

# D950 Session Configuration Tool

## Operating Instructions

Version V1.0

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# 1 IMPORTANT

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The D950 Digital Mixing System may be easily reconfigured using the optional Session Configuration Tool. Whereas the ability for reconfiguration is a great feature of the D950, it is important for an operator to fully understand the Session Configuration Tool and its functions. There is no safeguard functionality to prevent someone from configuring a console without e.g. the summing busses - in this case, the console may not function properly upon loading of such a configuration. Please consult the separate D950 Operating Instructions for more details on the D950 Digital Mixing System.

The D950 Session Configuration Tool is an option to the D950 Digital Mixing System. The functions, features and the appearance of the D950 Session Configuration Tool may be changed by adding or modifying the software. For this reason the operation of the Tool and its parts as described in this manual may be slightly different from your version.

Information contained in this manual has been carefully checked and is believed to be correct and complete. But, as we all know, everybody makes mistakes, and we are not immune either. If you detect a mistake, please write or send an e-mail to the addresses printed on the cover. We will be thankful for your feedback. No responsibility is taken by us for any inaccuracies, errors or omissions nor is any liability assumed for any loss or damage resulting either directly or indirectly from use of the information contained in the manual and any accompanying documentation.

## 1.1 Attention

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USE OF THE SOFTWARE IS SUBJECT TO THE STUDER PROFESSIONAL AUDIO SOFTWARE LICENSE AGREEMENT SET FORTH BELOW. USING THE SOFTWARE INDICATES YOUR ACCEPTANCE OF THIS LICENSE AGREEMENT. IF YOU DO NOT ACCEPT THESE LICENSE TERMS, YOU ARE NOT AUTHORIZED TO USE THIS SOFTWARE.

## 1.2 Agreement on Software Licence Terms and Conditions

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Under the condition and within the scope of the following Terms and Conditions STUDER Audio Professional AG (hereinafter „STUDER“) grants the right to use programmes developed by STUDER as well as those of third parties which have been installed by STUDER on or within its products. References to the licence programmes shall be references to the newest release of a licence programme installed at the Customer's site.

## 1.2.1 Programmes covered by the Agreement

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### 1.2.1.1 Licence Programmes of STUDER

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The following Terms and Conditions grant the right to use all system programmes of STUDER, all user programmes which carry the brand „STUDER" and are part of the D950 Digital Mixing System and/or its options at the time of its delivery to the Customer as well as the installation software on the original data disk and the accompanying documentation („Licence Material"). In this Agreement the word „Programmes" shall have the meaning of programmes and data written in machine code.

### 1.2.1.2 Programmes of Third Parties

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Programmes of third parties are all programmes which constitute part of the D950 and/or its options at the time of delivery to the Customer but have not been developed by STUDER. The following conditions are applicable to programmes of third parties:

The right to use Microsoft Windows NT is governed by the Licence Agreement attached hereto (if applicable), which is an integral part of this Agreement. The Customer shall sign any and all Licence Agreements for all further programmes of third parties installed on the D950 by STUDER with the third parties. The Customer shall be deemed to have received all Licence Agreements upon delivery of the D950 and/or its options.

Studer shall accept no responsibility or liability for, and gives no warranties (express or implied) as to the programmes of third parties. The Customer waives any and all claims versus STUDER for any consequential damages, which might occur due to defects of these programmes.

## 1.2.2 Right of Use

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### 1.2.2.1 Principle

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STUDER grants the Customer the non-exclusive right to use the Licence Material in one copy on the D950 and/or its options as laid down by the Sales Agreement concluded between the parties and all Terms and Conditions which shall be deemed to form and be read and construed as part of the Sales Agreement. This right is assignable according to para. 1.2.2.5 hereinafter.

### **1.2.2.2 Customised Configurations and Reverse Engineering**

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The Customer is not entitled to alter or develop further the Licence Material except within the expressly permitted configuration possibilities given by the Session Configuration Tool installed on the D950 or elsewhere. All altered programmes, including but not limited to the products altered within the permitted configuration possibilities, are covered by this Licence Agreement.

Reverse engineering is only permitted with the express consent of STUDER. The consent of STUDER can be obtained but is not limited to the case in which the interface-software can not be provided by STUDER. In any case STUDER has to be informed immediately upon complete or partial reverse engineering.

### **1.2.2.3 Copying the Licence Material**

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The Customer is entitled to make copies of all or parts of the Licence Material as is necessary for the use according to this Agreement, namely to make safety copies. The Customer shall apply the copyright of STUDER found on the Licence Material onto all copies made by him. Records shall be kept by the Customer regarding the amount of copies made and their place of keeping. The responsibility for the original programme and all copies made lies with the Customer. STUDER is entitled to check these records on first request. Copies not needed any more have to be destroyed immediately.

### **1.2.2.4 Disclosure of Licence Material**

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The Licence Material is a business secret of STUDER. The Customer shall not hand out or in any way give access to parts or the complete Licence Material to third parties nor to publish any part of the Licence Material without prior written consent of STUDER. The Customer shall protect the Licence Material and any copies made according to para. 1.2.2.3 aforementioned by appropriate defence measures against unauthorised access. This obligation of non-disclosure is a perpetual obligation.

Third parties are entitled to have access to the Licence Material if they use the Licence Material at the Customer in compliance with this Agreement.

Under no circumstance are third parties entitled to have access to the installation software on the original data disc. The Customer shall safeguard the original data disc accordingly.

### **1.2.2.5 Assignability**

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The rights granted to the Customer according to this Licence Agreement shall only be assignable to a third party together with the transfer of the D950 and/or its options and after the prior written consent of STUDER.

### **1.2.3 Rights to Licence Material**

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With the exception of the right of use granted by this Licence Agreement all proprietary rights to the Licence Material, especially the ownership and the intellectual property rights (such as but not limited to patents and copyright) remain with STUDER even if alterations, customised changes or amendments have been made to the Licence Material.

Studer's proprietary rights are acknowledged by the Customer. The Customer shall undertake no infringements and make no claims of any patent, registered design, copyright, trade mark or trade name, or other intellectual property right.

### **1.2.4 Royalties**

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The Customer shall pay STUDER a non refundable lump sum as royalty for the rights granted under para. 1.2.2, which is owed together with the purchase price of the D950 and/or its options according to the Sales Agreement or the confirmation of the order respectively.

### **1.2.5 Warranty, Disclaimer and Liability**

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#### **1.2.5.1 Warranty and Disclaimer regarding the functionality of the Licence Material**

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Except as stated in para. 1.2.1.2 STUDER hereby represents and warrants the functionality of the Licence Material according to the specifications agreed upon between the parties. The functions of the programmes covered by this Agreement were thoroughly checked at the time of the acceptance test. The Customer shall be deemed to have satisfied himself as to the compliance of the programmes with the specifications agreed upon as stated in the protocol of the acceptance test.

STUDER shall take no liability for any malfunctions of the programmes due to circumstances it is not responsible for, as for example but not limited to any change in the use or the operating conditions by the Customer, alterations to the Licence Material undertaken by the Customer or third parties, disturbances caused by machines and programmes not delivered by STUDER as well as user mistakes of the Customer or third parties.

STUDER shall take on no further responsibility or liability for the Licence Material. The Customer carries the full responsibility for the use of the Licence Material as well as for the results achieved. STUDER expressly does not warrant that the Licence Material can be used without interruption and free of any mistakes in all combinations and under all conditions the Customer wishes.

### **1.2.5.2 Remedy of defects**

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STUDER shall undertake, at no cost to the Customer, to remedy defects of the valid, unaltered version of the Licence Material for the period of three months, beginning with the delivery of the D950 Mixing System and/or its options to the Customer, or, should the acceptance test take place at the Customer, upon termination of the acceptance test, unless otherwise agreed. The obligation of STUDER to remedy expires after the above-mentioned period of three months, in any case however, at latest nine months after delivery of the mixing console to the Customer. This right of the Customer to remedy is subject to the correct documentation of the defects by the Customer and the ability of STUDER to reproduce the defects.

STUDER can choose whether the defect shall be remedied by the installation of a correction code / corrected version of the Licence Material or the description of a solution to evade the defect without any amendment to the functionality. If the use of the Licence Material is not restricted due to the defect, such defect has to only be remedied in the next programme version.

### **1.2.5.3 Warranty and Disclaimer regarding the Proprietary Rights**

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STUDER herewith declares that it has either developed the Licence Material itself and has therefore procured the corresponding proprietary rights or has been granted the rights to use and distribute the Licence Material.

In the event that the Customer is charged with infringement of third parties' alleged proprietary rights resulting from the use of the Licence Material, then STUDER shall assume all costs of the proceedings as well as the costs and damages resulting from a court order in the maximum amount of the royalty paid by the Customer for the component causing the infringement, provided however that the Customer immediately informs STUDER about the dispute and authorises STUDER in writing to conduct the proceedings, including the right to settle the dispute.

Should the Licence Material infringe the proprietary rights of third parties according to a court decision or Studer's free discretion, STUDER is entitled to make alterations at its own cost to remedy the infringement or to purchase the necessary rights from the third party. Should this remedy not be successful and should the infringement be established by a final court decision STUDER would pay damages for the loss of the right of use in the amount of the royalties paid by the Customer for the component causing the infringement reduced by the usual depreciation for the time of use.

STUDER is released from the aforementioned obligations if the infringement is due to an alteration made to the Licence Material by the Customer, to the use of the Licence Material combined with

own products or those of third parties or to the use of the Licence Material for other uses than those meant for. The Customer expressly waives all and any further claims versus STUDER.

#### **1.2.5.4 Liability**

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STUDER shall only take on liability for damages which occur to the Customer due to defects of the Licence Material or failure to comply with the Agreement, if they result from unlawful intent or gross negligence on the part of STUDER. All further liability, especially liability for simple negligence, concerning the use of the Licence Material and the achieved results is expressly excluded by STUDER. Furthermore STUDER shall not be made liable for any damages which arise through acts of an employee of STUDER. The Customer expressly waives all such claims.

STUDER shall not be liable for failure to comply with the Agreement if the performance of the obligations is impossible due to circumstances which STUDER can not influence. No damage claims can be made versus employees of STUDER.

#### **1.2.6 Miscellaneous**

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This Agreement is integral part of the Sales Agreement for the D950 mixing console and/or the written confirmation of order and enters into force upon signature of the Sales Agreement by the Customer. The Sales Agreement can be substituted by a confirmation of order making explicit reference to and enclosing these Terms and Conditions.

Should there be any discrepancies between the Sales Agreement / confirmation of order, this Agreement and the offer, then the wording of the Sales Agreement / confirmation of order precedes that of this Agreement, which again precedes the offer.

The parties are obliged to assign all rights and obligations resulting from this Agreement to their subsequent successors, transferees and assigns.

#### **1.2.7 Applicable Law and Jurisdiction**

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This Agreement shall be governed by and interpreted and construed in accordance with the substantive domestic laws of Switzerland.

Exclusive Jurisdiction is Zurich.

If you have any questions regarding this Agreement or if you wish to request any information from Studer Professional Audio, please contact the firm in writing.

## 2 INSTALLATION

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**Note** A good level of understanding the PC-basics is assumed for this installation. You may need to copy files between various media and create subdirectories. You will be required to edit a simple .ini file to adjust the environment of your PC. Please have an instruction manual for the Windows version you are using at your disposal if necessary.

**Environment** The D950 Session Configuration Tool will run under Microsoft Windows 95 or higher, or Windows NT 4.0 environments.

**Minimum Requirements** The D950 Session Configuration Tool requires the following minimum environment to run properly:

- Windows 95 or Windows NT
- Pentium processor, min. 200MHz recommended
- 32 (preferably 64) MB of RAM
- Display resolution 1024x768

### 2.1 Where to install?

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The D950 Session Configuration Tool may be installed on:

- the D950 Control PC
- any other PC, provided that above requirements are met

We recommend installation on a PC different than the D950 Control PC. The programme requires a lot of processor power when it compiles. Whilst it will run without any problem in a multitasking environment with multiple programmes running at the same time, it's performance may be considerably slowed down under such circumstances. If speed is essential, we recommend running the D950 Session Configuration Tool alone on a PC.

In some cases, the D950 Digital Mixing System may be delivered with the D950 Session Configuration Tool already installed.

Delivery of the software will usually be on a data medium (usually a 100MB ZIP disk) containing all the necessary files for installation of the D950 Session Configuration Tool in compressed or non-compressed form.

### 2.2 How to install

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#### 2.2.1 Installing from a compressed file

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If you have obtained the D950 Session Configuration Tool in compressed form (usually via e-mail), then you will start by copying the file (usually called D950cfg.EXE) into the target directory and then running the self-extracting file. This will decompress the original files and create the necessary directories for you.

You need to extract the original files into a root directory of a drive (C, D, E, ...) on your PC. Please make sure that the „\ADI\_DSP“ directory has been placed directly under the root of your selected drive as indicated above, otherwise the Configuration Tool may not work properly.

You may now erase the files:

- D950install
- i.bat
- make.bat

if you wish. They would have only been needed if you had installed from a removable medium.

Now please proceed with the instructions found in chapter „Check the installation“.

## 2.2.2 Installing from a removable medium

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To install the complete D950 Session Configuration Tool from a removable medium (usually a 100MB ZIP disk), please proceed as follows.

On the removable disk drive, start the programme „D950install“. This will start a DOS batch file requesting you to select a drive letter on your target PC to install to.

We recommend to select the „C“ drive. You may select a different drive than „C“ (D, E, ...) if you wish. Please proceed by typing:

make c

followed by Enter. This will copy all necessary files to the selected drive.

**Note** The directory C:\D950SYSTEMDB will already exist if you are installing on to a D950 Control PC. In this case, please use the „C“ drive for your installation.

## 2.2.3 Check the installation

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**Check the results** Please use the Windows Explorer to check the results of your work now. The following (or similar) file structure should now be found on your target PC (assuming „C“ was selected as the target drive):

C:\D950cfg	\tmpFiles\ (subdirectory)	contains temporary files
	\Ar111297.ach	DSP Processor Element architecture file
	\CoreFunc150798.lib	DSP source code library
	\D950CfgTool.exe	the Session Configuration programme
	\Mn150498.exe	executable used for the core files
	\Rt070798.a	DSP RTOS (operating system library)

The above file names may be different, or have different date stamps in your case! This is normal.

C:\ADI_DSP\21K\Bin	[	\asm21k.exe	Sharc assembler file
		\go32.exe	Sharc assembler file
		\ld21k.exe	Sharc assembler file
		\lib21k.exe	Sharc assembler file

C:\ADI_DSP\21K\Etc	[	\a21000.exe	Sharc assembler file
		\cpp.exe	Sharc assembler file

Please make sure that the „\ADI\_DSP“ directory has been placed directly under the root of your selected drive as indicated above, otherwise the Configuration Tool may not work properly.

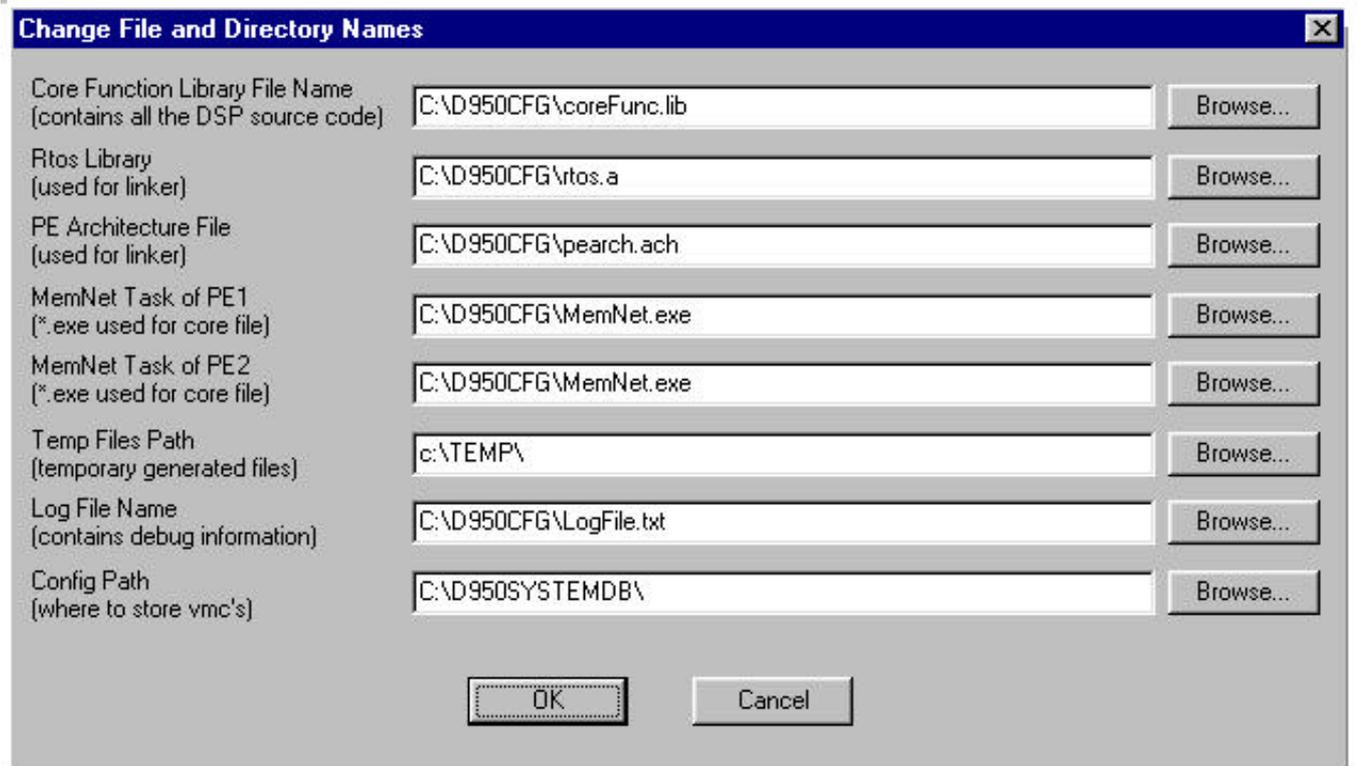
C:\D950SYSTEMDB	[	\Example\ (subdirectory)	contains an example D950 Configuration
		\MyConfig1\ (subdirectory)	any previously existing Configurations
		...	

The next step will be to create a Shortcut and then to set several options within the system.

**Create a Shortcut** Usually the fastest way to use a programme is to create a so-called Shortcut on the Windows Desktop. To create a Shortcut for the D950 Session Configuration Tool, please click on the file „d950CfgTool.exe“ in the Windows Explorer, then use the right mouse button and drag the file to the desktop. Now you are ready to run the Configuration Tool for the first time.

**Start the Programme** Double-click on the shortcut. There will probably be an error message „Unable to open file: xxxx“. This is because the .ini file options have not yet been set. Quit the message and the D950 Session Configuration Tool screen will appear.

**Set the options** Click on the menu item „Options“ and then on „Directories/Files“. The following setup screen will appear:



Here the names of directories and appropriate files that you've just copied have to be entered. The above graphic shows factory default files and paths. Since those may vary for every installation and software version, you will now need to update this entries by using appropriate file names and paths as installed on your system. The Browse button can be used to select the appropriate file, except for the following two entries:

- Temp Files Path
- Config Path,

for which the appropriate paths must be entered by hand and **must be followed by a backslash (\) sign.**

Using the example of our installation, you would need to adapt the entries as follows:

Core Function Library File Name	C:\D950cfg\CoreFunc150798.lib	(file form CoreFuncDDMMYY.lib)
Rtos Library	C:\D950cfg\Rt070798.a	(file form RtDDMMYY.a)
PE Architecture File	C:\D950cfg\Ar111297.ach	(file form ArDDMMYY.ach)
MemNet Task of PE1	C:\D950cfg\Mn150498.exe	(file form RtDDMMYY.a)
MemNet Task of PE2	C:\D950cfg\Mn150498.exe	(file form RtDDMMYY.a)
Temp Files Path	C:\D950cfg\tmpFiles\	
Log File Name	C:\D950cfg\tmpFiles\LogFile.txt	
Config Path	C:\D950SYSTEMDB\	

The above file names may be different, or have different date stamps in your case! This is normal.

Now please click „OK“ to finish the preparations and to store the edited „D950CfgTool.ini“ file automatically. This will create the

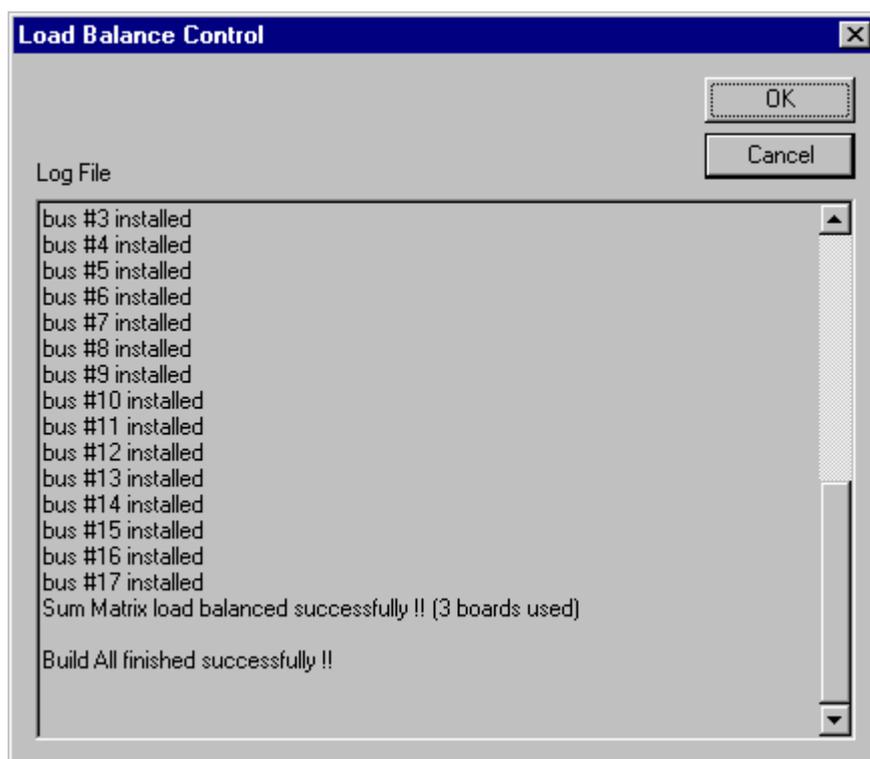
C:\Windows\D950CfgTool.ini file. To learn more about the use of the .ini file, please refer to the chapter „Maintenance“.

### Test the Installation

Now that you have installed all files and set the basic options, you can proceed to test the whole installation. For this, you will load the included example configuration and run the compilation (known as the „Generate process“) to generate a DSP core file. This is how you will proceed:

Use the menu item „File“ and click on „Open“. A windows dialogue screen will appear and should point to the selected config path (in our example C:\D950SYSTEMDB). Select the folder „Example“ and you will see the file „Example.VMC“. Open the file.

Disregard the appearance of the screen for now, you will be able to set your workspace later on. Select the menu item „Generate“ and then „All“. This will start the process of generating the DSP and control software that is needed to run a new Session Configuration on your D950. Various messages will be displayed and after a while, a message similar to the following one should appear:



After the message „Build All finished successfully !!“ appears, click on „OK“ to finish the successful installation and test procedure.

## 3 INTRODUCTION

### 3.1 Features & Benefits

**The D950 DSP concept** The concept of the D950 allows to use multiple DSP processors in a fully scaleable and configurable way. It is possible to specify the power of the DSP core in fine steps in order to fulfil the exact need of an application. It can be said that the D950 has a scaleable DSP resource pool of computational power, which can be used in many different combinations.

**Session Configuration** So the concept of a „Session Configuration“ was born, which allows to create many completely different mixers that can run on the same existing hardware. The operator is now able to choose the ideal mixer for the task he or she wants to work on.

For this, the Session Configurations can be loaded and the D950 console restarted in a matter of seconds. Each Session Configuration can contain a different console configuration based on the available DSP power. In the ever-changing studio environment, it is now possible to have a new mixer every day:

Day 1	Day 2	Day 3
Live Broadcast configuration	Multitrack Recording configuration	Mixdown configuration
48 Mono Input Channels with - EQ - Delay  24 Stereo Input Channels with - EQ	48 Inline Channels with - EQ in monitor path - Comp/Lim/Exp/Gate in input path - Delay  4 Stereo Input Channels with - EQ	96 Mono Input Channels with - EQ - Delay - Comp/Lim/Exp/Gate - IPL - Surround PAN  4 Stereo Input Channels with - EQ
0 Routing busses	48 Routing busses	8 Routing busses
8 Groups with - EQ	0 Groups	16 Groups
2 Master Outputs with - Output Limiter - EQ	4 Master Outputs	8 Master Outputs
8 Mono Auxiliaries 2 Stereo Auxiliaries	4 Mono Auxiliaries 4 Stereo Auxiliaries	12 Mono Auxiliaries 4 Stereo Auxiliaries
12 Clean feed busses	0 Clean feed busses	0 Clean feed busses

**Channel types** All channels within the DSP core can be configured as Mono channels or Stereo channels. The number of channels for any channel type is defined through the Session Configuration. Moreover, any channel type can be fitted with the available function blocks from the processing library. So EQ, delay or Dynamics can be fitted to Input Channels, but also to Group

Channels, Master Channels or Auxiliaries in any number and combination. Any combination of Auxiliary, Clean-feed, Multitrack Routing, audio Subgroup and Master Busses can be configured in the system.

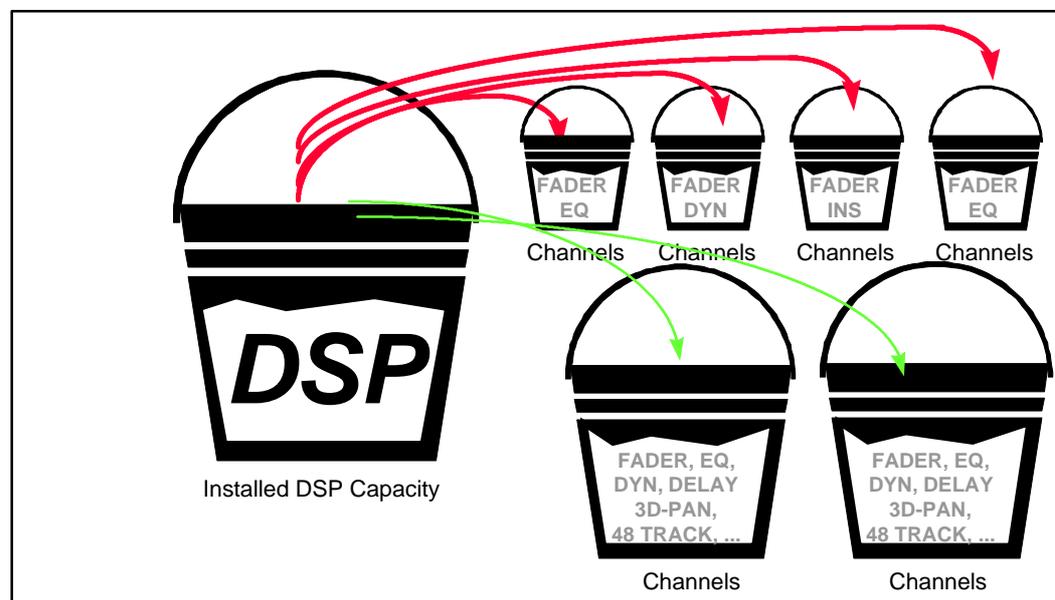
**DSP boards** The D950 system can contain 4 board types.

- PE - DSP board with 6 DSP processors
- PEAES - DSP board with 6 DSP processors, 8 AES/EBU inputs (2 of which with SFC) and 8 AES/EBU outputs
- MADI I/O board with 2 MADI inputs and 2 MADI outputs
- MEMNET board for communication and control

The system must contain one communication and control board called the MEMNET board.

The total number of boards in any combination can be 21 at the maximum.

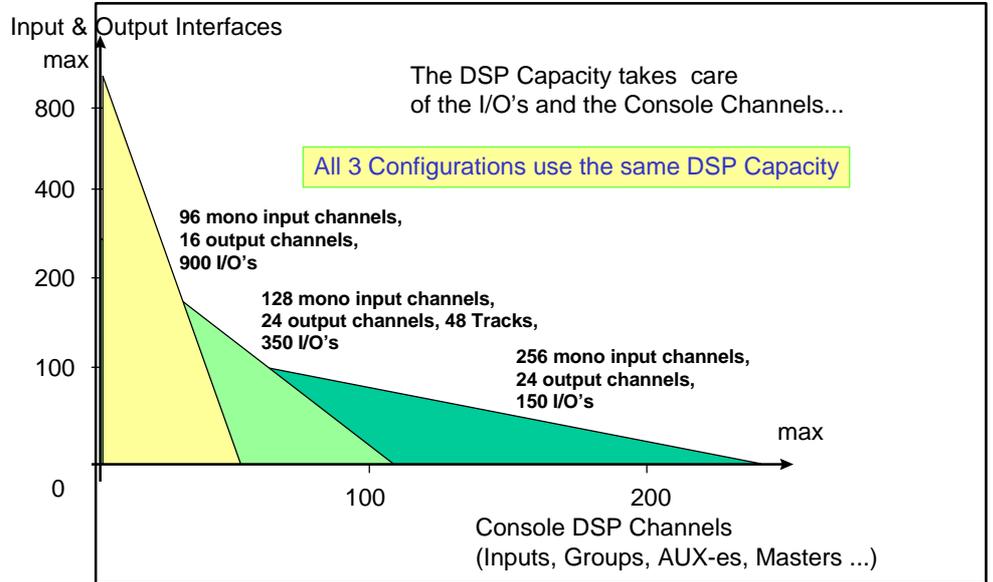
**System size & numbers** The size and power of the system is defined by the number of DSP processors and I/O boards installed. The total DSP power can be compared to a bucket of water (Installed DSP Capacity). The contents of the big bucket can be distributed to 4 smaller buckets (channels with fader + EQ). Alternatively, the same contents can be distributed to only 2 buckets which are larger (channels with fader+EQ+DYN+Delay+3D-PAN...).



So, the number of available channels depends on two things:

- total installed capacity (1 - 20 DSP boards)
- load required by each of the channels types and their quantity

To complicate matters slightly, the total number of channels also depends on the number of summing busses and the number of physical I/O interfaces. To illustrate this, we can look at 3 different ways to use the same installed DSP power.



The D950 Session Configuration Tool will tell you exactly how many DSP and I/O boards you will need in order to run a certain configuration defined by the number and type of channels, the number of summing busses and the number of physical I/O interfaces. As a consequence, there is no finite maximum number of channels on the D950 - the maximum can be anywhere between 100 and 300 channels!

### 3.2 The concept of a Virtual Mixing Console (VMC)

The D950 Digital Mixing System bases its operation on the concept of a Virtual Mixing Console (VMC). The VMC is a software structure that runs on the D950's control PC and consists of two parts:

- console configuration (structure)
- current audio settings of the console (data)

**Structure** The VMC describes all the parameters of a certain console configuration such as the number of input channels, the number of multitrack busses, whether there is EQ on each channel, etc.

**Data** Moreover, the VMC is a real-time data container that keeps the actual settings of a console, such as „input channel 13 EQ gain = +12dB“, „master 4 fader = -10dB“, etc. The VMC will only keep data for the channels and console parts that are defined in the structure part of the VMC. Active controls on the console such as the faders, rotary encoders, pushbuttons and the GC keyboard/trackerball control, but also the Snapshot system and the AutoTouch Automation system can write data to the VMC. Other console parts such as lamps, displays and the GC screen can read data from the VMC and display them. It can generally be said, that

almost all settings and conditions of the D950 console are a part of the VMC.

### **Make and edit a Configuration**

The D950 Session Configuration Tool can be used to make a new configuration, or to edit an existing one. This is the first part of the process of preparing a VMC for the D950 console. That part is done off-line, even if the Configuration Tool is running on the D950's Control PC. The result of this part is a:

- „meta“ VMC file - the definition of the console structure
- a DSP core file - software that tells the DSP core what to do

### **Use a Configuration**

When we operate the D950 console, we speak of „loading a configuration“. This means loading the „meta“ VMC file to the memory of the D950's Control PC. This process will remove the current file from the D950 memory and load a different one. The D950 Control software will then, based on information contained in the new files, run a VMC that corresponds to the information from the „meta“ VMC file. It will also remove the current DSP core file, replacing it with a new one, thus activating a new VMC. Now the D950 is ready to work with the new Session Configuration.

There can only be one VMC that is active on the D950 console at any one time, but there can be multiple VMCs configured and stored for later use. For more information on loading a configuration and using the D950, please consult the D950 Operators Instructions.

## **3.3 The practical side**

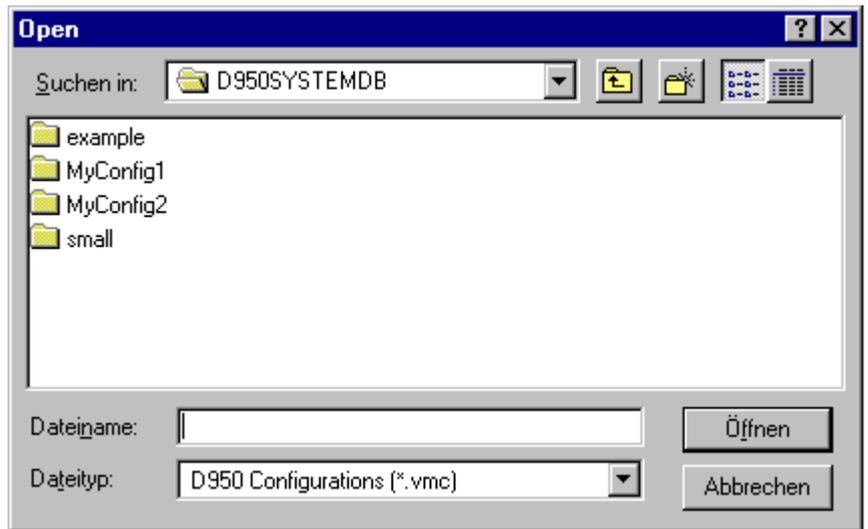
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The purpose of the D950 Session Configuration Tool is to allow creating and modifying „meta“ VMC files and generating the DSP files from the information contained in the „meta“ VMC file. We call this process „making a Session Configuration“. There are always two files that are the result of making a Session Configuration:

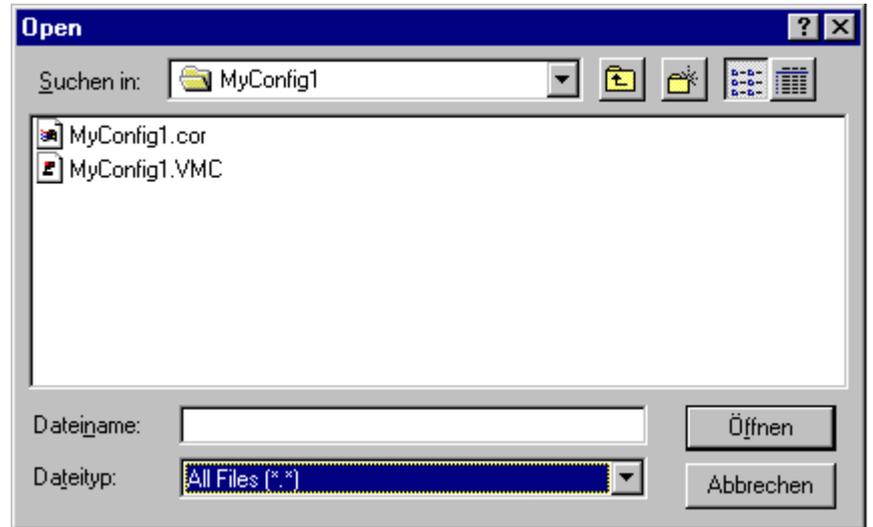
- the „meta“ VMC file called MyConfig1.vmc
- the DSP core file called MyConfig1.cor

The name „MyConfig1“ stands for any name selected by the user. The endings „.vmc“ and „.cor“ are obligatory and are automatically created by the Tool and do not have to be typed.

It is good practice to keep all Session Configurations in the same Windows folder, because both the D950 Session Configuration Tool and the D950 System software can be set to search in this folder automatically. The Configuration Tool will automatically create a subdirectory (folder) with the same name as the Session Configuration, so the folder structure may look similar to this:



Each of the subdirectory folders will contain the two files with the



corresponding names when the Configuration process is finished.

In the above example, the whole file structure is as follows:

```
C:\D950SYSTEMDB
├── \Example\Example.VMC
├── \Example\Example.cor
├── \MyConfig1\MyConfig1.VMC
├── \MyConfig1\MyConfig1.cor
├── \MyConfig2\MyConfig2.VMC
├── \MyConfig2\MyConfig2.cor
├── \Small\Small.VMC
└── \Small\Small.cor
```

Both the D950 Session Configuration Tool and the D950 System software should be set to search in the folder C:\D950SYSTEMDB.

**On the D950's PC**

If you are running the D950 Session Configuration Tool on the D950's PC, and the search paths are set as above, there is nothing more you need to do in order to load a configuration.

Simply switch to the D950 operating system (the GC) and load a new configuration from the D950 system File menu.

**On a separate PC** If you are running the D950 Session Configuration Tool on a separate PC, you will need to transfer the configuration files to the D950 control PC. Since all files are Windows files, it is a simple matter of using a transfer medium (floppy, ZIP or even a LAN network) to transport the files. Care has to be taken to store the files under the appropriate directory on the D950 control PC as described above. The only files that must be transferred for each configuration are:

- MyConfig1.vmc
- MyConfig1.cor

Both files must be in the same subdirectory, otherwise the D950 will not be able to load this configuration. The best practice is to always copy the whole folder < MyConfig1> with both files inside and paste it to the C:\D950SYSTEMDB directory.

### 3.3.1 Data compatibility

---

D950 features such as Snapshot, AutoTouch Automation, etc. use Windows compatible files to store data. Since the contents of such files are dependent on the current configuration, each file is internally stamped with the Session Configuration ID. The configurations may be quite different - the resulting snapshot or automation files will be different too.

A Snapshot file made under Session Configuration A can not, therefore, be directly recalled under a different configuration B. A function called Import must first be performed using the appropriate controls within the D950 GC. For more information on the Import function, please consult the D950 Operators Instructions V1.1A or higher.

**Import rules** A simple set of rules will apply for the import:

- unnecessary data are truncated
- only items of identical type can be imported, e.g. data for mono input channels can only come from mono input channels
- If the source configuration A has 48 mono input channels and the current configuration B has only 32, just the channels 1 through 32 are imported and the rest of the source channels are ignored. When the item is saved it will have 32 channels in it.
- If the source configuration A has 32 mono input channels and the current configuration B has 48, just the channels 1 through 32 are imported and the rest of the current channels are ignored. User can edit and save channels 33-48 manually. When the item is saved it will have 48 channels in it.
- same rules apply to the existence of processing blocks EQ, Dynamics, etc.

## 4 THE FAST LANE - TRY IT!

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### 4.1 Do your Own - Use Existing or start from Scratch?

---

#### 4.1.1 Use an existing VMC

---

Usually the changes that need to be made to a configuration are small. Adding two more AUXes or replacing the mono input channels by stereo input channels may be two examples of such small changes. In such cases, an existing .VMC file can be loaded and modified. For the first try, you can use the included Example.VMC and try changing it. Or you can use the .VMC file that was delivered with your console as a starting point.

The .VMC files can be treated in a similar way as word processing documents. They can be opened, saved, saved under a different name, moved and deleted.

**Tip** Please be careful to first save the file under a different name in order to keep the D950 basic configuration intact! Use the Save As item in the File menu.

Modifying the .vmc file that had been delivered with your console is the simplest way to create a configuration that will run properly on your existing D950 console. On your console, there are several things that can not simply be changed by editing the configuration:

- all external I/O wiring
- monitoring wiring and monitoring configuration
- number of mic preamplifiers and their wiring
- Signaling (fader start, ...) wiring and configuration

It is not very likely that you will be changing any of the above all the time - that is why you will want to use the existing configuration as a starting point for your work, without having to think of configuring the right I/O every time.

#### 4.1.2 Start from Scratch

---

It is sometimes handy to find out how many DSP boards would be needed for a certain configuration. You can always configure the mixing console of any description by starting with an empty (New) .VMC file. For this, you will use the File/New menu. The approach of starting from scratch will be useful if you do not have to modify an existing console, but are really starting a new project.

**Tip** If you want the new configuration to really run on your existing console, you need to be careful to think of all the elements of a configuration - channel numbers and types, summing busses, I/O configuration, shared functions, etc. Otherwise your new configuration may not be able to be loaded properly on an existing console.

## 4.2 Generate the D950 Configuration Files

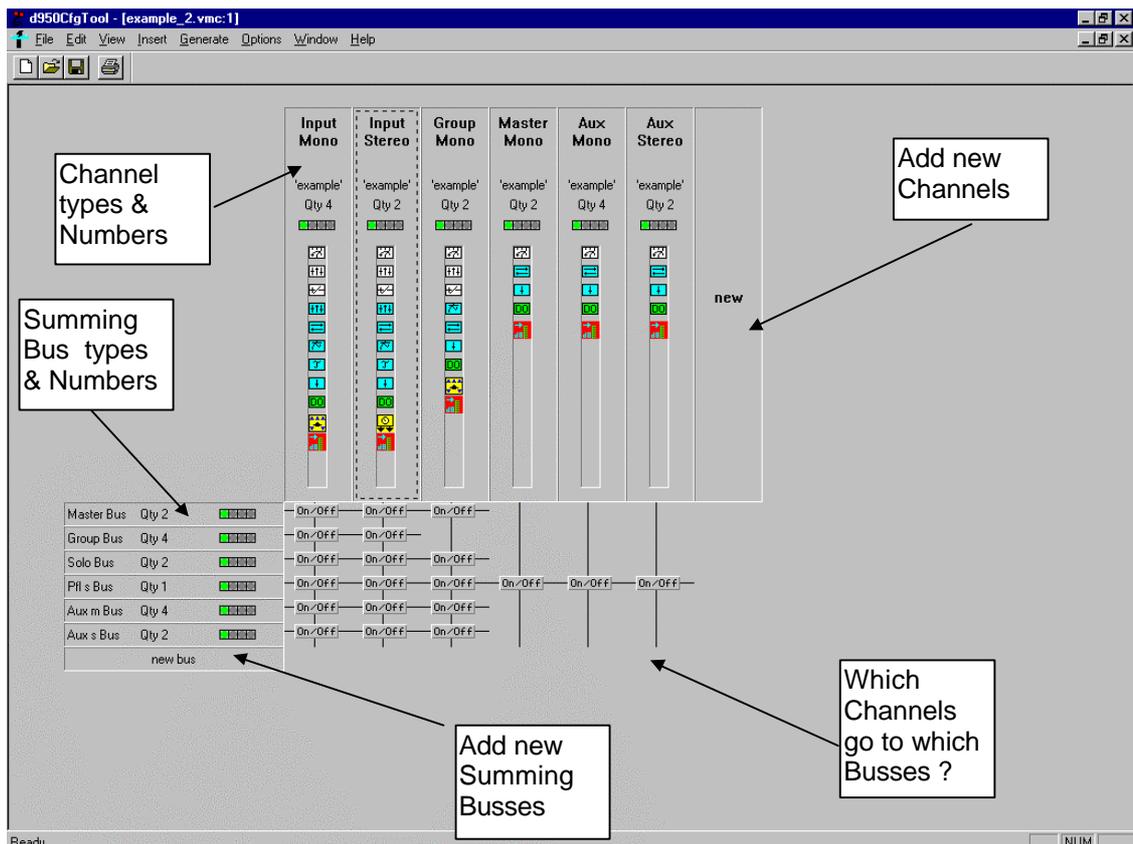
In this chapter, a simplified but complete configuration exercise is described. The example VMC file will be used as the starting point and modified. A DSP core file will be generated. You will need to start the D950 Session Configuration Tool first.

**Open the file** Use the „File/Open“ menu or the „open folder“ icon in the toolbar to open the Example.VMC file. You may need to search for the right folder first. Double click on the Example.VMC file or use the Open button to open the file.

**Save VMC As** To keep the original file intact, use the „Save VMC As“ command from the File menu. Save the file as Example\_2. Note that you do not have to type the extension .VMC. A new folder and a new VMC file will be automatically created.

**View the configuration** Use the „View/Channel Bus“ command from the menu bar to display the configuration contents. You may want to maximise the window in order to see all the components.

This is a display of all the configured channel types and numbers and all the configured summing busses as well as their interconnections.

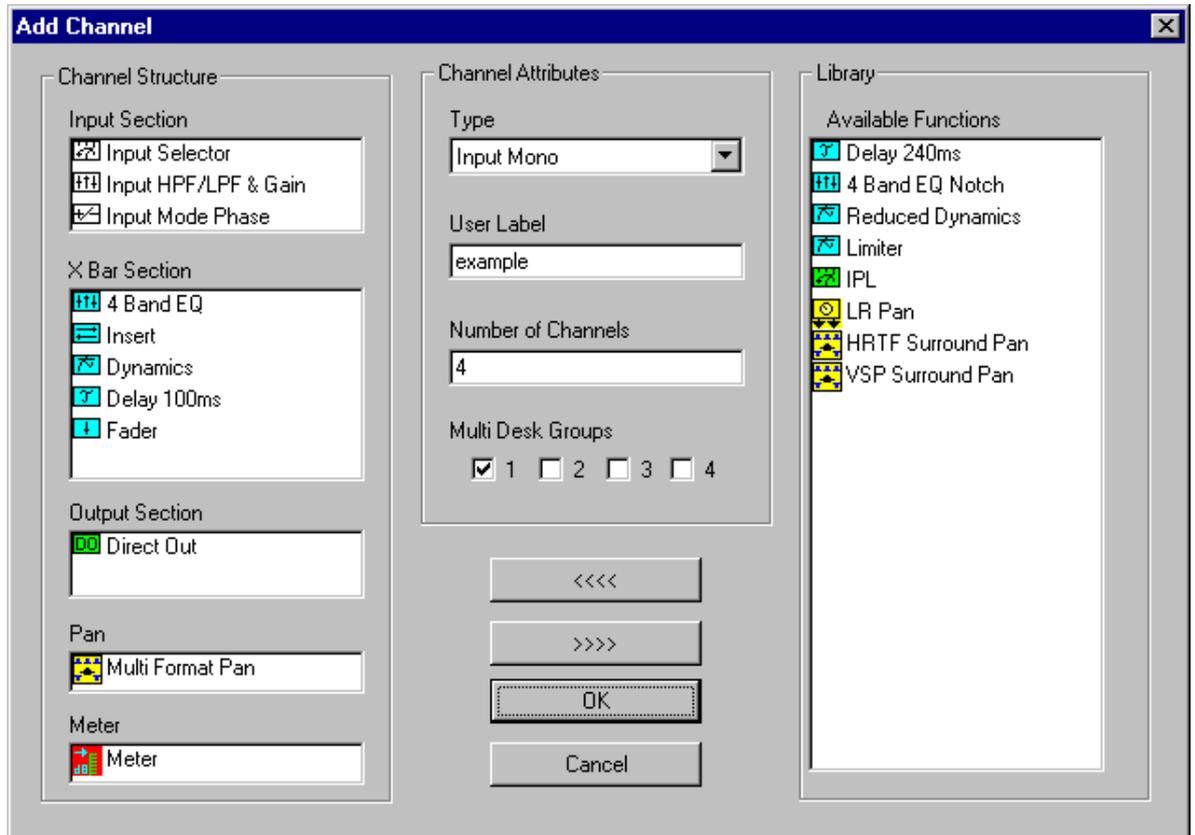


As you can see, the configuration is for a console which has:

- 4 mono input channels
- 2 stereo input channels
- 2 mono groups + 2 group busses
- 2 mono masters + 2 master busses
- 4 mono Auxes + 4 mono AUX busses
- 2 stereo Auxes + 2 stereo AUX busses
- 2 SOLO busses
- 1 stereo PFL bus

**Add more Channels**

Double click on the channel area labelled „Input mono“. This will open an editing dialogue box which will allow you, among other things, to change the number of mono channels.



Go to the „Number of channels“ area and change the number from 4 to 8. Click on OK. Now you have increased the number of mono input channels to 8.

**Edit the stereo input channel**

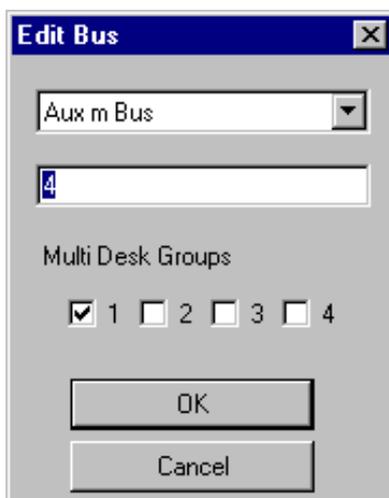
Now we will change the stereo input channel configuration and name. Double click on the channel area labelled „input stereo“. On the left hand side, in the area called „X Bar Section“, double click on the „Dynamics“ and on the „Delay 100ms“. This will remove those two functions from the stereo input channel. Now move to the area called „Library / Available Functions“ and double click on the „Delay 240ms“. Then go to the „User Label“ field and type in „my stereo“. Click on OK.

**Add more AUXes**

Now we will add two more mono AUX masters. Double click on the channel area labelled „AUX mono“ and change the number of channels to 6. Click on OK.

Now you will have to adapt the number of AUX mono busses to reflect the above change. Double click on the area labelled „Aux m Bus“.

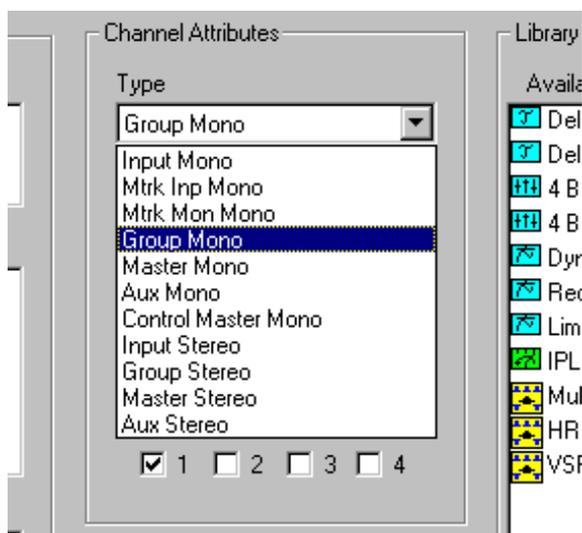
This will open a dialogue that will allow you to set the number of busses to 6 - this will match the new number of AUX mono channels.



Enter 6 instead of 4 and click on OK. This will add 2 more AUX mono busses to the system.

### Add new group channels

Now double click on the channel area labelled „new“. This will allow you to select a channel type and set it's contents and number. Click on „Channel Attributes / Type“ and select „Group mono“.



This will select the channel type to mono group. Set the „Number of channels“ to 2. Add „4 Band EQ“ from the library by double clicking on this item. Type in „my GRP“ in the user label area and click on OK. This will add two more audio groups including EQ to the configuration. Note that you now have two sets of mono group channels with completely different audio processing sections called „my GRP“ and „Example“. Note also that the bus connections have been extended with the small „on/off“ boxes indicating that the new 2 groups will have access to Master, Solo,

PFL and AUX busses. By clicking on the „on/off“ box corresponding to the Master Bus, you can disable access from the new groups to the masters - so they can only be used for direct outputs.

Finished? Not quite. We still have to increase the number of Group Busses to a total of 4. Oops! The number is already 4! The original Example.VMC had 2 groups, but it had 4 group busses.

**Tip**

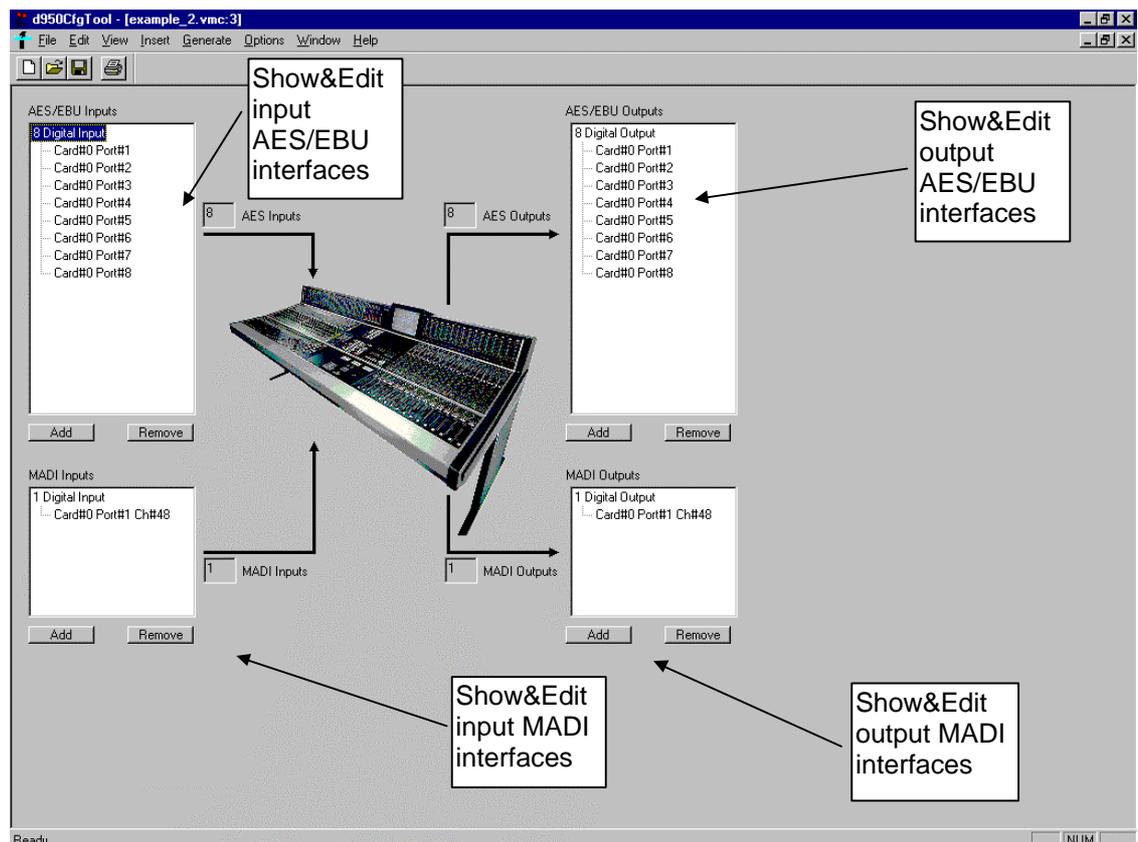
It is legal to have more busses than corresponding channel types, as in the above example. The reason for this is because the busses (unlike in analogue consoles) are valid audio signals and can be used as such in the D950's patch. They are simply summation busses which will output the sum of all assigned inputs.

The newly edited configuration now looks as follows:

- 8 mono input channels
- 2 stereo input channels with changed processing
- 2 + 2 mono groups, different processing + 4 group busses
- 2 mono masters + 2 master busses
- 6 mono Auxes + 6 mono AUX busses
- 2 stereo Auxes + 2 stereo AUX busses
- 2 SOLO busses
- 1 stereo PFL bus

**Check the interfaces**

We will assume that for this example, the interfacing does not need to be changed. We will only have a look at what interfacing is available in the configuration we just changed. For this, select „Interface“ from the „View“ menu.

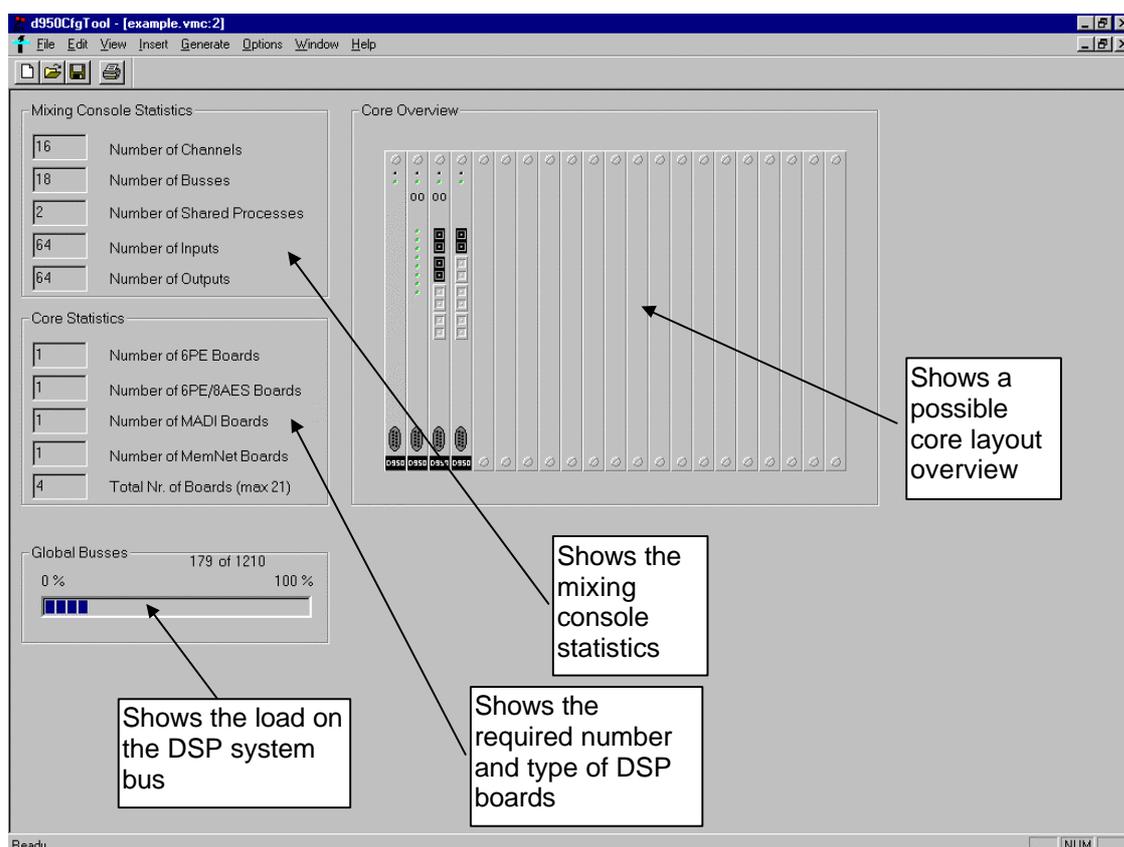


There are 8 AES/EBU input interfaces, 8 AES/EBU output interfaces, 1 MAD1 input with 48 configured channels and 1 MAD1 output with 48 configured channels. This accounts for a total of 64 mono equivalent inputs and 64 mono equivalent outputs.

**Tip** Although we have been through many actions and have edited the original configuration quite a bit, we did not yet touch on all possibilities of the Configuration Tool. Please read on and acquaint yourself with all the details before you attempt to make a configuration and load it on your console.

#### 4.2.1 Does my D950 have enough power?

In order to see the console statistics, now select „Core“ in the „View“ menu. This will display the statistics of the channels, busses and I/O's as well as the occupancy of the DSP core. Let's first look at the core before we did any of the above changes by opening the original Example.VMC file:

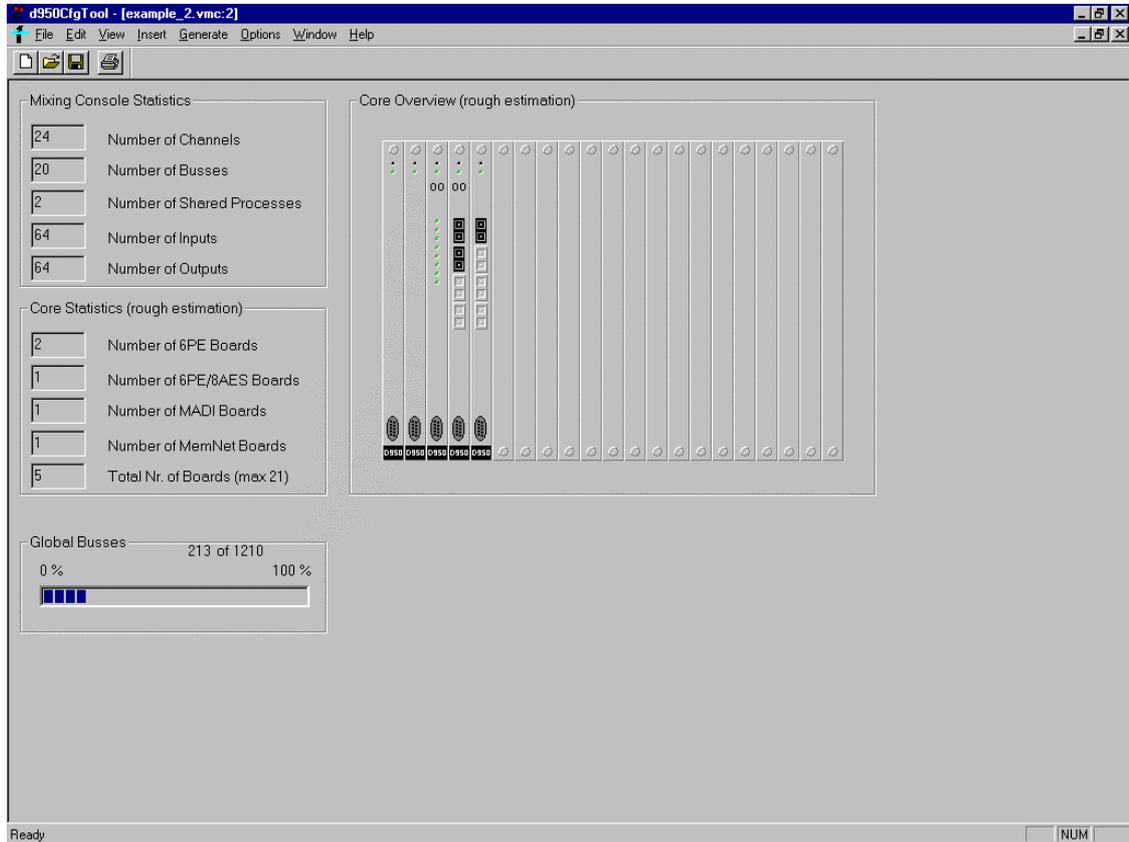


We can see that the original configuration had a total of:

- 16 channels
- 18 busses
- 1 PE board
- 1 PEAES board
- 1 MAD1 board and 1 MEMNET board.

If we now open the Example\_2.VMC file, we can see that we now have a configuration that requires:

24 channels  
 20 busses  
2 PE boards  
 1 PEAES board  
 1 MADI board and 1 MEMNET board.



So, one PE board more than before is needed. There are 3 possibilities from this point on:

**Generate Core and check again** The indication on the Core View shows Core Statistics as a rough estimation. It uses a simple fitting algorithm to estimate the required number of boards. To get to the real number of boards, the full Generate Core process has to be done first, as explained in the next chapter. After that is finished, it may happen that the requirements are less than estimated and that your newly edited configuration could fit on the existing core.

**Tip** It is always recommended to run the Generate process before deciding whether a desired configuration will fit on a given DSP core.

**Reduce the requirements** If you do not have enough installed DSP power, you can either reduce your configuration slightly, by reducing the number of channels, taking out some of the Dynamics or EQs you do not really need, or reducing the number of I/O's, until the configuration matches your actual board number.

**Add more power** The other way is to plug in the additional required number of PE or PEAES cards into the DSP rack and load your new configuration.

You can even do this with power on. You may need to add some I/O wiring on the back of the DSP rack if you are expanding the number of physical I/O's.

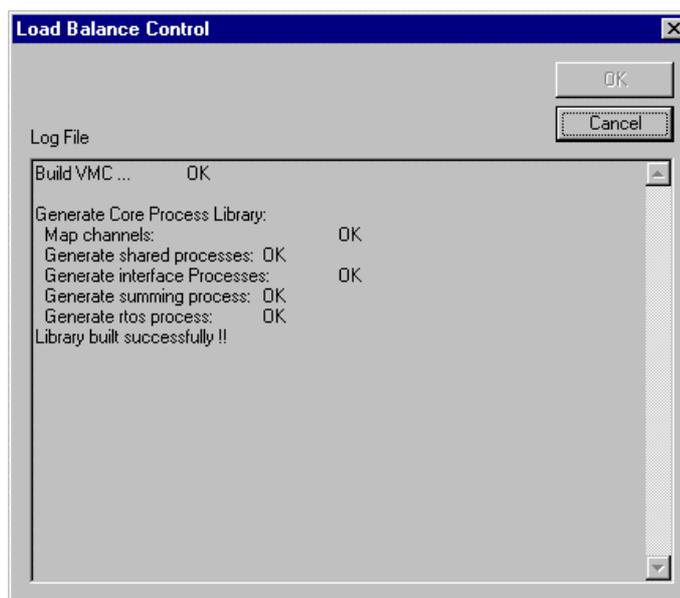
### 4.3 Generate the Core file

To generate the core file for our new configuration, simply click on the „Generate / All“ menu item. This starts an automatic process which will end up with a core file being saved in the same folder as the .VMC file.

A fairly complicated procedure called Load Balancing will try to compress all the required components of the new configuration into as few DSP boards as possible, at the same time trying to distribute the workload evenly across all necessary DSP boards.

You can follow what is happening on the screen. Most of the information shown on screen will also be stored into a LOG file for later viewing.

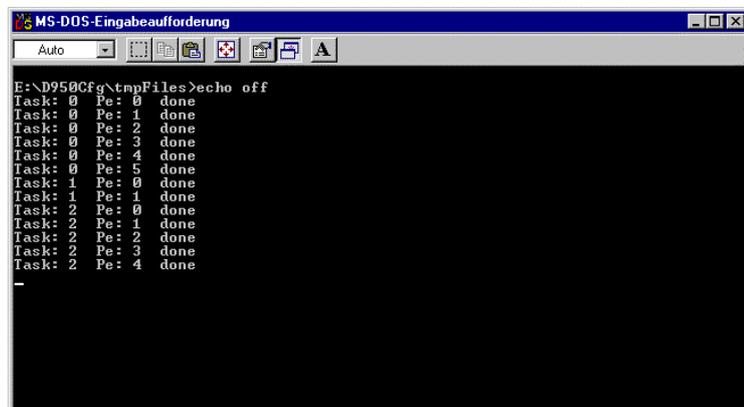
**Build VMC and processes** the Load Balancer first generates the VMC structure and checks the channels, shared processes, busses and builds a DSP library.



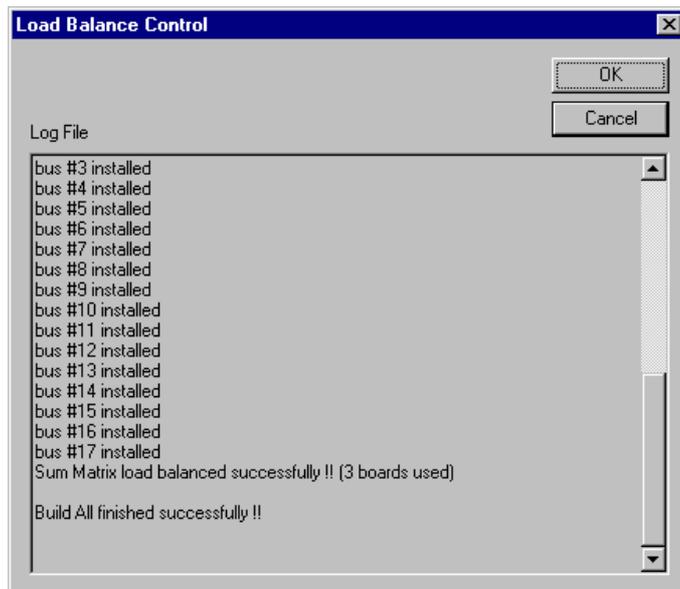
**Compile processes** A DSP compiler/assembler generates all the individual DSP files needed to perform EQ, Dynamics, Summing, etc.



First all channels and then all the summing busses are allocated to the required DSP board processors. Then the final core file is assembled out of individual components:



**Finished ...** And finally, the finished core file is automatically stored. You only have to click on OK to finish the whole process after the message „Build All finished successfully!“.



**Tip** Note that if you now display the core View, the lettering „(rough estimation)“ will be missing, indicating that the numbers displayed are now the real, load-balanced ones. You will also find out that, in our example, the Load Balancing was more successful in economising than the rough estimation algorithm - again only 1 PE board is required, despite the increased configuration.

## 4.4 Transfer the Files to the Console

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The Core file and the „meta“ VMC files are now ready to be used on a D950.

**On the D950's PC** If you are running the D950 Session Configuration Tool on the D950's PC, and the search paths are set as described before, there is nothing more you need to do in order to load a configuration. Simply switch to the D950 operating system (the GC) and load a new configuration from the D950 system File menu.

**On a separate PC** If you are running the D950 Session Configuration Tool on a separate PC, you will need to transfer the configuration files to the D950 control PC. Since all files are Windows files, it is a simple matter of using a transfer medium (floppy, ZIP or even a LAN network) to transport the files. Care has to be taken to store the files under the appropriate directory on the D950 control PC as described above. The only files that must be transferred for each configuration in the above example are:

- Example\_2.vmc
- Example\_2.cor

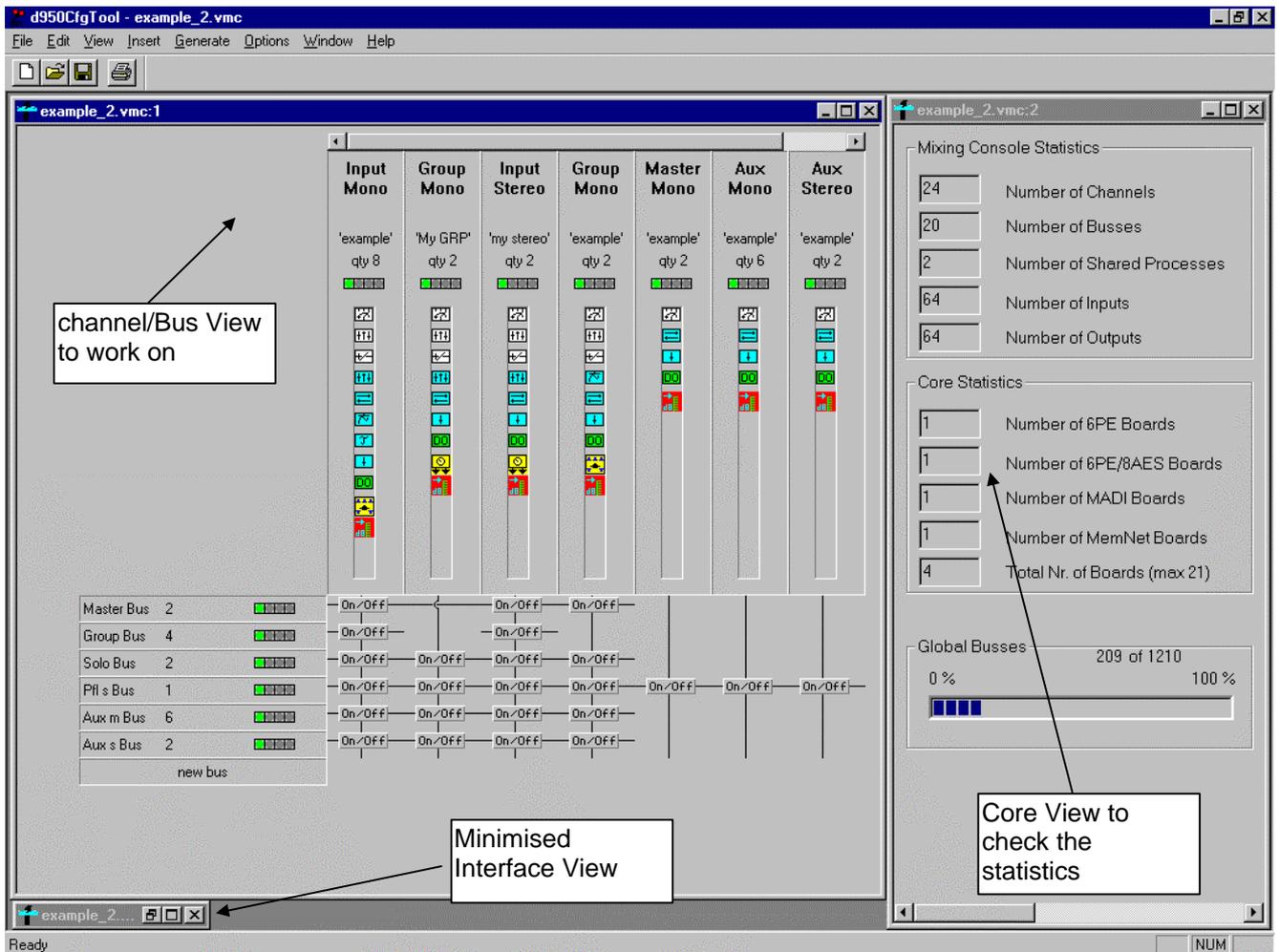
Both files must be in the same subdirectory, otherwise the D950 will not be able to load this configuration. The best practice is to always copy the whole folder < Example\_2> with both files inside and paste it to the C:\D950SYSTEMDB directory.

## 5 DETAILED TUTORIAL

The previous chapter gives a brief run through all the basics needed to configure a D950 console. We recommend reading it before you proceed with the detailed tutorial, found in this chapter.

### 5.1 Set your own Workspace

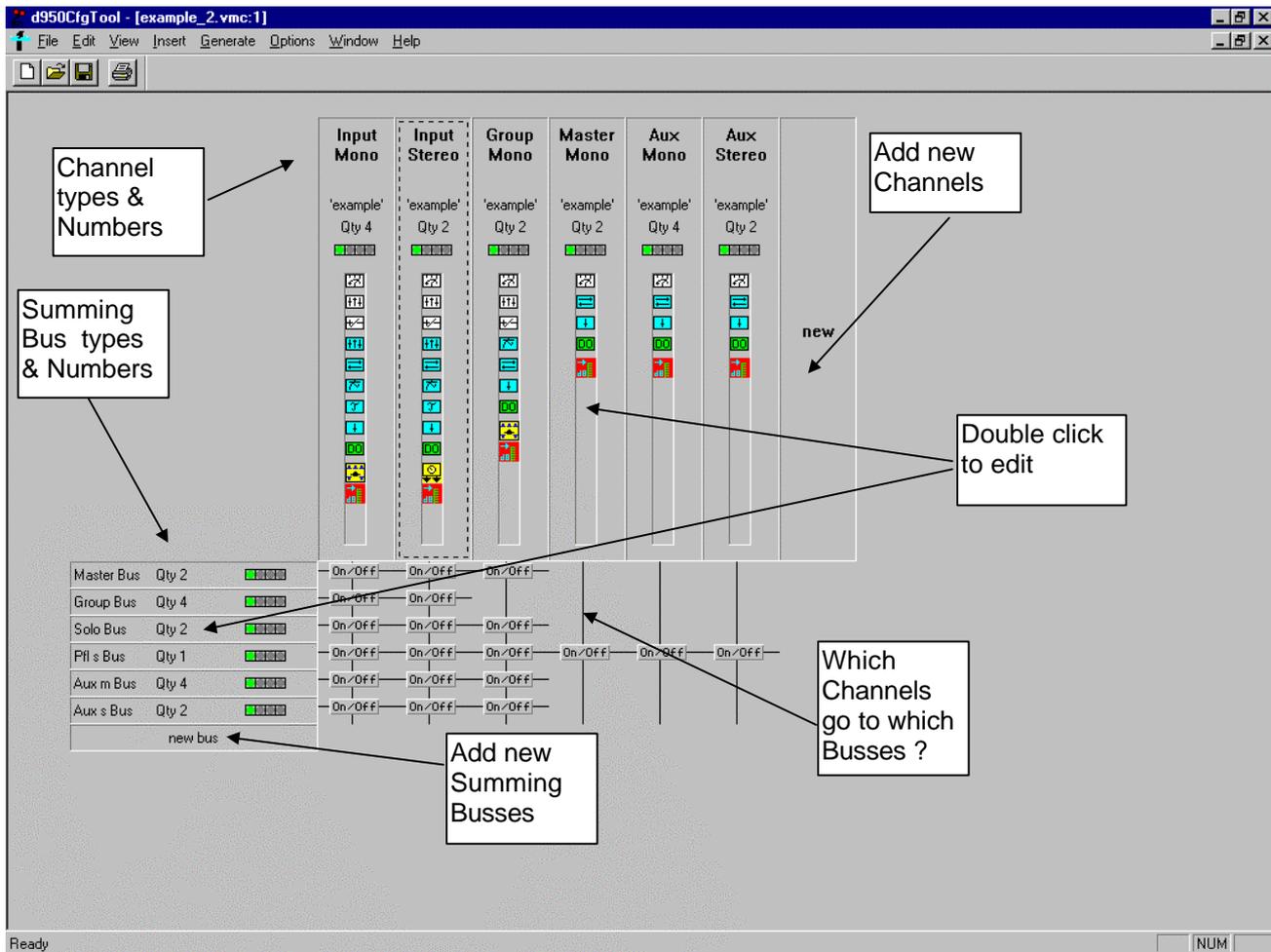
The D950 Session Configuration Tool supports multiple windows. Up to now, a single view Window was used to operate the Configuration Tool functions. For a better overview of the configuration process, we recommend using two windows at the same time - the Channel/Bus page alternatively with the Interface page and the Core page in addition. This allows to follow the rough estimation of the core requirements on-line, as you edit channels, busses and interfaces.



The last used Workspace setup will be stored when you close the D950 Session Configuration Tool, and will be recalled the next time you start the program.

## 5.2 The Channel/Bus Page

The Channel/Bus page is the main working area of the D950 Session Configuration Tool. It allows to make new or edit existing channels, busses and their interconnections, displaying the configured console in a matrix display. It displays in a condensed way all the configured channel types and their functions.



### How to:

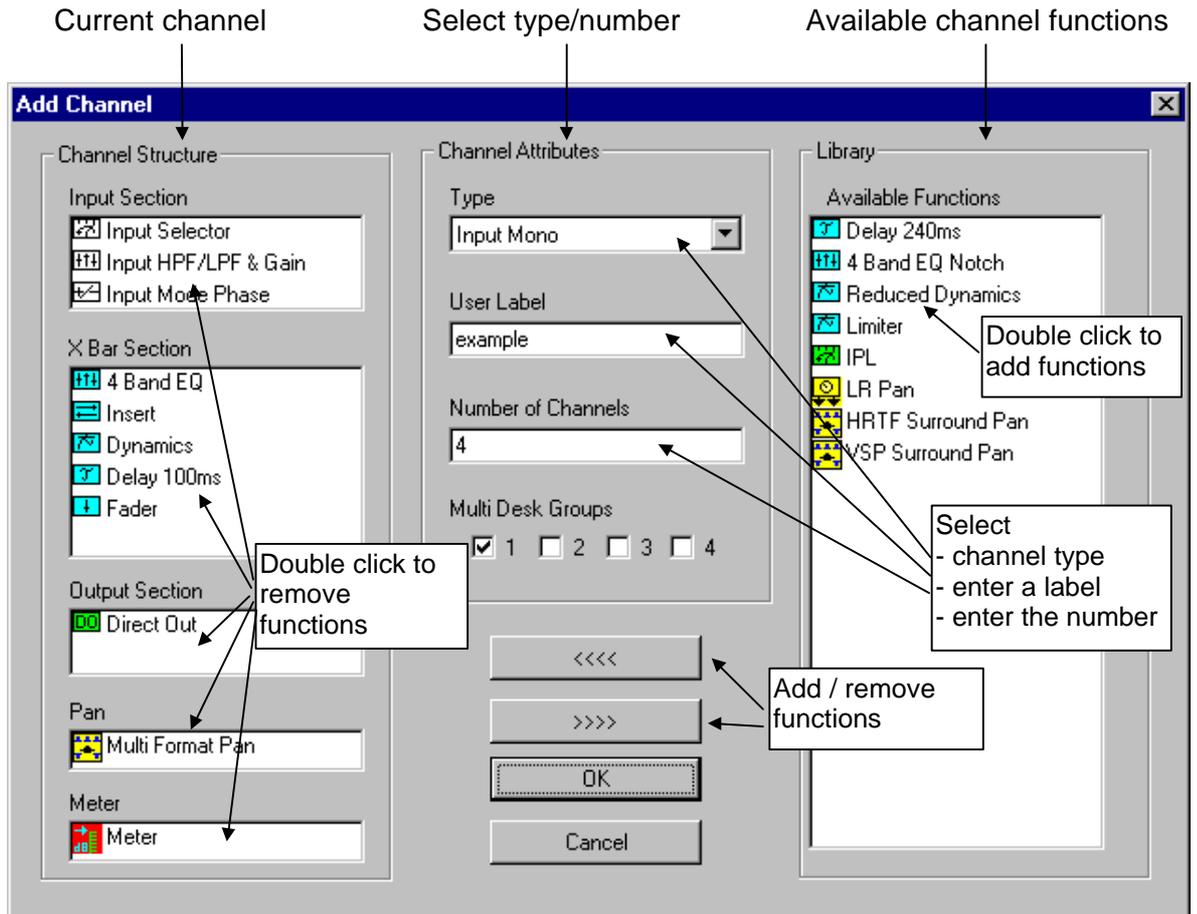
- |                        |  |
|------------------------|--|
| Add new channels       | double click on „new“ in the channel area  |
| Add new busses         | double click on „new bus“ in the bus area  |
| Edit channels          | double click on an existing channel type in the channel area   |
| Edit busses            | double click on an existing bus type in the bus area   |
| Assign/Deassign busses | double click on the „On/Off“ button where the corresponding channel and bus cross. All channels of the selected type will have access to all busses of the selected type if the button is set. |

### 5.2.1 Add / Edit channels

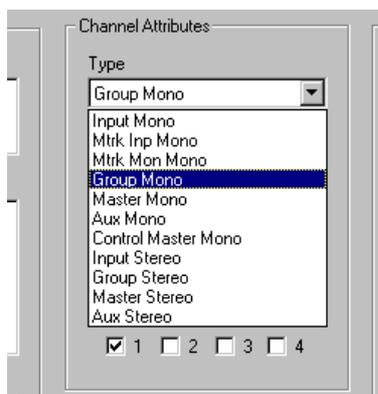
**Add new channels**  
**Edit channels**

To:  
 double click on „new“ in the channel area of the Channel/Bus page  
 double click on an existing channel type in the channel area of the Channel/Bus page

Both actions will open the „Add Channel“ dialogue box that allows to edit all the entries for new or existing channels.



**select channel type** Click on the box to display the available channel types. Currently, the following channel types are available:



- mono input
- mono Multitrack input
- mono Multitrack monitor input
- mono group
- mono master
- mono AUX master
- *mono Control Master*
- stereo input
- stereo group
- stereo master
- stereo AUX master

All channel types correspond to similar channels of an analogue console. Each channel will be assigned to a channel strip on the D950 Desk upon loading of the configuration. AUX mono and stereo masters are treated as normal channels in this respect. On selection, a set of factory default functions will be loaded to the Channel Structure area, depending on channel type.

**Mtrk Input / Monitor** These channel types largely correspond to what is known as „in-line“ channel. They have a very similar structure as input channels, and the only major difference is in the way they are both assigned to the D950 desk. The Mtrk Monitor channel is always automatically assigned to the upper layer of a bank and the Mtrk Input channel to the lower layer. This simulates an in-line desk layout. Please refer to the D950 Operating Instructions for more information on D950 Desk layer/bank concept.

**Control Master** The mono Control Master is a special channel type which does not have any audio functions - it is the Control Group Master used for the „VCA“ style control groups. Up to 16 such Control Masters may be configured.

**User Label** User label is an optional text label that can be entered to additionally differentiate the channel types. Usually, labels are used to differentiate channels of the same type but with different functions, e.g. Input Mono „with EQ“, Input Mono „w/o Dyn“, etc.

**Number of channels** Any number can be entered here to define the quantity for this particular channel type. The maximum numbers are in function of the overall installed DSP capacity (check the Core page to see how requirements change) and, for some channel types the maximum number is limited by the capacity of the D950 Desk to operate them. Here the Desk limitations:

Aux Mono	max. 8, can be extended to 16 if no Aux stereo extension
Aux stereo	max. 4, can be extended to 8 if no Aux mono extension
Master Mono	max. 8
Master stereo	max. 8
Group Mono + Stereo	max. 48, stereo counts as 2 (e.g. 32 mono + 8 stereo groups)
Control Master	max. 16

**MultiDesk Groups** will be explained later in this chapter

**Current Channel Structure** This area displays the functions that have been selected for the current channel type. There are 5 sections of each channel, corresponding to the audio signal flow:

- Input Section
- X-Bar Section (order of functions can be set in the D950 GC per drag-n-drop)
- Output Section
- Pan Section
- Meter Section

The functions have icons in different colours corresponding to each of the above 5 sections. Functions can be removed from the current channel by double clicking on the function or by using the >>>> button. Each of the functions requires DSP power, therefore

it is prudent to keep only the functions that are really needed. The minimum functions of a channel are:

- Input Selector
- Fader
- Direct Out

**Library / Available Functions**

In this area, the available functions from the system library are listed. The list changes slightly depending on the channel type (e.g. master channels do not have a Pan function available), but most functions are the same for all channel types. This means that master channels may be configured with an EQ, or an Aux master can have a limiter if needed. Functions can be added to the current channel by double clicking on the function in the library or by using the <<<< button.

Please note that several restrictions to the x-Bar section apply:

- The X-Bar section can contain a maximum of 6 functions
- „Delay 100ms“ and „Delay 240ms“ must not be used at the same time
- „4Band EQ“ and „4Band EQ Notch“ must not be used at the same time
- the „VSP Surround PAN“ requires a lot of DSP power and can not be used in a full channel, otherwise an error will be displayed during the Generate process. It is usually sufficient to remove the Dynamics or EQ + Delay functions to allow fitting of the VSP PAN.

**Remove channels** Simply click on the channel type to be removed and hit the „delete“ key.

**Tip** Note how the requirements shown in the „Core Statistics“ area in the Core page change as you add or remove channels, change their number or add/remove functions.

**5.2.2 V1.0 Function Library**

	Most of the functions can be used for both <u>mono and stereo channels</u> :
<b>Input Selector</b>	3-way input selector
<b>Input HPF/LPF &amp; Gain</b>	variable HP and LP filters, channel gain +- 24dB
<b>Insert</b>	Insert function with dry/wet mix feature
<b>Delay 100ms</b>	Variable audio delay 0-100 ms
<b>Delay 240ms</b>	Variable audio delay 0-240 ms
<b>4 Band EQ</b>	Fully parametric 4-Band EQ with Bell/Shelve switch in the LO and HI bands, Constant Q/Constant Range switch in the HIMID and LOMID bands
<b>4 Band EQ Notch</b>	Fully parametric 5-Band EQ with Bell/Shelve switch in the LO and HI bands, Constant Q / Constant Range switch in the HIMID and LOMID bands, Notch filter
<b>Dynamics</b>	Full dynamic section with Compressor, Limiter, Expander, Gate, Lookforward circuit and Auto Make-up gain, Sidechain with HP/LP Filter

<b>IPL</b>	In - Process - Listen functions, allows listening into various points along the signal flow
<b>Meter</b>	Precision metering function, switchable to channel input or after fader
	<u>Only mono channels:</u>
<b>Input Mode Phase</b>	Phase reversal switch
<b>LR Pan</b>	standard Left/Right panner
<b>Multiformat Pan</b>	Multiformat Surround Pan (MPAN), Format selection: 2CH, LCR, LCRS, 5.1, Amplitude Panning, selectable Divergence, Panaround feature
<b>HRTF Surround Pan</b>	HRTF Surround Pan (HPAN), Format selection: 2CH, LCR, LCRS, 5.1, Amplitude Panning, selectable Divergence, Panaround feature, Intensity, Frequency-Dependent and echo Pan modes, Simulation algorithms for several surround microphone types (HRTF, ORTF, AB, Sphere)
<b>VSP Surround Pan</b>	VSP (Virtual Surround Panning) Pan (VSP), Format selection: 2CH, LCR, LCRS, 5.1, Amplitude Panning, selectable Divergence, Panaround feature, Intensity, Frequency-Dependent and echo Pan modes, Simulation algorithms for several surround microphone types (HRTF, ORTF, AB, Sphere), Simulation of Virtual Rooms with Room Size Control, Ambiance & Absorption Controls, Variable Source Distance
	<u>Only stereo channels:</u>
<b>Input MS Mode Phase</b>	MS/XY decoding matrix, stereo mode (Normal, LL, LR, reverse, Mono) and Phase switch L, R, LR
<b>Input MS Mode Phase Width</b>	MS/XY decoding matrix, stereo mode (Normal, LL, LR, reverse, Mono) and Phase switch L, R, LR, stereo Width control 0-200%
<b>Pan Bal</b>	stereo panorama
<b>Pan Bal Width</b>	stereo panorama, stereo Width control 0-200%

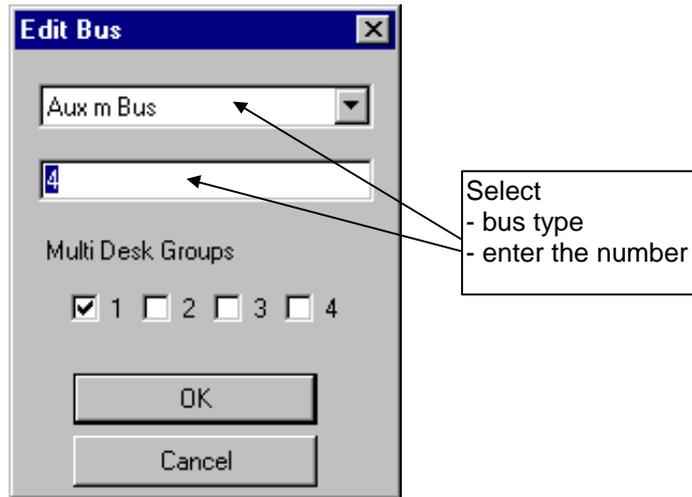
### 5.2.3 Add/ Edit Busses

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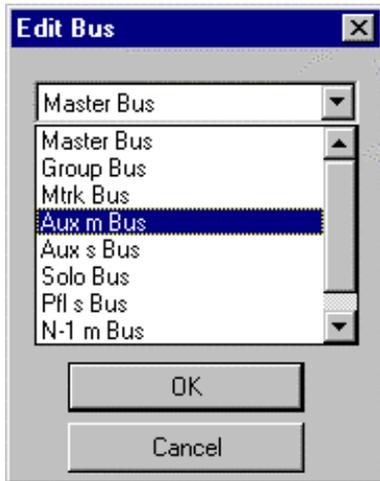
to:

<b>Add new busses</b>	double click on „new bus“ in the bus area
<b>Edit busses</b>	double click on an existing bus type in the bus area
<b>Assign/Deassign busses</b>	double click on the „On/Off“ button where the corresponding channel and bus cross. All channels of the selected type will have access to all busses of the selected type if the button is set.

Both the Add and the Edit actions will open the „Edit Bus“ dialogue box that allows to edit all the entries for new or existing busses.



**select bus type** Click on the box to display the available bus types. Currently, the following bus types are available:



- mono master bus
- mono group bus
- mono Multitrack bus
- mono AUX bus
- stereo AUX bus
- mono SOLO bus
- stereo PFL bus
- mono N-1 bus
- stereo N-1 bus

**Number of busses**

Any number can be entered here to define the quantity for this particular bus type. The maximum numbers are in function of the overall installed DSP capacity (check the Core page to see how requirements change) and, for some bus types the maximum number is limited by the capacity of the D950 Desk to operate them. Here the Desk limitations:

Aux Mono	max. 48
Aux stereo	max. 48
N-1 Mono	max. 48
N-1 stereo	max. 48
Master Mono	max. 8
Master stereo	max. 8
Group Mono + Stereo	max. 48, stereo counts as 2 (e.g. 32 mono + 8 stereo groups)

**Bus conventions**

- there are 3 types of stereo busses
- Aux stereo bus
  - PFL stereo bus
  - N-1 stereo bus

These bus types have to be entered bearing in mind that their number is counted as stereo. All other bus types are mono, regardless how they are used. For example, having 8 mono master channels and 8 stereo master channels will need a total of 24 mono master busses.

The required numbers are automatically entered into the Edit Bus dialogue based on the number of corresponding channels. So, in the above example, the Edit Bus box will propose 24 busses automatically.

For busses which do not correspond to channels (Multitrack, SOLO, PFL and N-1 busses), the proposed number will be initially zero and must be set by hand.

**Tip** Typically, there will only be one stereo PFL bus. The number of SOLO busses has to comply with the surround format - for the 5.1 format you will need 6 SOLO busses.

**Tip** It is legal to have more busses than corresponding channel types. The reason for this is because the busses (unlike in analogue consoles) are valid audio signals and can be used as such in the D950's patch. They are simply summation busses which will output the sum of all assigned inputs. That is the reason the busses can also be used as components of multiformat stems.

**Remove busses** Simply click on the bus type to be removed and hit the „delete“ key.

**MultiDesk Groups** will be explained later in this chapter

## 5.2.4 Special Configuration functions: MultiDesk and Stems

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Here a brief explanation of two concepts that are unique to the D950.

### 5.2.4.1 The Concept of MultiDesk Control Groups

---

Up to four individual operating desks can access the same DSP Core on the D950. Each of these desks can have a separate Monitor section, PFL busses, Solo busses, and a set of Outputs. The four desks can work on individual tasks in different studios, but they share the available DSP power of the core and the AutoTouch automation. It is also possible that any or all four desks access the same audio channels. Using the built-in digital router, audio resources such as input converters can also be shared among the studios. This allows to have up to four operators (in four different locations or in the same room) working on the same task or to have four independent mixing consoles working on four separate tasks.

The Session Configuration defines and configures the way how several Desks in a MultiDesk setup work and share DSP power.

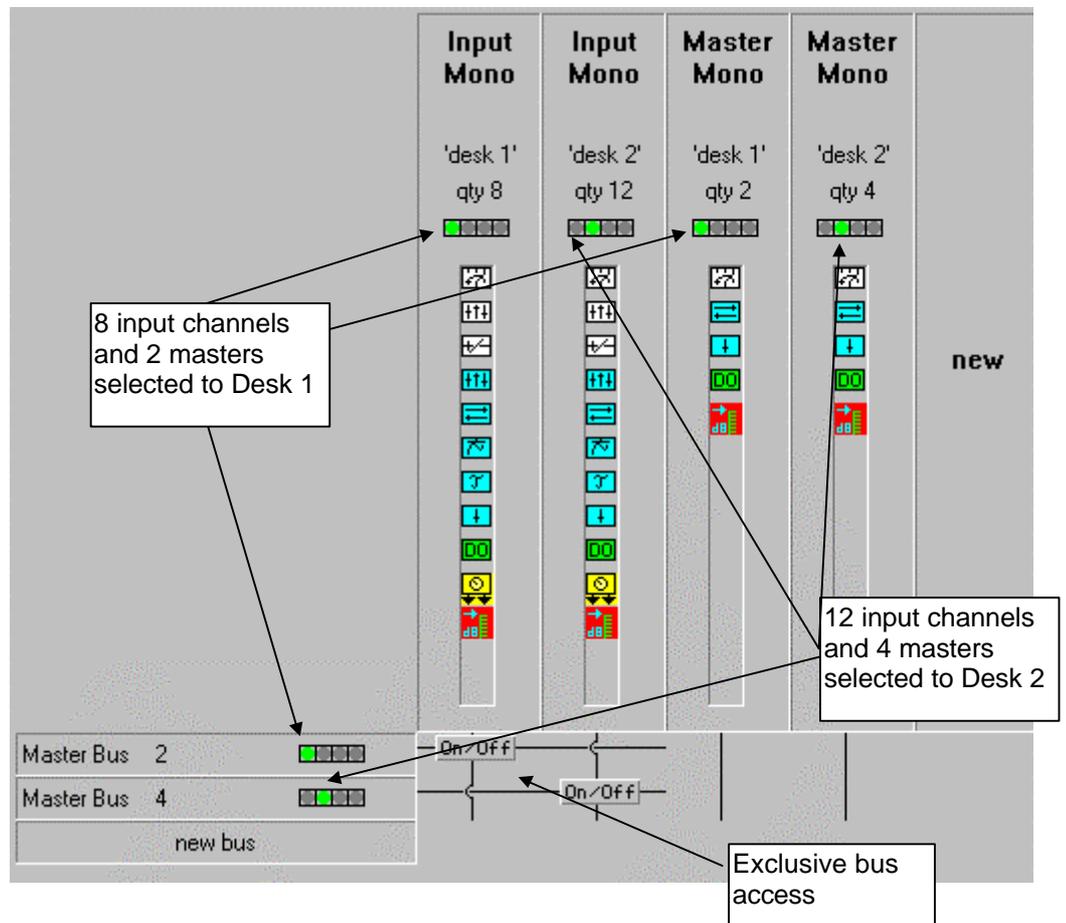
**Tip**

- It must be noted that there are two limitations to this concept:
- regardless of the number of desks in a MultiDesk system, they must all work with the same Timecode, since there is only one TC input to the system
  - since there is only one control system, and only one Session Configuration, individual desks can not be reconfigured and a configuration loaded independently from other desks. This means that all (up to 4 ) desks are always loaded at the same time.

Please also note that having made a MultiDesk configuration is only a part of the work. The D950 desk has also to be manufactured and equipped in an appropriate way, as well as all peripheral devices configured to serve the MultiDesk purpose. The next section describes the principle of making two very different MultiDesk configurations. In both cases we will make a 2-Desk configuration for reasons of simplicity.

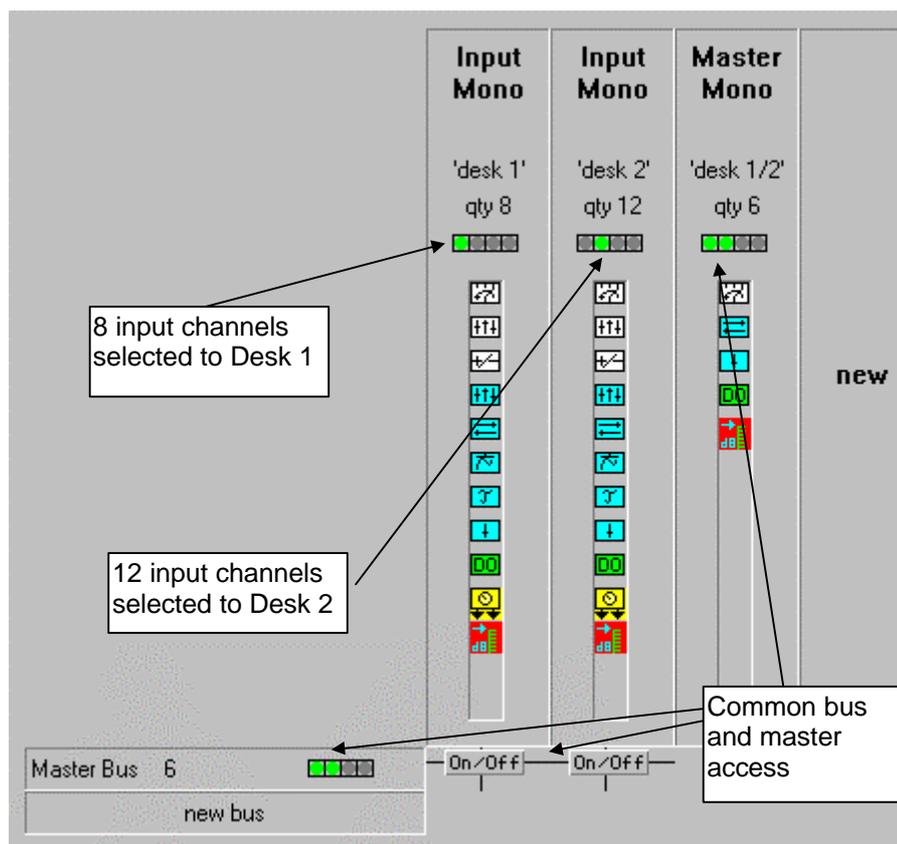
**How to make a split desk?**

Use the MultiDesk Groups checkboxes in the Edit Bus and Add Channel dialogues to assign channels and busses to the two desks (operators). The following example shows a two-operator split desk, whereby the desks are independent of each other:



The DSP capacity is sufficient for a total of 20 input channels and 6 master channels. Operator 1 sees 8 input channels and 2 master channels, whereas Operator 2 sees 12 different input channels and 4 different master channels.

**How to make a parallel desk?** Use the MultiDesk Groups checkboxes in the Edit Bus and Add Channel dialogues to assign channels and busses to the two desks (operators). The following example shows a two-operator parallel desk configuration, whereby the inputs of the desks are



independent of each other, but the masters are common and both operators have access to the same master busses. The DSP capacity again is sufficient for a total of 20 input channels and 6 master channels. Operator 1 sees 8 input channels and all 6 master channels, and Operator 2 sees 12 different input channels and all 6 master channels.

#### 5.2.4.2 The Concept of Stems

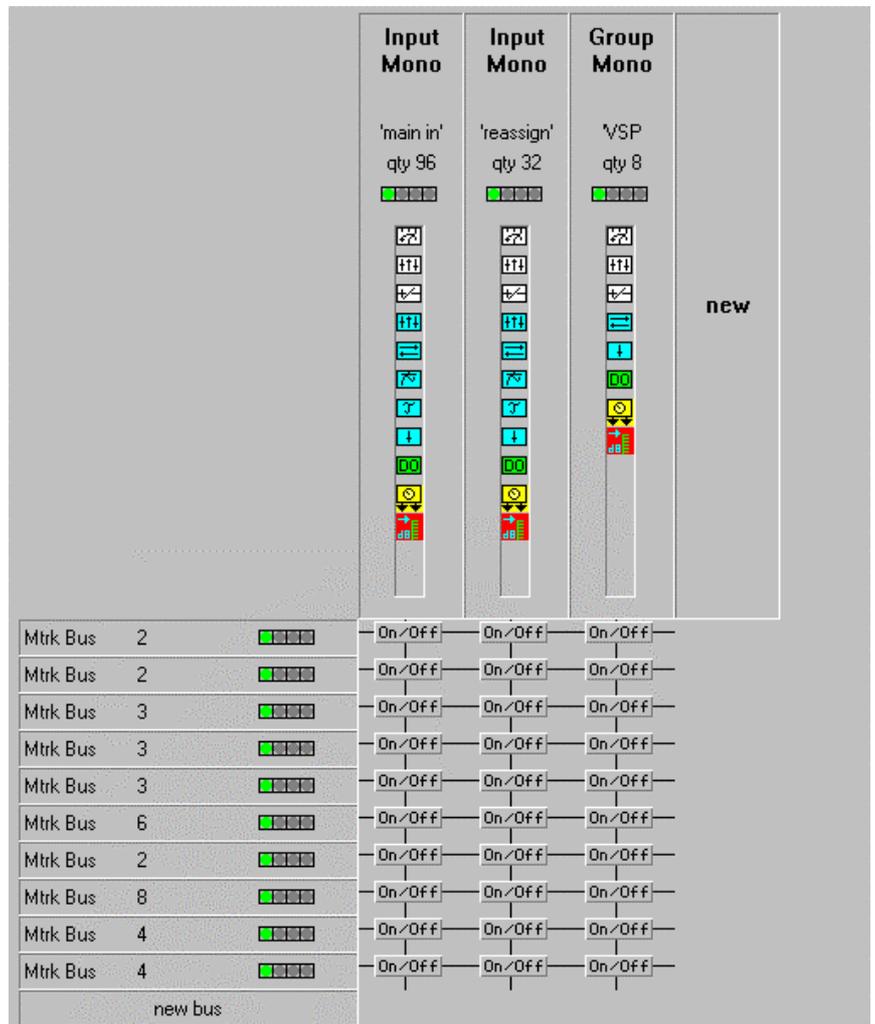
For Film style mixing, bits and pieces of film sound are put together from a variety of surround formats ranging from mono to 8 channels. Very often, there may be hundreds of audio sources that need to be mixed together and put into the right spatial image. In order to bring some order to such a vast number of sources and formats, a concept of Stems is often used.

A Stem is a group of sounds (i.e. audio summing busses) that belong together. Stems can be 1-channel to 8-channel wide. For example, a console may be configured to have:

- 2 stereo stems for music
- 3 LCR stems for simple effects
- 1 5.1 stem for effects
- 1 stereo stem for dialogue, etc.
- 1 8-CH stem for effects
- 2 Dolby Surround (4-CH) stems for predubs

The basic Stem setup is defined in the Session Configuration - the number, type and assignment of Stem busses is fixed. In the D950 GC, there are controls for dynamic Stem setup and for assignments of the related recorder tracks. In this way, the Stem setup may be changed dynamically as the need arises.

The restriction to the total number of Stems is the number of busses for a certain Session Configuration. D950's Master, Mono Group and/or Track busses are used to build a system of Stems (each stem consists of a number of busses) up to a maximum of 104 Stem busses at any time.



- stereo stem for music
- stereo stem for music
- LCR stem for simple effects
- LCR stem for simple effects
- LCR stem for simple effects
- 5.1 stem for effects
- stereo stem for dialogue, etc.
- 8-CH stem for effects
- Dolby Surround (4-CH) stems for predubs
- Dolby Surround (4-CH) stems for predubs

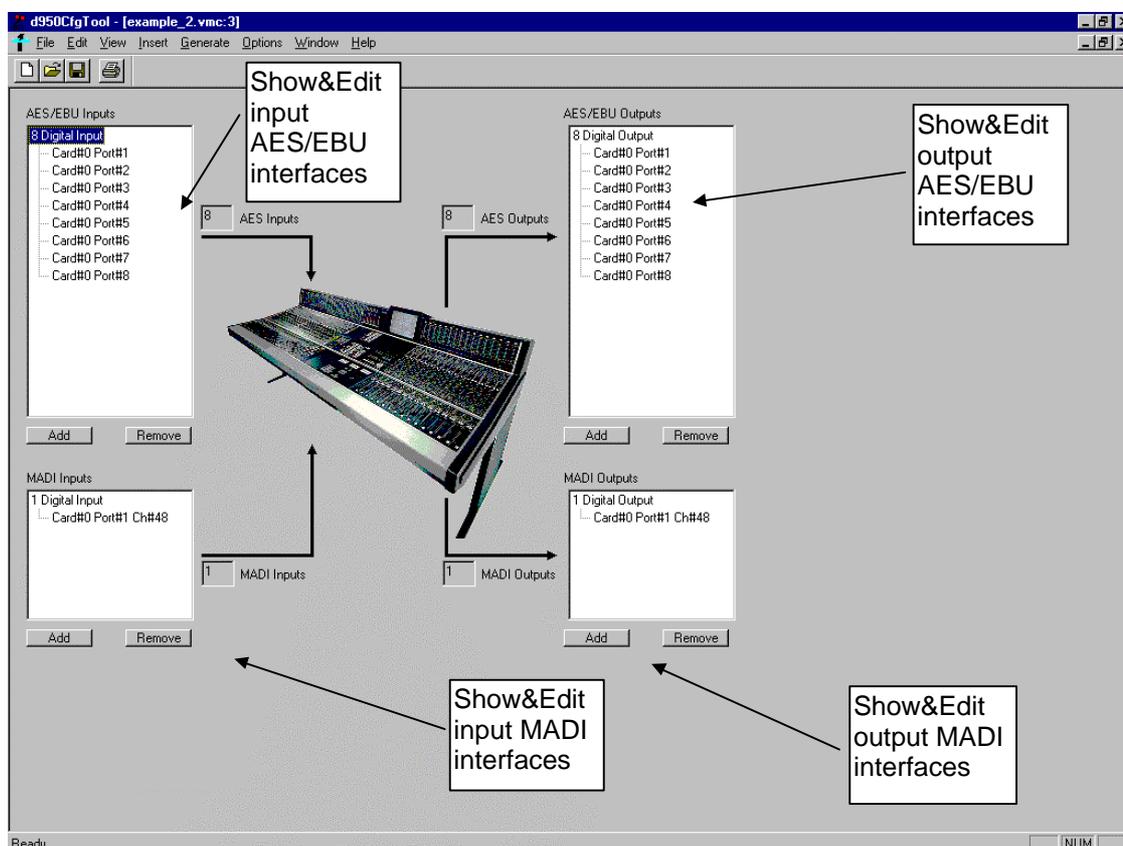
In this example, the bus structure has been set to allow for the above stem configuration using multitrack busses as Stem busses. A total of 37 multitrack busses has been configured by adding new busses for a stem of 2, a stem of 2, a stem of 3, etc. All 136 input and group channels have access to all 10 stems.

### 5.3 The Interface Page

The interface page allows viewing and editing of the audio interfacing to the DSP core. It is important to assign enough audio input and output interfaces so that the configured system can work satisfactorily. There are only 4 types of interfaces that can be edited here:

- AES/EBU inputs
- AES/EBU outputs
- MADI inputs
- MADI outputs

All those require a little DSP power and, obviously, the right DSP board type and quantity. Only the direct-to-core interfaces are relevant for the core load. Any mic preamps, A/D or D/A converters or other digital format converters must be connected to the above four direct-to-core interface types. The Interface page has 4 areas corresponding to the 4 interface types:



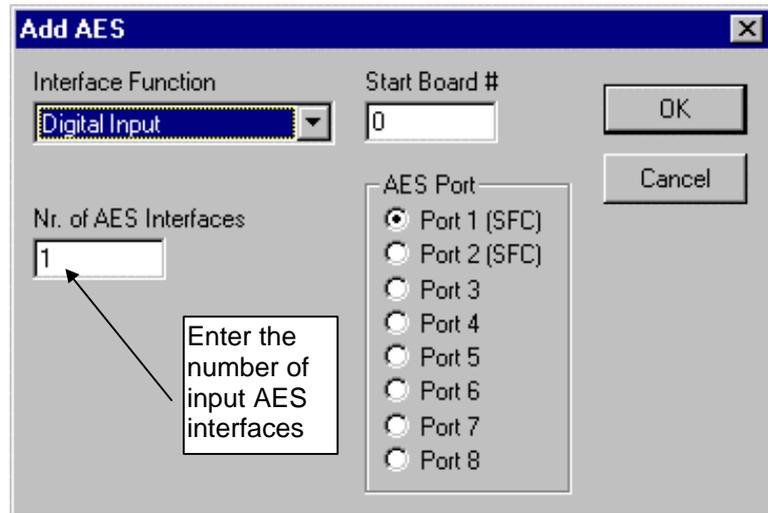
The D950 system can contain 2 I/O board types that are relevant for the interfacing:

- PEAES - DSP board with 6 DSP processors, 8 AES/EBU inputs (2 of which with SFC) and 8 AES/EBU outputs
- MAD I/O board with 2 MAD I optical input connectors and 2 MAD I optical output connectors per board

The D950 Session Configuration Tool will check all the relevant requirements as you enter the numbers and will calculate the necessary DSP power, the board types and their number and display that information on the Core page.

**Edit AES/EBU interfaces**

To add AES/EBU input interfaces to the system configuration, simply click on the Add button in the AES/EBU Inputs area and a dialogue box will appear:



Most of the time it is sufficient only to enter the total number of interfaces, bearing in mind that the number of AES/EBU interfaces will mean twice the number of available mono-equivalent audio inputs - if you enter 24, this will mean 48 mono signals that can enter the DSP system.

The Configuration Tool will calculate the total number of PEAES boards needed (3 in the above case). Normally, the other entries in the box will never have to be used.

**Only for the specialist !**

The „start board“ entry allows to set the board where the first interface will be placed by the system (normally starts with board 00). The „AES Port“ entry allows to set the first of the 8 AES ports on the selected board. The „Interface Function“ entry only allows Digital Input to be set -> no current function.

To add AES/EBU output interfaces to the system configuration, simply click on the Add button in the AES/EBU Outputs area and a similar dialogue box will appear, allowing to set the number of AES/EBU outputs.

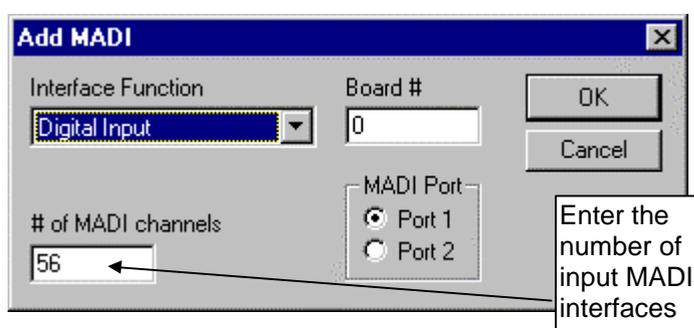
The total number of AES/EBU inputs does not have to be the same as the number of outputs. Since all AES/EBU inputs and

outputs require a little DSP power, it is prudent to keep the numbers as low as necessary.

After adding the required interfacing, the display will show the total number of interfaces and their distribution on the PEAES board, starting with board number 00.

To remove AES/EBU input interfaces from the system configuration, simply select the interface to be removed (or to remove all, select the uppermost line) and click on the Remove button, or use the „delete“ key.

**Edit MAD I interfaces** To add MAD I input interfaces to the system configuration, simply click on the Add button in the MAD I Inputs area and a dialogue box will appear:



The number of channels per each MAD I interface has to be entered, and the process repeated for every MAD I interface.

The Configuration Tool will calculate the total number of MAD I I/O boards needed. Normally, the other entries in the box will never have to be used.

#### Only for the specialist !

The „start board“ entry allows to set the board where the first interface will be placed by the system (normally starts with board 00). The „MAD I Port“ entry allows to set the first or second of the 2 MAD I ports on the selected board. The „Interface Function“ entry only allows Digital Input to be set -> no current function.

To add MAD I output interfaces to the system configuration, simply click on the Add button in the MAD I Outputs area and a similar dialogue box will appear, allowing to set the number of MAD I outputs.

The total number of MAD I inputs does not have to be the same as the number of outputs. Since a new MAD I board is added per each 2 new MAD I interfaces, it is prudent to keep the numbers as low as necessary. Since all individual channels within a single MAD I interface require a little DSP power, it is also prudent only to enter the required number. If you need to interface a 24 track digital recorder via MAD I, then only enter 24 in the „Nr. of MAD I

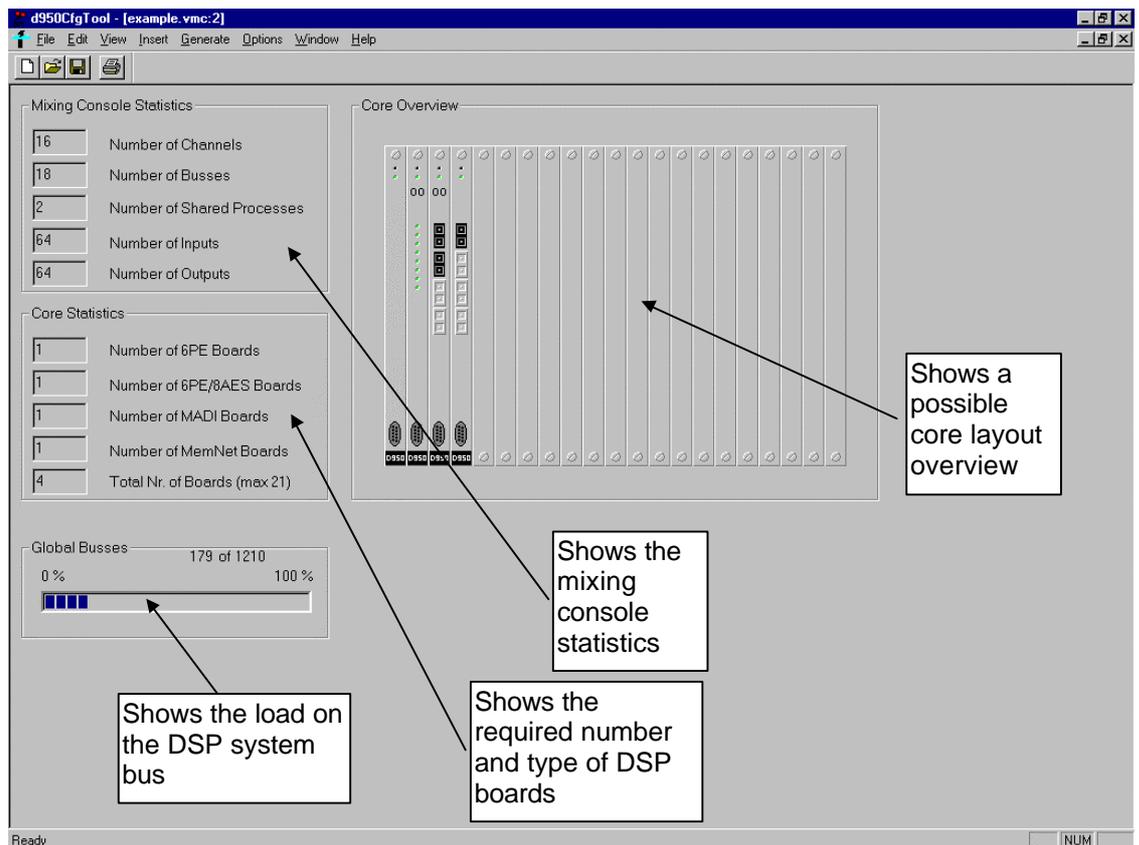
channels“ box, and not 56, which would be the maximum a standard MADi interface will support.

After adding the required interfacing, the display will show the total number of interfaces and their distribution on the PEAES board, starting with board number 00.

To remove MADi input interfaces from the system configuration, simply select the interface to be removed (or to remove all, select the uppermost line) and click on the Remove button, or use the „delete“ key.

### 5.4 The Core Page

The core page displays the statistics of the channels, busses and I/O's as well as the occupancy of the DSP core. The page has four parts:



**Mixing Console Statistics**

This area indicates the configured number of channels, busses, shared processes (test tone generator, side-chain links), and input and output interfaces. These numbers reflect all the entries that have been made during the configuration process.

**Core Statistics**

Shows the calculated number of various DSP core boards. The indication on the Core View shows Core Statistics as a rough estimation. It uses a simple fitting algorithm to estimate the required number of boards. To get to the real number of boards, the full Generate Core process has to be done first, as explained

in the next chapter. After that is finished, the display will show the real numbers and the text (rough estimation) will disappear. The total number of boards must not exceed 21.

- Global Busses** Shows the current communication load on the DSP system communication bus (not to be mistaken for audio busses in the mixing console). The number of busses must not exceed 1210.
- Core Overview** Indicates graphically all the boards and the setting of their I/O addresses. The actual physical position in the core frame is irrelevant at this point.

## 5.5 The Shared Function Page

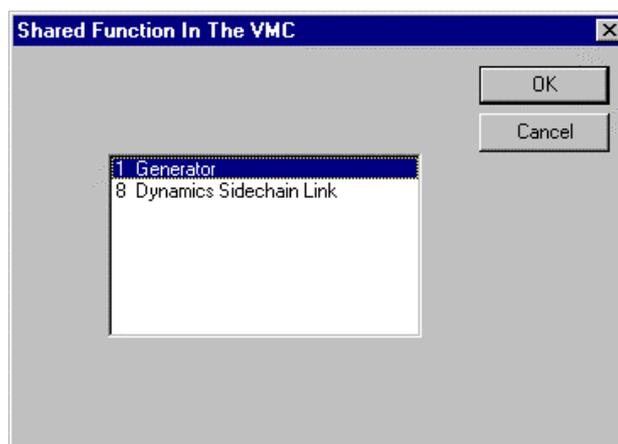
The shared functions page allows adding and editing the so-called shared functions. There are currently the following shared functions:

- test generator
- dynamics sidechain link

**Test Generator** the test generator is used to test the console with sine, white noise and pink noise signals. The number is automatically set to 1.

**Dynamics sidechain link** The dynamics sidechain link allows to link the controls (sidechains) of up to 8 dynamics sections of 8 different channels. It is similar to the stereo link function found on many compressor/limiters, but the number of linkable channels has been set to 8 rather than only 2, so that all current surround formats can be supported. The dynamics sidechain link requires DSP power, so the number is best set to the required minimum. The default number is 0, and the number can be set freely.

**To edit** To edit the numbers of shared functions, click on the „View/ shared functions“ menu. This will bring up the dialogue box, allowing to edit the numbers:



Double click on the shared function you wish to edit and enter the required number.

## 5.6 The Session Configuration Tool Menu

Most of the functions of the D950 Session Configuration Tool are controlled directly from the 4 View pages as described in the

previous chapters. There are, nevertheless, some functions that are accessible only via the menus. The following descriptions briefly explain all the menu items, and only go into details for functions not explained in the previous chapters.

### 5.6.1 The File Menu

---

<b>New</b>	Opens a new, empty .VMC configuration file. Only the factory defaults are set.
<b>Open</b>	Opens an existing .VMC configuration file. First looks into the folder as stated in the „options/Directories/Files“ menu, usually C:\D950SYSTEMDB.
<b>Close</b>	Closes current .VMC configuration file.
<b>Save VMC</b>	Saves current .VMC configuration file under the same name, thus overwriting it.
<b>Save VMC As</b>	Saves current .VMC configuration file under a different name. The ending .VMC does not have to be typed out. Generates a new folder with the same name as the .VMC configuration file and saves the .VMC configuration file there.
<b>Save VMC Overview</b>	Saves the Overview of the current .VMC configuration file as a text (.txt) file. The overview contains condensed information about the current configuration. An example is given in the next chapter.
<b>Save Distribution Info</b>	Saves the results of the Generate process of the current .VMC configuration file as a text (.txt) file. The Distribution info contains condensed information about the distribution of the load onto DSP PE and PEAES boards and individual PE processors. This information may be helpful during trouble shooting of the D950 system. An example is given in the next chapter.
<b>Print VMC Overview</b>	Prints the Overview of the current .VMC configuration file. The overview contains condensed information about the current configuration.
<b>Print preview</b>	Shows the Overview of the current .VMC configuration file on screen.
<b>Print Setup</b>	Standard Windows printer setup.
<b>1, 2, 3, 4</b>	List of last 4 used .VMC configuration files.
<b>Exit</b>	Quits the D950 Session Configuration Tool.

### 5.6.2 The Edit Menu

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<b>Remove last process</b>	An „Undo“ function to remove the last added process (added channel or bus).
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### 5.6.3 The View Menu

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<b>Vmc</b>	<b>Only for the specialist !</b>
<b>FuncLib</b>	<b>Only for the specialist !</b>
<b>Log File</b>	Shows the Log File that contains information about the last several Generate runs. The oldest information is shown at the top of the file.
<b>Tool Bar, Status Bar</b>	Switches on and off the Tool Bar and The Status Bar.

<b>Channel Bus</b>	Brings up the Channel Bus page. For a description, please see previous chapters.
<b>Interface</b>	Brings up the Interface page. For a description, please see previous chapters.
<b>Shared Functions</b>	Brings up the Shared Functions page. For a description, please see previous chapters.
<b>Core</b>	Brings up the Core page. For a description, please see previous chapters.

#### 5.6.4 The Insert Menu

<b>Channel</b>	opens the „Add Channel“ dialogue box. For a description, please see previous chapters.
<b>AES Input</b>	opens the „Add AES“ dialogue box. For a description, please see previous chapters.
<b>AES Output</b>	opens the „Add AES“ dialogue box. For a description, please see previous chapters.
<b>MADI Input</b>	opens the „Add MADI“ dialogue box. For a description, please see previous chapters.
<b>MADI Output</b>	opens the „Add MADI“ dialogue box. For a description, please see previous chapters.
<b>External Devices</b>	opens the „External Devices“ dialogue box.



This box allows entering the number of remotely controlled devices. Currently, only the D19 MicAD can be remotely controlled from a D950. Enter the number of devices as required. The number can be higher than the actual number of connected devices.

<b>Important Tip</b>	The number of devices is set to 0 per default. It is important to enter the number of devices here, otherwise there will be no remote control possibility.
<b>Shared Functions</b>	opens the „Shared functions“ dialogue box. For a description, please see previous chapters.

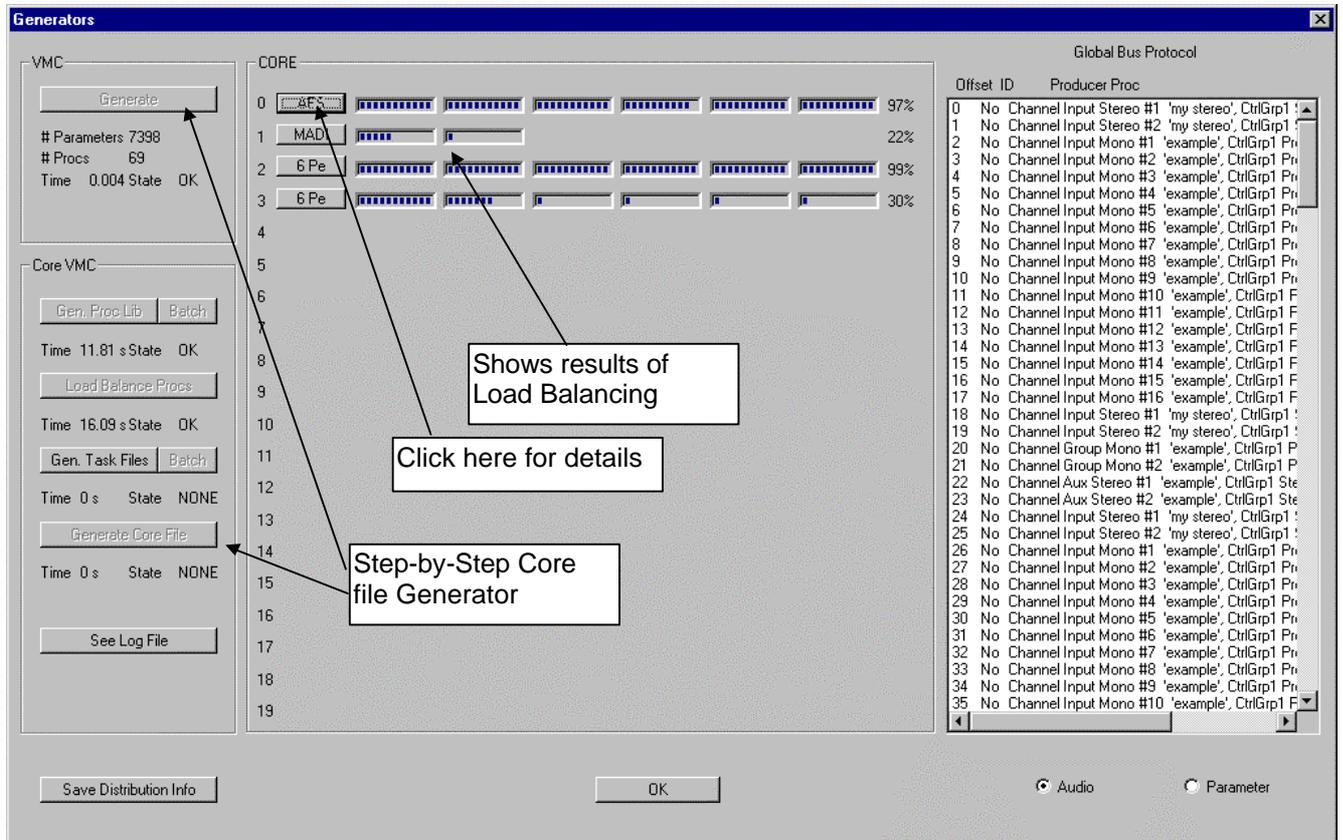
### 5.6.5 The Generate Menu

**Detailed** This menu opens up an interactive dialogue box that allows to start step-by-step manual Load Balancing and generation of the DSP core file. It allows the specialist to see more details about the current configuration than when Generate/All is used.

**Only for the specialist !**

It is not necessary to go to this menu item to do the whole generate process. The main reason for looking at this page is to see the load distribution to various DSP boards and individual PE processors. There is a lot of other information here that does not mean much to the ordinary humans.

Activating „Detailed“ will bring up the following box:



If a Generate process has already been done, the area „CORE“ will show the results of load balancing and distribution of the load to DSP boards. Click on one of the buttons to see the load distribution on one DSP board in detail. If the Generate process has not yet been done, the „CORE“ area is empty.

To do the Generate process from here, all 7 boxes in the „VMC“ area have to be clicked in turn, always waiting for the result of the previous action to appear before the next box is clicked. The order of the individual processes is as follows:

- Generate (VMC)
- Gen Proc Lib
- Batch

- Load Balance Procs (now the „CORE“ area will be filled)
- Gen Task Files
- Batch
- Generate Core File

If all steps are completed, the new core file is generated.

### Tip

If you only wish to see the results of load balancing, but not to generate a core file, use only the following three boxes:

- Generate (VMC)
- Gen Proc Lib
- Load Balance Procs

which will display the „CORE“ area. Click on one of the buttons in the „CORE“ area to see the load distribution on one DSP board in detail. Here the display for the PEAES Board 00 as an example:

The screenshot displays the 'PE Card' window with six sub-windows for PE 1 through PE 6. Each sub-window has 'Task File' and 'DMA's' tabs. Below each list of tasks is a 'Balancing' progress bar showing the current task count out of 800 and a percentage. PE 1: 790 of 800, 98%. PE 2: 790 of 800, 98%. PE 3: 795 of 800, 99%. PE 4: 737 of 800, 92%. PE 5: 797 of 800, 99%. PE 6: 749 of 800, 93%. On the right, the 'Display Mode' section has radio buttons for Core Cycles (selected), Data Memory, Program Memory, Program Code, and SHARC I/O Bus. Below it, the 'Board Statistics' section has buttons for 'Summation Matrix' and 'Shared Bus Timing'. At the bottom, it shows 'Cycles: 104' and 'Nodes: 40'. An 'OK' button is centered at the bottom.

Some of these details can also be found if the Distribution info is saved. An example of this file is given in the next chapter. The page and the file contain condensed information about the distribution of the load onto DSP PE and PEAES boards and individual PE processors. This information may be helpful during troubleshooting of the D950 system because all the individual channels, busses and functions can be precisely located to a particular board.

- All** Starts the Load Balancing and automatic generation of the DSP core file. For a description, please see previous chapters.

### 5.6.6 The Options Menu

---

**Core Constants**    **Only for the specialist !**    **Do not change anything here!**

**Directories/Files...**    Allows to edit the D950CfgTool.Ini file, as described in the previous chapters.

### 5.6.7 The Window Menu

---

This menu contains standard Windows functions for the management of windows. Multiple windows and copies of existing windows are allowed.

**New Channel Bus**    Opens a new Channel Bus page. If there are already Channel Bus pages, creates a new copy of the page.

**New Interface**    Opens a new Interface page. If there are already Interface pages, creates a new copy of the page.

**New Core**    Opens a new Core page. If there are already Core pages, creates a new copy of the page.

**Cascade**    Arranges the Workspace as cascaded windows.

**Tile**    Arranges the Workspace as tiled windows.

**1,2,3,...**    Brings the selected page to the top of the workspace

## 6 MAINTENANCE

### 6.1 Managing the Files - Which File is Where?

Any Session Configuration starts with only two files:

- myvmc.vmc
- myvmc.cor

As a Session Configuration is used by the D950 console, there will be more session-specific files stored in the Session Configuration folders on the D950 PC. These files are generated by the D950 System automatically. Here a brief explanation of the files:

C:\D950SYSTEMDB

<pre> ├─ \lastknownsession.ini ├─ \&lt;myvmc1&gt; │   └─ \&lt;myvmc1&gt;.vmc │   └─ \&lt;myvmc1&gt;.cor │   └─ \&lt;preset2&gt;.pre │   └─ \... │   └─ \&lt;myvmc1&gt;.snp │   └─ \&lt;myvmc1&gt;.asg │   └─ \&lt;myvmc1&gt;.stp │   └─ \&lt;myvmc1&gt;.trk │   └─ ... ├─ \&lt;myvmc2&gt; │   └─ \&lt;myvmc2&gt;.vmc │   └─ \... </pre>	<p>stores last used session configuration and title</p> <p>session directory named after the .vmc file name</p> <p>session configuration .vmc file</p> <p>DSP executable programme</p> <p>preset</p> <p>preset</p> <p>start snapshot (periodically updated via the Autosave option)</p> <p>strip setup for the desk</p> <p>start snapshot for the stem assignment</p> <p>start snapshot for the track assignment</p> <p>session directory named after the .vmc file name</p> <p>session config .vmc file</p>
---	--

**Note** Names enclosed in brackets are free to choose/edit. Extensions and names not enclosed in brackets must not be changed. The extension makes it easier for the system to search data files. But it is not the only ID to identify a data file of a certain type, in addition a file ID in the file itself is used to check the file type.

The described directory structure is the default structure generated by the system and is also the location where the system first looks for user data. This structure can be changed by the user. The path for productions and system database is set via D950system.ini and the D950CfgTool.ini files, please see later.

The D950 Productions or Titles are not linked with a specific session configuration. Each snapshot, sequence and mix file contains a session reference which makes it possible to identify session and data belonging to that session. That means one can open a title with data files belonging to different session configurations. The system can convert those files if needed (D950 Software V1.1).

## 6.2 The D950CfgTool.ini File

The :\\Windows\_Root directory contains the file „D950CfgTool.ini“. This file tells the Configuration Tool where to look for various components and what the basic settings are. This root directory may be called similarly to „Windows“, „Win95“ or WINNT40“ and is usually found on the C: drive of every PC.

The contents of this file are set by the D950 Session Configuration Tool software. The user should not find it necessary to edit the file using a text editor.

The contents of this file have four parts:

[globals] DpramAMessageChOffset=0 DpramAAudioChOffset=666 DpramABoardChStartOffset=700 DpramALength=992 DpramBMessageChOffset=64 DpramBParamChOffset=128 DpramBAudioChOffset=666 DpramBBoardChStartOffset=700 DpramBLength=992 DpramReadWaitStates=0 DpramWriteWaitStates=0 DpramABeginWrite=0xc00000 DpramABeginRead=0x400400	Set via the Options/Core Constants menu. Should never be changed!
[dir and file settings] CoreFuncLibFile=C:\\D950cfg\\coreFunc220498.lib LogFile=C:\\D950cfg\\tmpFiles\\LogFile.txt CoreMemNet1File=C:\\D950cfg\\Membeta.exe CoreMemNet2File=C:\\D950cfg\\Membeta.exe PearchFile=C:\\D950cfg\\Core.ach RtosFile=C:\\Programs\\D950cfg\\Rbeta.a CoreTempFilesPath=C:\\Programs\\D950cfg\\tmpFiles\\ CfgPath=C:\\D950SYSTEMDB\\	Set via the Options/Directories/Files menu.
[GUI settings] ShowWindow=3 View=ChanBusView,3,44,44,844,502,0,0	Last workspace setting. Stored when quitting
[Recent File List] File1=C:\\D950SYSTEMDB\\example\\example.VMC File2=C:\\D950GC\\D950SYSTEMDB\\CfgToolManual\\CfgToolManual.VMC File3=C:\\D950GC\\D950SYSTEMDB\\Untitled\\Untitled.VMC	Last VMC files used. Stored when quitting

### 6.2.1 Related entries in the D950system.ini

The actual D950 System software uses the D950system.ini file to set some defaults. Please consult the D950 Operating Instructions for more details. There are two entries in this file that are related to the Session Configuration, here the keywords:

LastKnownIniFile=C:\\D950SYSTEMDB\\lastknownsession.INI	The keyword points to the .ini file which indicates the last used session and last used production/title.
---	---

DefaultSystemdbDir=C:\D950SYSTEMDB

This path points at the starting directory for the file dialogue box when changing a session.

## 6.2.2 Example of an VMC Overview File

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The overview file contains condensed information about the current configuration. It can be stored from the „File“ menu.

Configuration 'C:\D950SYSTEMDB\example\_2\example\_2.txt'

=====

Channels:

8 Input Mono 'example' Channels

Input Selector

Input HPF/LPF & Gain

Input Mode Phase

4 Band EQ

Insert

Dynamics

Delay 100ms

Fader

Direct Out

Multi Format Pan

Meter

2 Group Mono 'example' Channels

Input Selector

Input HPF/LPF & Gain

Input Mode Phase

Dynamics

Insert

Fader

Direct Out

VSP Surround Pan

Meter

2 Master Mono 'example' Channels

Input Selector

Insert

Fader

Direct Out Simple

Meter

6 Aux Mono 'example' Channels

Input Selector

Insert

Fader

Direct Out Simple

Meter

2 Input Stereo 'my stereo' Channels

Input Selector

Input HPF/LPF & Gain

Input MS Mode Phase

4 Band EQ

Insert

Fader

Direct Out

Pan Bal Width

Meter

```

2 Aux Stereo 'example' Channels
Input Selector
Insert
Fader
Direct Out Simple
Meter

```

```

2 Group Mono 'My GRP' Channels
Input Selector
Input HPF/LPF & Gain
Input Mode Phase
4 Band EQ
Insert
Fader
Direct Out
LR Pan
Meter

```

Busses:

```

2 Master Busses
4 Group Busses
6 Aux m Busses
2 Aux s Busses
2 Solo Busses
1 Pfl s Bus

```

Interfaces:

```

8 Digital Input AES Interfaces
8 Digital Output AES Interfaces
1 Digital Input MADi Interface
1 Digital Output MADi Interface

```

### 6.2.3 Example of an VMC Distribution Info File

The Distribution info file contains condensed information about the distribution of the load onto DSP PE and PEAES boards and individual PE processors as well as the MADi and MEMNET boards. This information may be helpful during trouble shooting of the D950 system. An example is given here:

```
Configuration ' C:\D950SYSTEMDB\example_2\example_2_dst.txt'
```

```
=====
```

```

6Pe 8Aes Boards:          1
6Pe Boards:              1
2Madi Boards:            1
MemNet Boards:           1

```

BOARD:Type: AES Interface Number:0

```

                                No Summation
PE 1:
    Channel Group Mono #1 'example', CtrlGrp1
    Channel Master Mono #1 'example', CtrlGrp1
PE 2:
    Channel Group Mono #2 'example', CtrlGrp1
    Channel Master Mono #2 'example', CtrlGrp1
PE 3:
    AES/EBU Port#0
    AES/EBU Port#1
    AES/EBU Port#0
    AES/EBU Port#1
    Channel Input Mono #1 'example', CtrlGrp1
    Channel Group Mono #3 'My GRP', CtrlGrp1
    Channel Aux Stereo #1 'example', CtrlGrp1

```

```

PE 4:
AES/EBU Port#2
AES/EBU Port#3
AES/EBU Port#2
AES/EBU Port#3
Channel Input Mono #2 'example', CtrlGrp1
Channel Group Mono #4 'My GRP', CtrlGrp1
Channel Aux Stereo #2 'example', CtrlGrp1

```

```

PE 5:
AES/EBU Port#4
AES/EBU Port#5
AES/EBU Port#4
AES/EBU Port#5
Channel Input Mono #3 'example', CtrlGrp1
SharedProc
SharedProc
SharedProc

```

```

PE 6:
AES/EBU Port#6
AES/EBU Port#7
AES/EBU Port#6
AES/EBU Port#7
Channel Input Mono #4 'example', CtrlGrp1
SharedProc
Channel Aux Mono #1 'example', CtrlGrp1
Channel Aux Mono #2 'example', CtrlGrp1
Channel Aux Mono #3 'example', CtrlGrp1

```

BOARD: Type: MADI

No Summation

```

PE 1:
MADI B#0 P#0 48 ch
MADI B#0 P#0 48 ch

```

PE 2:

BOARD: Type: 6 Pe  
Summing Busses:

```

Bus Master #1 (#0 in stem), CtrlGrp1
Bus Master #2 (#1 in stem), CtrlGrp1
Bus Aux m #1 (#0 in stem), CtrlGrp1
Bus Aux m #2 (#1 in stem), CtrlGrp1
Bus Aux m #3 (#2 in stem), CtrlGrp1
Bus Aux m #4 (#3 in stem), CtrlGrp1
Bus Aux m #5 (#4 in stem), CtrlGrp1
Bus Aux m #6 (#5 in stem), CtrlGrp1
Bus Solo #1 (#0 in stem), CtrlGrp1
Bus Solo #2 (#1 in stem), CtrlGrp1
Bus Group #1 (#0 in stem), CtrlGrp1
Bus Group #2 (#1 in stem), CtrlGrp1
Bus Group #3 (#2 in stem), CtrlGrp1
Bus Group #4 (#3 in stem), CtrlGrp1
Bus Aux s #1 (#0 in stem), CtrlGrp1 left
Bus Aux s #1 (#0 in stem), CtrlGrp1 right
Bus Aux s #2 (#1 in stem), CtrlGrp1 left
Bus Aux s #2 (#1 in stem), CtrlGrp1 right
Bus Pfl s #1 (#0 in stem), CtrlGrp1 left
Bus Pfl s #1 (#0 in stem), CtrlGrp1 right

```

```

PE 1:
Channel Input Mono #5 'example', CtrlGrp1
Channel Input Mono #6 'example', CtrlGrp1
No Summing

```

```

PE 2:
Channel Input Mono #7 'example', CtrlGrp1
Channel Input Mono #8 'example', CtrlGrp1
No Summing

```

```

PE 3:
Channel Input Stereo #1 'my stereo', CtrlGrp1
Channel Input Stereo #2 'my stereo', CtrlGrp1
Channel Aux Mono #4 'example', CtrlGrp1
Channel Aux Mono #5 'example', CtrlGrp1
Channel Aux Mono #6 'example', CtrlGrp1
No Summing

```

```
PE 4: SharedProc
      Summing: 20 B (0 to 27)
PE 5: Summing: 20 B (27 to 48)
PE 6: No Summing

BOARD: Type: Mem Net
      No Summation
```

## 6.2.4 Troubleshooting

---

The Session Configuration Tool was checked for over a year at the factory for malfunctions and erroneous operations. We tried hundreds of different configurations and have made all sorts of tests. Nevertheless, since there exists an almost infinite number of combinations of channel, bus and I/O configurations, we could not test them all. So it may happen that on a very rare occasion, an error message will be issued during editing or during the Generate process. Here a description of some of the typical error messages:

### 6.2.4.1 Errors during Generate Process / in Log File

---

```
error! cannot load balance vmc process
(check core funcLib requirements)!
Process requirements:
cyclesAudio=726<800-RTOScyclesAudio
cyclesPrep=2724<10000
cyclesPostp=112<2000
pmco=2521<12288
pmda=7961<7700
dmda=11774<28000
```

Too many functions in a channel. Typically happens with full channels including the VSP Pan. Take out the Dynamics or EQ and run Generate again.

```
ERROR: I/O Overflow on PE 4 of board 0
```

Typical for a Load Balancing error. Try to slightly change the channel configuration so that the load on the board 0 / PE 4 shifts a little and run Generate again.

Studer Professional Audio AG  
Althardstrasse 30,  
CH-8105 Regensdorf  
Switzerland  
Tel. +41 1 870 75 11  
Fax. +41 1 840 47 37

Contact and more information:  
<http://www.studer.ch>

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