local, national and fully open. More about this can be found under Operation & Maintenance Number Analysis.

Attendant and Operator

In this concept it is understood that the operator is proving the attendant service. For this Mitel InAttend and SIP trunks are recommended.

Now is the time to plan how to set this up. More about this can be found in the documentation for Mitel InAttend.

It is possible to use TDM operators, but since this requires gateways and HW resources it is recommended against.

Pick up Groups, Hunt Groups, and Common Abbreviated Numbers

Already at this stage it can be useful to plan how this feature shall be offered. The number of Pick up groups for each customer.

Hunt groups and common abbreviated need to be incorporated within the ranges and they are probably at least partially known.

More about this can be found in Operation & Maintenance Extension Groups and Abbreviated Dialing.

Features and Feature Packing

This is normally an integral part of this concept and then deciding of how to tie different features with dialing capabilities is a good idea to do early. More about this can be found in Operation & Maintenance Feature packaging.

CSP and TCD

We shall now know how we want CSP and TCD tables to look like so it is time to initiate:

1. All Common CSPs. For more information see Operational Directions, Generic Extension.
2. All Common TCDs. For more information see Operational Directions, Number Analysis.

Customer, Numbers, and Ranges

When we get to this stage all of the common data and exceptions are expected to be decided upon.

It is a good idea to initiate and remove the number ranges from the number analysis and the customer number plan data at the same time.

This way it is easier to keep track of what is available.

If possible it also recommended to use complete 1 digit plus complete national DID numbers as internal numbers in the system and create the short internal dialing using the function customer number plan.

We now have a range of numbers to initiate:

1. Initiate the extension numbers into number analysis and then initiate the extensions. For more information see, Number Analysis and Generic Extension, IP Extension etc.
2. Initiate any Common Abbreviated numbers into number analysis, and to their own data base. For more information see, Number Analysis and Abbreviated Dialing.
3. Initiate any Group hunt numbers into number analysis, and to their own data base. For more information see, Number Analysis and Extension Groups.
4. Initiate the customer number plan data with the ranges for extensions, common abbreviated numbers and group hunt numbers. For more information see, Number Analysis.
5. Initiate other extras, such as group call pick up (For more information see, Extension groups.

