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**User Manual**  
**for the OPERA™ Control Center Server Software V3.5**  
**OPR-003-CTR-X**  
**OPR-010-CTR-X**

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# 1 Preface

This document is meant as a completion to the user manual of the OPERA™ measurement system. It describes the OPERA™ Control Center Server Software (OPR-003-CTR-X, OPR-010-CTR-X). Before you start reading this documentation, you should already be familiar with the OPERA™ system in general.

The purpose of the OPERA™ Control Center is to schedule test calls and the evaluation of speech quality parameters between various OPERA™ systems and to remote control these systems through a TCP/IP connection. It allows the user to create complex schedules consisting of up to some hundred commands without having to think about the synchronization and allocation of the resources. Commands may be automatically repeated and rescheduled after a certain time, e.g. every Monday.

Although the OPERA™ Control Center was originally designed for the automated monitoring of telecom networks with OPERA™ systems standing at all important network nodes, it can be used on a single OPERA™ system as well. Please note, that with the "Light" version of the OPERA™ Control Center, the software cannot be used to manage a distributed set of OPERA™ systems. If you want to use the OPERA™ Control Center to control other systems than the local host, you will need the full version. For more information about this, please refer to Section 8.3 in this manual.

The use of the OPERA™ Control Center is not limited to telecom applications, it is also applicable to wide band audio applications.

All interface options and all algorithms available for OPERA™ may be used in conjunction with the OPERA™ Control Center. Typical applications range from monitoring telecom networks up to automatically test broadcast transmission links. The OPERA™ Control Center may also be used for automating tests in an R&D environment if you do not want to write commandline scripts, although we would generally recommend the commandline interface for this purpose since it is significantly more flexible and gives more detailed results. In any case, all results will be stored in a tab separated text file which can be viewed by the OPERA™ Control Center itself, or imported into any spread sheet data base program or network management system for further analysis.

## 2 The Concept Behind the OPERA™ Control Center

The OPERA™ Control Center consists of two modules which access the remote controlled OPERA™ systems through remote procedure calls. The first module is the graphical user interface (GUI), which is used to create and edit entries in the command database. From the command database the system creates some control files which are handed over to the dispatcher module. The dispatcher module does the real work and takes care of the allocation of all required resources before a test call is issued. It locks the interfaces which are required for a test call and keeps them locked throughout the test call. This will effectively block all other commands and also manual access (e.g. the use of OptiCall™) to these resources. Commands which require such a locked resource will be delayed until the resources are free again. Due to this locking mechanism there may be several OPERA™ Control Centers and OptiCall™ applications active on the network.

In order to keep the maintenance of the system easy, there are two different tables used to form the command database. One contains the description of the available resources on the network ("Phonebook", see Section 3.2) and another one consists of the actual test commands ("Commands", see Section 3.3). The first table is used to assign an alias name for each combination of an OPERA™ system, the chosen interface and the associated telephone number. The second table then uses these alias names to define the originator and the terminator of the test calls. This means if the name of a system or just the telephone number changes, it is not required to adapt the entire command schedule (the relevant interface may be used a hundred times there), instead just the single database entry which defines the alias name of the relevant interface has to be modified.

## 3 Setting up the OPERA™ Control Center

### 3.1 Verifying the Test Setup

Before starting to use the OPERA™ Control Center, all systems should be booted and - if they are not members of the same Windows NT domain - logged on with the same user name and password. If you did not modify any settings on the OPERA™ systems, they will all automatically log you on after booting them.

It is generally a good idea to verify the correct setup by issuing a few test calls manually using OptiCall™ from the machine on which the OPERA™ Control Center is installed. If it is not possible to establish a call using OptiCall™, it will also not be possible to do so using the OPERA™ Control Center. If there are problems at this stage already, please verify your network settings and the proper connection to the telephone network. If the call succeeds if it is issued from OptiCall™ running on the OPERA™ system where the interfaces are installed, the reason is probably due to the network setup. Please consult your local network administrator or OPTICOM in this case. Especially if you are using a firewall between two OPERA™ systems, some special network settings may be required.

If everything works fine so far, you may start the OPERA™ Control Center. It will come up either with an empty result table (if you did not yet perform any measurements) or with the result view of the last measurements that have been performed.

If you haven't performed any test calls with the Control Center yet, you will create database entries for all resources you want to use, in a first step (see Section 3.2). The second step is to create a table with the actual commands, as described in Section 3.3.

### 3.2 Defining the Resources - the Phone Book

To create the resources required for the commands, simply click on the toolbar button **Phone Book**. This will popup a dialog window with a table as shown in Figure 3.1. You may edit existing entries in this table by simply clicking on the fields you want to modify, you may add new rows or you may delete existing rows.

The meaning of the columns of the Phone Book table are explained in Table 3.1. Imagine this resources database as a telephone book. Everybody has a name in there (=ResourceName), an address (SystemName, LineInterface) and a telephone number (PhoneNumber) under which you can call the person. Each resource may appear in table several times with different resource names, just like one person may have several telephone numbers. You may also use the same interface with different names and telephone numbers, if you want to perform e.g. several loop calls on the same interfaces, taking different routes through the network which are defined by the telephone number.

You edit existing entries in the table by simply clicking on them with the mouse. If you want to create a new entry click on the "Add" button and then select the field of the new line that you would like to edit. If you are done

with editing the table click on the "Close" button to close the window. The underlying database is then updated accordingly. To delete an entry in the table, select a line and then click on the "Delete" button. You may also select several lines to delete.

For editing new entries you may also copy and paste a single field or a whole line in the table. To copy a single field entry, you either select the copy command from the pop-up menu that appears on a right click after you selected the entry, or you use the key combination Ctrl-C to copy and then Ctrl-V to paste.

To copy a whole line or several lines, you will first select the line (or the lines) by clicking on the gray field on the left hand side of the "ResourceName" column. Then copy the selection with the key combination Ctrl-C. When you paste it using Ctrl-V, the selection will be automatically added to the end of the table. In doing so, an additional index will be appended to the resource names that have been pasted, automatically.

Please note, that only those resource names may be deleted or modified, which are not currently used in the Commands table.

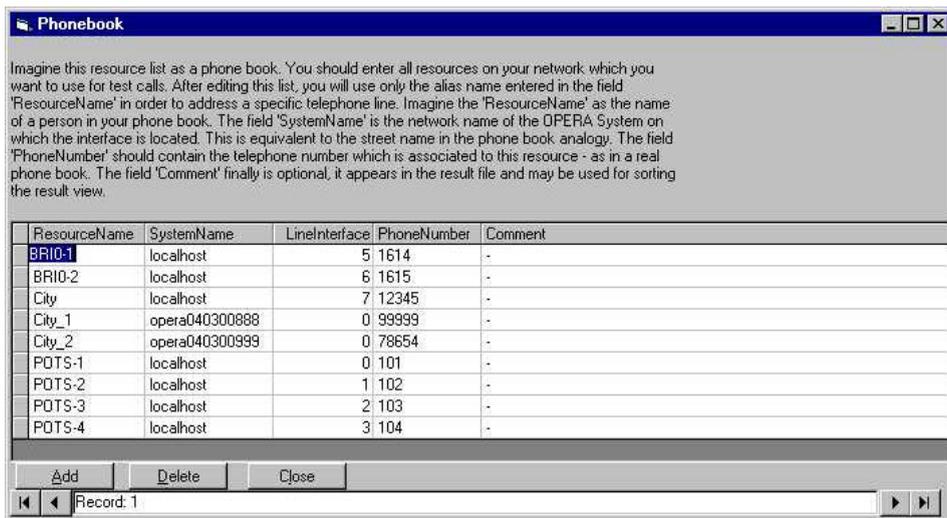


Figure 3.1: The Phone Book dialog window.

Column Title	Description
ResourceName	Name under which you want to address this resource in the command table
SystemName	Computer name of the OPERA™ analyzer where the interface is located. May also be "localhost" for the local machine.
LineInterface	Index of the interface on the OPERA™ analyzer defined in SystemName. This index is shown in OptiCall™ if you click on the drop down list box for the interface selection. It is the sequential number before the name of the interface.
PhoneNumber	This is the phone number which must be dialed in order to call this resource.
Comment	This is an optional comment which will appear in the result table.

Table 3.1: Meaning of the columns of the Phone Book table.

**Note:**

If you are using the light version of the OPERA™ Control Center, "localhost" is the only valid entry for the resource name (see Section 8.3).

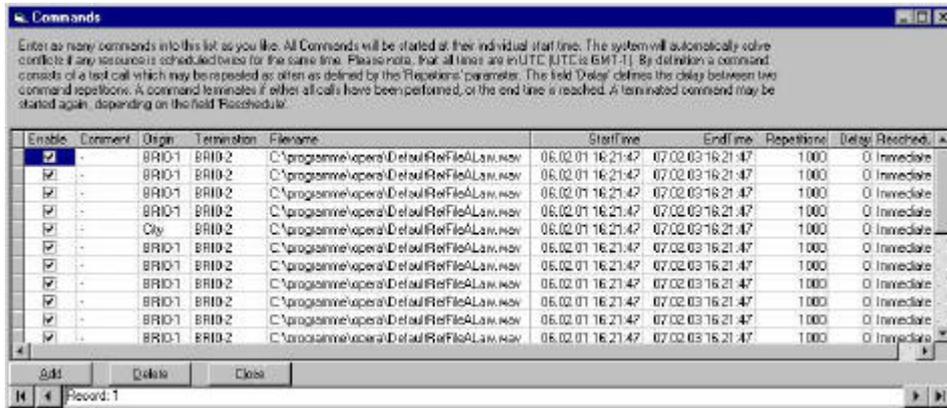


Figure 3.2: The Commands Table dialog window.

**3.3 Defining the Testcalls – the Commands Table**

After creating a Phone Book table with the available resources, you are ready to create a table with the schedule of the test calls. Just click on the toolbar button Commands. Figure 3.2 depicts the dialog window that will be presented. Editing this Commands table works essentially in the same way as editing the Phone Book table.

The meaning of the columns is explained in Table 3.2. The fields for the originator and the terminator of the call ("Origin" and "Termination") are drop down list boxes which are automatically filled with the resource names defined in the Phonebook. The "Reschedule" field is a drop down list box as well, here you will find entries as e.g. "Every Monday" or "Immediately". When you click on a "Filename" field in the table, a small button will appear on the right edge of the field. Use this button to browse for files on your computer.

As described for the phone book table, you may copy and paste a single field or a whole line in the table. To copy a single field entry, you either select the copy command from the pop-up menu that appears on a right click after you selected the entry, or you use the key combination Ctrl-C to copy and then Ctrl-V to paste.

To copy a whole line or several lines, you will first select the line (or the lines) by clicking on the gray field on the left hand side of the "Enable" column. Then copy the selection with the key combination Ctrl-C. To paste it into the table, use the combination Ctrl-V.

Column Title	Description
Enable	Check the box in order to activate the command. Inactive commands will not be executed during the measurement.
Comment	This is an optional comment which will appear in the result table.
Origin	Select the interface on which you want to originate the call (Drop down list box).
Termination	Select the interface on which you want to terminate the call (Drop down list box).
Filename	Name of the wave file with the speech sample which is sent from the terminating side to the originating side.
StartTime	This is the time in UTC at which the command will be executed for the first time. If it is a date in the past, the system will reschedule the command as defined by the reschedule parameter.
EndTime	This is the time in UTC at which the command will be terminated.
Repetitions	Defines how often a command will be repeated before it is rescheduled.
Delay	This is an optional delay between two command repetitions. It is defined in seconds.
Reschedule	Here you may choose when the command will be issued again (Drop down list box).

Table 3.2: Meaning of the columns of the Commands table.

**Note:**

Please note that all times are specified in UTC (Universal Time Coordinated) in order to use the same time coordinate on measurement systems standing in different time zones. During winter time (standard time) UTC is equal GMT (Greenwich Mean Time). During summertime (daylight savings time), UTC is GMT -1. To obtain your local time, you need to subtract (add) a certain number of hours from (to) UTC depending on how many time zones you are away from Greenwich (England). For the current GMT check the following web site: [www.GreenwichMeanTime.com/](http://www.GreenwichMeanTime.com/)

3.4 Using Microsoft Access to edit the Database

If you are planning to create a large and complicated setup, it may be a good idea to use MS Access to edit the tables, especially the Phone Book table. The Commands, as well as the Phone Book table are stored in the file c:\programme\opera\databases\commandlist.mdb. You may directly open this database using MS Access, or any other compatible database application.

## 4 Starting and Stopping the Measurement

When you have successfully setup your databases, you start the measurement by clicking on the toolbar button **Start**. A dialog window will pop up asking you whether you want to append new measurements to the existing result file or if you want to create a new result file. Then, you will be informed in the status bar, on the bottom of the main window, about the number of currently active and waiting commands.

The result display is permanently refreshed. If you want to stop this automatic refresh, click on the toolbar button **Pause Refresh** and to switch it on again on **Continue Refresh**. If you want to refresh the display manually click on **Refresh**. Figure 4.1 depicts a typical view of the Control Center main dialog window after a measurement has run for a while.

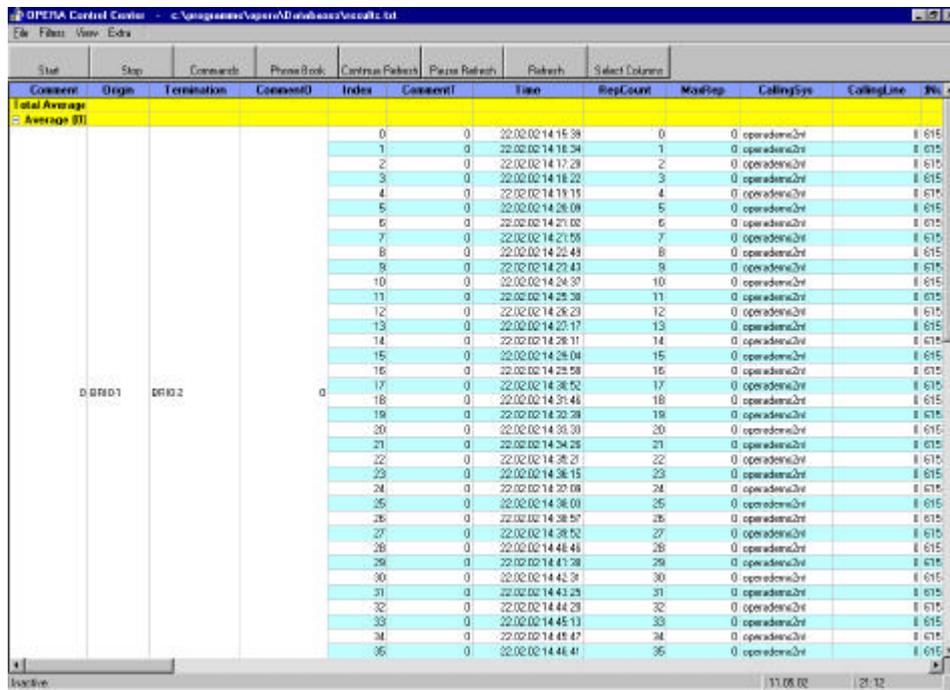


Figure 4.1: The OPERA™ Control Center main dialog window.

In order to stop the measurement, wait until no more commands are scheduled or press on **Stop**. Pressing **Stop** may take some time since all scheduled commands, active as well as sleeping commands, must be interrupted which is not possible at all times. Sometimes the OPERA™ Control Center has to wait until a command reaches an interruptible state. When all commands are stopped, this will be indicated in the status bar of the main window by the status message "Inactive".

During the measurement all results are written to the file which is indicated in the title bar of the main dialog window of the OPERA™ Control Center. Further information about the result file and the result view in the main dialog you will find in the next section.

## 5 The Result View

The result view is the table which is drawn in the main dialog window of the OPERA™ Control Center (see Figure 4.1). It presents the contents of the result file which was created during the measurement. You may drag the columns with the mouse in order to change their sequence, and you may modify the sort order by clicking into the heading of any column.

Please note that between column 6 and 7 there is border which splits the table into two parts. Since the first six rows are used for grouping the rows, you are not allowed to drag a column from the left part of the table to the right part and vice versa.

### 5.1 The Result File

During the measurement, the results are written in the file that is shown in the title bar of the main dialog window. As a default, the results are stored in `c:\programme\opera\databases\results.txt`. This is the file which is opened every time when you start the OPERA™ Control Center.

If you want to open another result file, choose the menu option `File|Open`. To create a new result file, select the menu option `File|New`. You may, as well, save the current results in another file, therefore select the menu option `File|Save as`. The chosen file will immediately be opened in the result view of the OPERA™ Control Center.

### 5.2 Freezing Fields

It is also possible to freeze rows and columns by pulling the border line between the row with the column titles and the results values down with the mouse, or pulling the left most border line of the table to the right. Therefore move the mouse near to the corresponding line until the mouse symbol turns into a little lock symbol. Then you may freeze rows or columns by holding the left mouse button down and move the mouse until all the rows or columns that you wish to freeze are selected.

The freezed fields will be depicted olive-colored. For instance, if you have freezed the first two columns, as shown in Figure 5.1, these columns will not move while you scroll to the right in the result view.

If you want to "unfreeze" fields, you should move the mouse near to a line between a freezed and a non-freezed area of the result table. The mouse symbol will turn into the lock symbol again, and you will be able to select a new freeze area.

Comment	Origin	Comment()	Termination	Index	Comment()	Time	RepCount	MaxRep	CallingSys	CallingLine	No.
0				0		22.02.02 14 15 38	0	0	operadems2tr		615
1				1		22.02.02 14 16 34	1	0	operadems2tr		615
2				2		22.02.02 14 17 28	2	0	operadems2tr		615
3				3		22.02.02 14 18 22	3	0	operadems2tr		615
4				4		22.02.02 14 19 15	4	0	operadems2tr		615
5				5		22.02.02 14 20 08	5	0	operadems2tr		615
6				6		22.02.02 14 21 02	6	0	operadems2tr		615
7				7		22.02.02 14 21 55	7	0	operadems2tr		615
8				8		22.02.02 14 22 49	8	0	operadems2tr		615
9				9		22.02.02 14 23 43	9	0	operadems2tr		615
10				10		22.02.02 14 24 37	10	0	operadems2tr		615
11				11		22.02.02 14 25 30	11	0	operadems2tr		615
12				12		22.02.02 14 26 23	12	0	operadems2tr		615
13				13		22.02.02 14 27 17	13	0	operadems2tr		615
14				14		22.02.02 14 28 11	14	0	operadems2tr		615
15				15		22.02.02 14 28 04	15	0	operadems2tr		615
16				16		22.02.02 14 29 58	16	0	operadems2tr		615
17	0 DF001		0 DF002	17		22.02.02 14 30 52	17	0	operadems2tr		615
18				18		22.02.02 14 31 46	18	0	operadems2tr		615
19				19		22.02.02 14 32 39	19	0	operadems2tr		615
20				20		22.02.02 14 33 33	20	0	operadems2tr		615
21				21		22.02.02 14 34 27	21	0	operadems2tr		615
22				22		22.02.02 14 35 21	22	0	operadems2tr		615
23				23		22.02.02 14 36 15	23	0	operadems2tr		615
24				24		22.02.02 14 37 08	24	0	operadems2tr		615
25				25		22.02.02 14 38 02	25	0	operadems2tr		615
26				26		22.02.02 14 38 57	26	0	operadems2tr		615
27				27		22.02.02 14 39 52	27	0	operadems2tr		615
28				28		22.02.02 14 40 46	28	0	operadems2tr		615
29				29		22.02.02 14 41 40	29	0	operadems2tr		615
30				30		22.02.02 14 42 34	30	0	operadems2tr		615
31				31		22.02.02 14 43 28	31	0	operadems2tr		615
32				32		22.02.02 14 44 23	32	0	operadems2tr		615
33				33		22.02.02 14 45 17	33	0	operadems2tr		615
34				34		22.02.02 14 46 11	34	0	operadems2tr		615
35				35		22.02.02 14 46 41	35	0	operadems2tr		615

Figure 5.1: The main dialog window with the first two columns in frozen mode.

### 5.3 Selecting the Columns to Display

Maybe the result view of the Control Center will provide you with more information as you actually require. If you do not want to see all this information, you may select which columns are shown and which ones are hidden. Just click on the toolbar button "Select Columns" and check the appropriate boxes in the dialog that pops up (see Figure 5.2).

Please check the fields which you want to see in the result table and in printouts.

- Index
- Comment
- Origin
- Comment()()
- Termination
- CommentT
- Time
- RepCount
- MaxRep
- CallingSys
- CallingLine
- CalledNumber
- CalledSys
- CalledLine
- RefFile
- FileCaller
- FileCalled
- Tpdd
- Tring
- Duration
- TermCause
- PsqmOMOS\_w2
- PsqmPlusOMOS
- PsqmDelay
- Attenuation
- EchoDelay
- ERL
- PesqMOS
- PesqMOSsp
- PesqMOSbg
- LevRefSone
- LevTestSone
- LevBackSone
- LevRefTotdBov
- LevRefSpdBov
- LevRefBackdBov
- LevTestTotdBov
- LevTestSpdBov
- LevTestBackdBov
- PESQAttenuation
- FECmin
- FECavg
- FECmax
- HOTmin
- HOTavg
- HOTmax
- DelayMin
- DelayAvg
- DelayMax
- Errors

Figure 5.2: The Select Columns dialog window.

### 5.4 Filtering the Results

If you want to filter the results which are shown in the table, there is the option to generate some filtering rules. Two filter types are available: the Connection Filter type and the Limit Filter type.

Limit Filters will filter out all results where one or several parameters are exceeding a user definable limit. Connection filters will allow you to filter the results depending on which resources have been involved to originate and terminate the call. For both filter types you may combine several simple filters using Boolean AND/OR operators in order to form complex filters.

If you want to specify a Connection Filter, use the dialog that appears after clicking on the menu `Filters|Edit Connection Filter`. The Connection Filter dialog is shown in Figure 5.3. For each Condition and Resource Name option there are drop down fields available. When you confirm your filter selection with the OK button, the filter condition is immediately applies on the result view. To switch this filter on and off use the menu `Filters|Apply Connection Filter`.

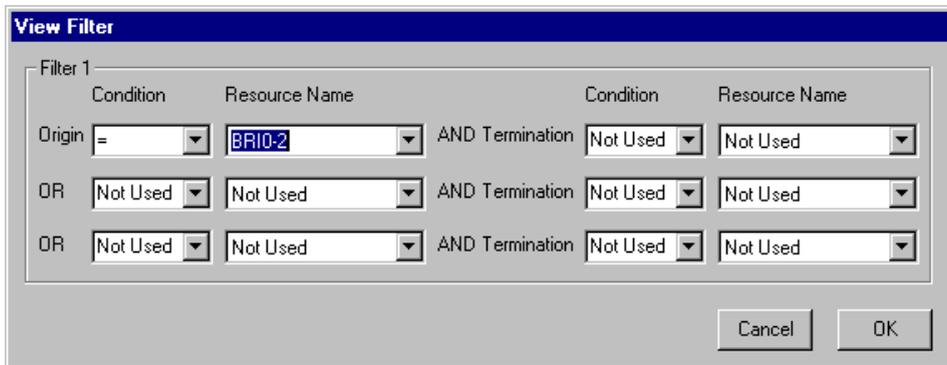


Figure 5.3: The Connection Filter dialog window.

In order to specify a Limit Filter use the dialog that appears after clicking on the menu `Filters|Edit Limit Filter`. This dialog allows you to select the parameters which shall be filtered by drop down list boxes and to specify the limits by editing a regular edit field. Figure 5.4 shows an example where a threshold for the PESQ MOS value has been defined. After confirming this filter setting by clicking on the OK button, the result view will show only those measurements that fulfill the chosen condition. To switch this filter on and off use the menu `Filters|Apply Limit Filter`.

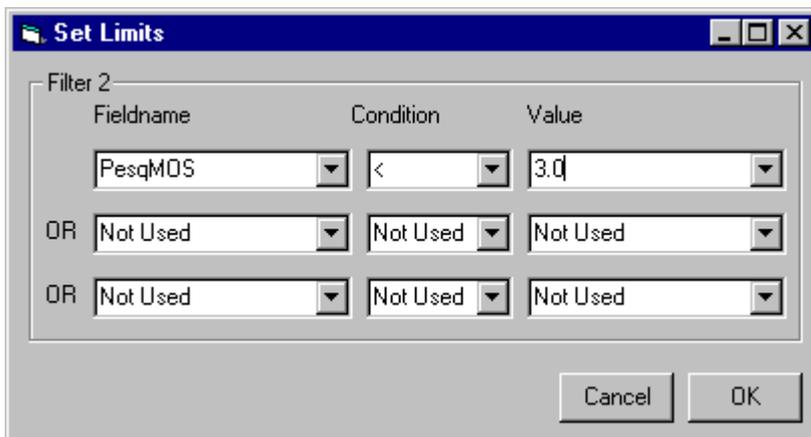


Figure 5.4: The Limit Filter dialog window.

### 5.5 Alerts

When measuring a system under test with the Control Center, you may notify a person in case of a specific problem. Therefore you select the menu option **Filters|Alerts**. As shown in Figure 5.5, you will in a first step define a condition for the alert. This is done in the "Limit Definition" section. In a second step you will define what action should be executed if the condition defined is fulfilled during the measurement. Check the button titled "Execute program on alert", and enter a program that is to be executed. This may be a batch file, or , as shown in the example setup in Figure 5.5, the Windows network command "net send" to send a message via an IP network.

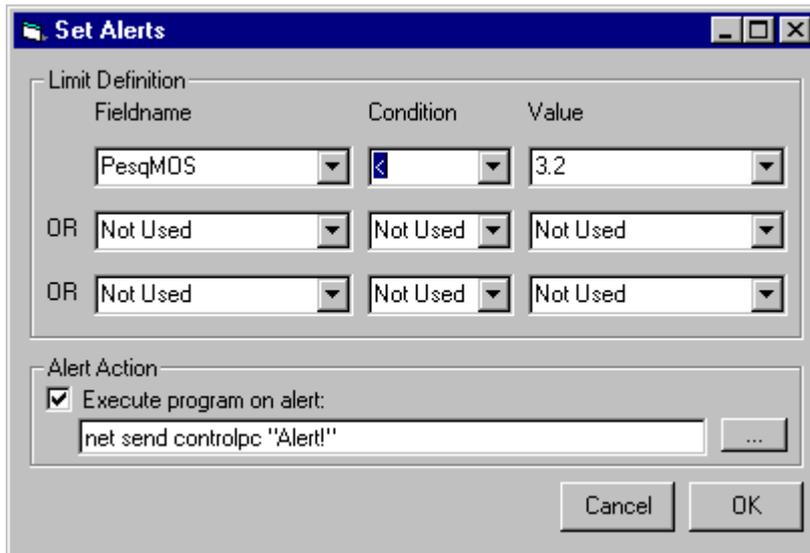


Figure 5.5: The Alerts dialog window.

### 5.6 Clearing the Result File

If you want to delete all the results before starting a new series of measurements, select the menu **View|Clear...** and confirm the warning which pops up with a click on yes. If you want to archive the results you should copy the result file to a safe location before. The default location for the result file is `c:\programme\opera\databases\results.txt`. As mentioned in Section 5.1, you may choose a different location on your computer where you want to store the result file.

### 5.7 The Averages Functionality

As a default, the Averages functionality is switched on in the Control Center. If this option is activated, the results are divided into groups. The groups are defined according to the very first column in the result view. Within these groups, all result values are averaged and the average values are shown in yellow-colored lines above every group.

If you prefer a simpler view of the results, switch off the average of the result values. Just use the menu **"View"|"Show Averages"** to toggle between the two modes.

### 5.8 Meaning of the Results

Table 5.1 gives an overview of the results which are shown in the result view of the OPERA™ Control Center. Depending on your current licenses and system configuration not all of these parameters may be available on

your system, e.g. if you have not purchased PESQ, the PESQ result values will not be available in the result view, as a consequence. Most measured parameters correspond to values determined by OPERA™. Please refer to the OPERA™ manual for a detailed description.

Column Title	Description
Comment	The comment which is related to the command.
CommentO	The comment which is related to the originating resource.
CommentT	The comment which is related to the terminating resource.
Origin	The resource name of the interface which originated the call.
Termination	The resource name of the interface which terminated the call.
Index	A sequential index of the test measurements
Time	Time in UTC at which the command was started.
RepCount	Counts the repetitions of the command
MaxRep	Corresponds to "Repetitions" in the command definition
CallingSys	Name of the system that originated the call.
Calling Line	Index of the line interface used to originate the call
CalledNumber	Telephone number dialed
CalledSys	Name of the system that terminated the call.
Called Line	Index of the line interface used to terminate the call
RefFile	The name of the file which was sent from the terminating side to the originating side
FileCaller	The name of the file which was recorded at the originating side (degraded signal)
FileCalled	The name of the file which was recorded at the terminating side (echo signal)
Tpdd	Post dial delay in ms, including the time required to detect the ring-back tone (app. 2..3s, country specific)
Tring	Currently not used, please ignore.
Duration	Total duration of the call (including dialing etc.)
TermCause	Termination cause. If it is "connect", the call was successful, all other values (busy, disconnected...) identify missed call attempts.
PsqmOMOS_W2	The MOS according to PSQM / P.861 using a silence weight of 0.2.
PsqmPlusOMOS	The MOS according to PSQM+.
PsqmDelay	The delay in ms as determined by OPERA™ during calculation of PSQM.
Attenuation	The attenuation of the line in dB.
EchoDelay	The delay of the severest echo component in ms.
ERL	The echo return loss of the severest echo component in dB, measured with real speech.
PesqMOS	The MOS according to PESQ / P.862
PesqMOSsp	PESQ / P.862 MOS of the speech parts of the test signal
PesqMOSbg	PESQ / P.862 MOS of the background noise parts of the test signal
DelayMin	The minimum delay in ms during the call as determined by PESQ / P.862
DelayAvg	The average delay in ms during the call as determined by PESQ / P.862
DelayMax	The maximum delay in ms during the call as determined by PESQ / P.862
LoudnessRefSone	Loudness of the reference signal measured in Sone
LoudnessDegSone	Loudness of the degraded signal measured in Sone
LoudnessBackSone	Loudness of the background noise parts of the degraded signal measured in Sone
LevRefTotdBov	Level in dBov averaged over the total of the reference signal
LevRefSpdBov	Level in dBov of the speech parts of the reference signal

LevRefBackdBov	Level in dBov of the background noise parts of the reference signal
LevDegTotdBov	Level in dBov averaged over the total of the degraded signal
LevDegSpdBov	Level in dBov of the speech parts of the degraded signal
LevDegBackdBov	Level in dBov of the background noise parts of the degraded signal
PesqAttenuation	Attenuation of the test signal as measured by PESQ / P.862

Table 5.1: The meaning of the columns of the Result View

Column Title	Description (Continued)
FECmin	Minimum amount of Front-end clipping (FEC)
FECavg	Average of Front-end clipping (FEC)
FECmax	Maximum amount of Front-end clipping (FEC)
HOTmin	Minimum amount of Hold-over time (HOT)
HOTavg	Average of Hold-over time (HOT)
HOTmax	Maximum amount of Hold-over time (HOT)
Errors	Errors messages in case of problems

Table 5.2: Continuation of the meaning of the columns of the Result View

### 5.9 Archiving of the Result Files

During the execution of test measurements with the Control Center, the result file may increase to a size that is not manageable in a comfortable way anymore. If you want to separate your results into a number of smaller files, select the menu option **Extra|Options...** The Control Center will offer you the option to define an archive location on your computer where the result files will be stored during the execution of the test measurements. As shown in Figure 5.6, you will define an archiving interval. If you want to switch off the archiving functionality, enter the value zero into this edit box.

The archived result files are stored in the directory that is defined in the edit field on the top of the dialog ("Move results to:"). If you want to use unique file names for the archiving, check the switch located underneath the edit box for the archiving interval. If you choose not to use unique file names, the archived result file will remain the file name shown in the title bar of the main window and will be overwritten in each archiving process.

As a default, the test WAVE files that are acquired during the execution are stored in the directory d:\remote. When you do not want to store these files on your computer, check the switch titled **Delete wave files after evaluation**, which will prevent that your hard disk will run out of free memory during the execution of a large number of test measurements.

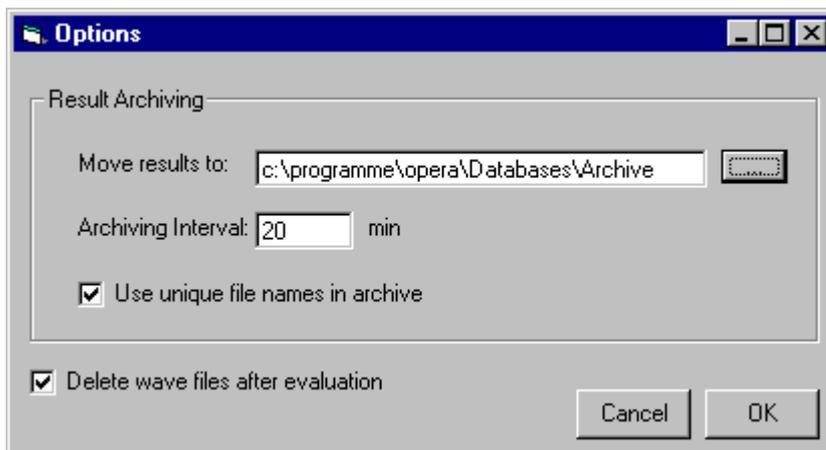


Figure 5.6: The Options dialog window for archiving result files.

### 5.10 Viewing Statistics

In order to view some statistics of certain result values shown in the result view, first select a result value by clicking somewhere into the corresponding column. Then, by a right mouse click, select the option **Show Chart**, a dialog window as shown in Figure 5.7 will pop up.

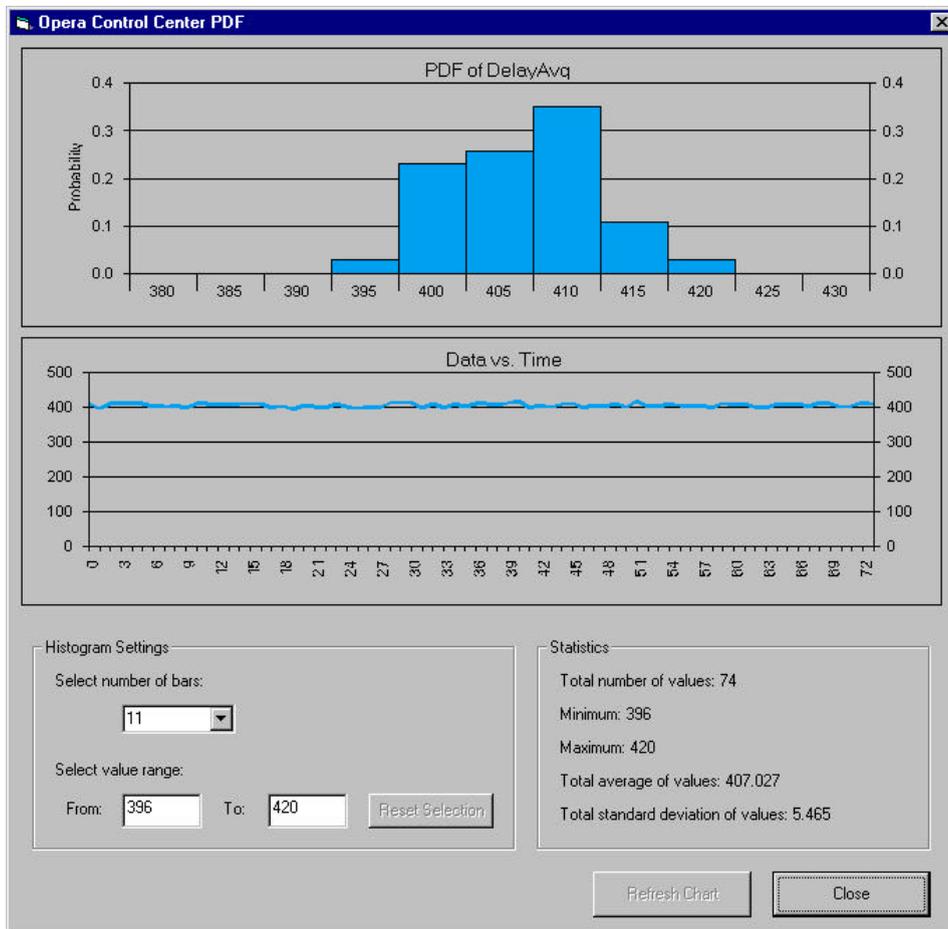


Figure 5.7: The PDF chart dialog window

The diagram shown in the top of the dialog is the probability density function (PDF) of the result parameter you have selected. The horizontal axis represents the measurement values, the vertical axis represents the probability. The second diagram presents the measurement result values versus time. Here, the horizontal axis represents the index in the table of the result file. The vertical axis represents the values of the result parameter.

If you want to change the number of bars shown in the PDF diagram to have a different resolution, you can either select a value from the drop down list of the edit field titled **Select number of bars**. or you enter a certain value into the edit box. Please note, that your changes only take effect after you have pushed the **Refresh Chart** button located on the bottom of the dialog window.

If you want to change the value range of the horizontal axis of the PDF diagram, modify the setting in the two edit boxes located underneath the title

Select value range. When you click the Reset Selection button, the edit boxes will be set back to their default settings. As explained above, the selected value range will only take effect after you click on the Refresh Chart button.

#### 5.11 Printing Results

In order to print the result view, select the menu option File|Print. Please setup the page layout from the windows menu Start|Settings|Printers.

#### 5.12 If No Data is Shown Even if the Result File Exists...

It is rare, but it may happen that your result file contains field names different from those expected by the OPERA™ Control Center (e.g. if you started it with a corrupt result file). In this case the OPERA™ Control center will not show any useful data. However it is easy to cope with this: select View|Reset Field Names from the menu. This will synchronize the field names used by the Control Center with those in the result file. If this does not help, try to clear the result file as described before and then repeat this step and restart the measurement. After the first new results are available, the new field names will be read from the result file.

## 6 Summary of the Menu and Toolbar Options

An overview of all the menu option of the Control Center is listed in Table 6.1. The functionality toolbar buttons is summarized in Table 6.2. For further details, you will find references to the sections in this documentation.

Menu Option	Description
File New...	Creates and opens a new result file (see Section 5.1)
File Open...	Opens an existing result file (see Section 5.1)
File Save as...	Save current result file to hard disk (see Section 5.1)
File Page Layout...	To setup the page layout for printing, please use the windows option Start Settings Printers
File Print...	Prints current result view (see Section 5.11)
File Exit	Exits the OPERA™ Control Center
Filters Apply Connection Filter	Applies the connection filter to the result view (see Section 5.4)
Filters Apply Limit Filter	Applies the limit filter to the result view (see Section 5.4)
Filters edit Connection Filter...	Opens a dialog to edit the connection filter (see Section 5.4)
Filters Edit Limit Filter...	Opens a dialog to edit the limit filter (see Section 5.4)
Filters Alerts...	Opens a dialog to define a alert functionality (see Section 5.5)
View Toolbar	Switches on/off the toolbar
View Statusbar	Switches on/off the statusbar
View Show Averages	Switches on/off the averages functionality
View Refresh	Refreshes the result view (see Section 4)
View Reset Field Names	Synchronizes the field names of the current result file with the result view of the Control Center (see Section 5.12)
View Clear...	Clears the current result view and deletes the corresponding result file (see Section 5.6)
Extra Options...	Opens a dialog to specify the archiving functionality (see Section 5.9)

Table 6.1: Overview of the menu option of the OPERA™ Control Center.

Toolbar Button	Description
Start	Starts the execution of the commands (see Section 4)
Stop	Stops the execution of the commands (see Section 4)
Commands	Opens the dialog for defining the commands (see Section 3.3)
Phone Book	Opens a dialog to define the resources (see Section 3.2)
Continue Refresh	Continues with refreshing the result view (see Section 4)
Pause Refresh	Pauses the refreshing of the result view (see Section 4)
Refresh	Refreshes the result view once (see Section 4)
Select Columns	Opens a dialog to specify which result parameters are shown the result view (see Section 5.3)

Table 6.2: Overview of the toolbar buttons options of the OPERA™ Control Center.

## 7 Time Synchronization of Distributed OPERA™ Systems

### 7.1 Description

Users that have purchased a OPERA™ Control Center license (OPR-003-CTR-X or OPR-010-CTR-X) will receive a program called Time Synchronization (TS). TS is a small add-on that is used to synchronize the local time and date (on local machine) with another computer on local network. It works with almost clockwork precision, the precision is in tens of nanoseconds. This program should be used when performing test calls with distributed OPERA™ systems.

### 7.2 Installation & Using

The TS program has to be installed on the computer that shall be synchronized with another computer as a time reference. TS does not need to be installed on the reference computer. The TS program has already been installed if an OPERA™ Control Center license has been included in the order of an OPERA™ system.

To install the time synchronization program you have to right-click on the TimeSync.inf file and choose the command install. This script will install the Time Synchronization service and the control panel applet. A dialog window as shown in Figure 7.1 will be displayed.

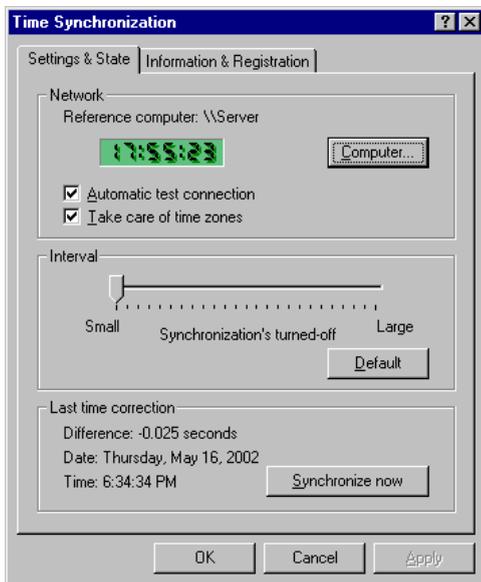


Figure 7.1: The settings dialog window of the Time Synchronization program.

First a reference computer has to be set. This is done in the “Network” field of the “Settings & State” tab of the dialog window. You can use the Browse button to select a reference computer. If no reference is chosen, the reference computer is the local machine. The option titled “Take care of time zones” must be checked.

In a second step, the time interval has to be set. For best operation the smallest value available has to be selected, i.e. 5 minutes. Please note, if the

slider is put to its left-most position the synchronization will be turned off. The arrow keys of the keyboard can also be used to set the time interval. Before using the keyboard, you have to select the slider control.

After all necessary settings have been done, the synchronization service is installed by clicking on the OK button. A message window will appear asking whether the service shall be executed. After confirming with the "Yes" button, the Time Synchronization service will run. After the Time Synchronization service has been installed and started, the computer time will be synchronized within the time interval defined in the settings dialog.

If the TS program has already been installed on the computer, the TS program is executed by right-clicking on the TimeSync.inf file and choosing the install command, just like mentioned above. The synchronization will proceed after clicking on the "Synchronize now" button located in the "Last time correction" field and then clicking on the OK button.

## 8 Other Issues of the Control Center

### 8.1 Modifying the Evaluation of the Results

It is possible to widely vary the way in which the results are calculated. Essentially all options and results that are available through the commandline interface of OPERA™ are available in the OPERA™ Control Center, too. Modifying the settings used by the Control Center however requires modifications of the Windows registry. Please contact OPTICOM if you have some specific needs.

### 8.2 A Note to Users of Versions older than V3.5

In all databases the field names have changed and also the result table uses different field names now. This was necessary in order to make it consistent with OptiCall™ and to implement more features. We recommend to copy the data from old databases to the new format using MS Access.

### 8.3 Full and Light Version of the OPERA™ Control Center Software

There are two versions of the OPERA™ Control Center Software available, a "full" version and a "light" version. To see which version is currently at your disposal, check the title bar of the OPERA™ Control Center main window. The full version is indicated by the string "OPERA Control Center", the light version is titled "OPERA Control Center Light".

The light version is included in delivery of every OPERA™ Objective Perceptual Analyzer. The light version is restricted for the operation with the localhost only. That is, you may not remote control other OPERA™ systems than your local analyzer. Entries in the Phonebook dialog (see Section 3.2) using system names other than "localhost" will result in non-functional commands. Please note, also the explicit entry of the computer name of the local host will be regarded as invalid in the light version.

If you want to use the OPERA™ Control Center to control distributed OPERA™ analyzers, you will have to purchase the full version of the Control Center software (OPR-003-CTR-X, or OPR-010-CTR-X).