

Multi-DNC for Windows XP,2000,NT,98 v7.0 (#990011-60-10-8) (Server)

File View Select Connection Operations Options Tools Programs Network Help Updates

Open Compare Group Setup Send Remote Stop! Receive Help Exit

MEM Machines - 7 Machines

Haas VF-3	Cincom B12 #1	Cincom B12 #2
Cincom B12 #3	Fadal CNC 88HS	Fadal CNC 88
	Operations Window shows Machine status	
Mori Mill	Machines are shown as icons	
CNC Viewer window shows "live" CNC code, other windows show System Events, Database, E-mail		

DNC [1001] COM3:19200,E71 Data Recovery Captured Data

C:\Xpert DNC\Send\ mill-sample.nc Send (881,9382)

66% % bar shows amount of program

	Remote (0)
Mike Donahey, TURBO BRACKET, Spindle Start - 1/19/2005	
	Remote (0)
George Marsh, 2678-453, Spindle Start - 1/19/2005 11:07:32	
	Remote (0)
Brad Herman, 05100, Spindle Start - 1/19/2005 11:07:46 AM	
	Remote (0)
Don Burnside, 05473, Spindle Start - 1/19/2005 11:07:40 AM	
	Remote (36)
Ian McCull, msg8, Spindle Stop - 1/19/2005 11:08:00 AM	
	Remote (0)

For optional Machine Monitoring, Mode, In Cycle and Spindle Icons are shown

Event Log CNC Viewer Database (DSL-SERVER) Connected Remote Commands by EMail

```

N866 X-3.5575 Y-1.0965
N867 X-1.8598
N868 X-1.7681 Y-1.1715
N869 X-1.7268 Y-1.284
N870 X-1.7292 Y-1.3777
N871 X-1.7779 Y-1.4902
N872 X-1.8839 Y-1.6215
    
```

Single Block Block Skip Cycle Start

CNC Viewer window shows live CNC program code for active Machine Connection with red border. Switches are to allow you to Stop and Start data flow.

Single Block Drip Feed SUB Expand Block Skip Auto Split Safe Start

Multi-DNC v7.0 for Windows XP Pro/ 2003 /2000 is a 32 bit multi-threaded communications and file management system enabling simultaneous uploads and downloads to multiple CNC controls and includes an Editor, Backplotter, File Compare, and the evaluation software **Job BASE SE** for "paperless" manufacturing. **Multi-DNC v7.0** is easily connected to CAD/CAM systems over industry standard networks and is available in a Client-Server configuration. **Job BASE** enables the creation of "Jobs", which are associated files of CNC Programs, CAD Drawings, Setup Sheets, Tool Lists, Digital Pictures of Setups all linked together under a Job Name and description and stored in a SQL database. A Job is a single operation with not only the CNC Programs sent to a Machine Connection, but also all supporting shop floor "electronic" documents pertaining to that Job. With the addition of the **Monitoring** option, important Machine Event data such as which program is running, Spindle on and off indication, Cycle time and Machine Alarms are also written to an SQL database. Reports can be generated from an IE Browser from anywhere in the world.

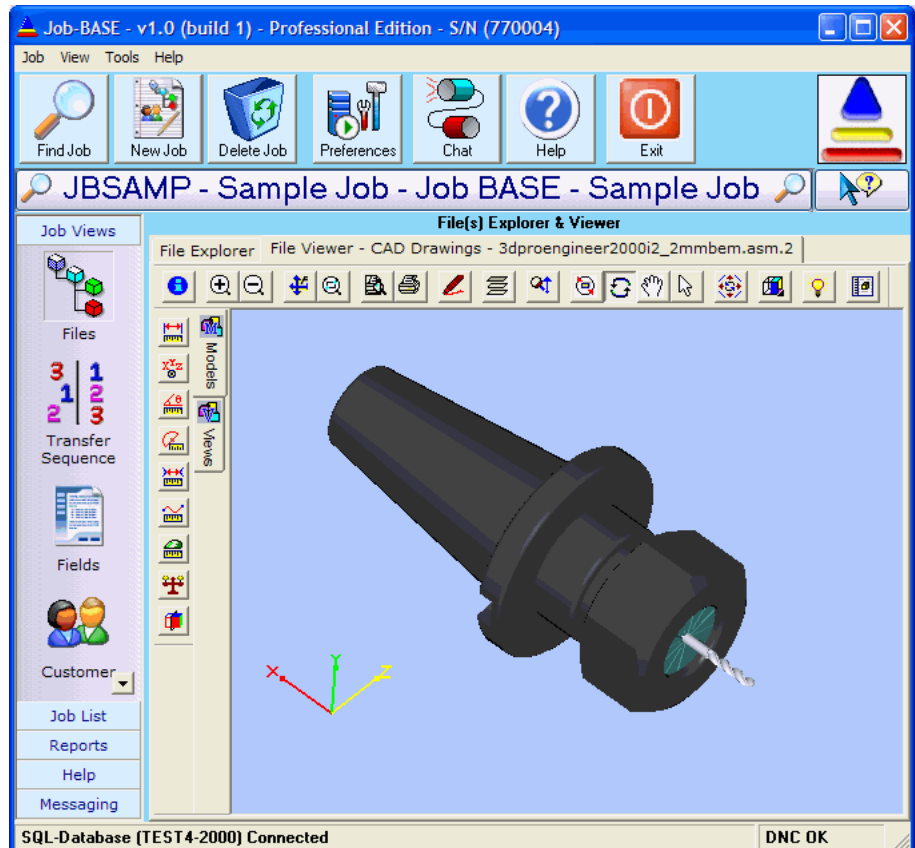
New Features

NEW – Job BASE SE now in every Multi-DNC v7.0 system

Job BASE SE is the **free** version of **Job BASE Professional** and is included with every **Multi-DNC v7.0** system. **Job BASE** is a CNC Document Management system where you create “Jobs” which are linked CNC programs, CAD drawings, Tool lists, Setup sheets, Digital pictures, Word documents, PDF files, Excel spreadsheets, and all can be viewed as part of a Job. **Job BASE SE** is shown in a restricted display window and the database can only hold 12 Jobs.

This is **Job BASE Professional** with no restriction as to the display size or number of Jobs in the database. The powerful Microsoft SQL Server or MSDE database is used.

Job BASE is tightly integrated with **Multi-DNC**. CNC programs linked to a Job can be sent in a Direct DNC (drip feed) mode or be requested in **Remote** directly from the CNC Controller.



NEW – Diagnostic Tools **Dry Run** and **Data Recovery**

Multi-DNC v7.0 has two new diagnostic tools. **Dry Run** lets you test and also shows you exactly what is going to sent from a Machine Connection when you send a single file or a multiple number of files, without actually sending the data. **Data Recovery** enables you to manage files on a per Machine Connection basis that have been received from CNC Controllers using **Remote** Autaname and were named according to the Date-Time format due to incorrect formatting or as Unknown Data Files.

NEW – Run Multi-DNC as a **Service**

Multi-DNC v7.0 can now be run as a **Service** in Windows 2000 or Windows XP. This would be used primarily with the Client Server version of Multi-DNC. It enables you to set up **Multi-DNC** on a Server that is in a secure area, such as a locked computer room. If the DNC Server computer fails and has to restart, the **Multi-DNC** application will start without having to log in to the Windows operating system.

Communication Features

Up to 288 Ports of Simultaneous communication

Simultaneous communication sessions with up to 288 CNC machines from a single PC at speeds of up to 230,400 baud using the **SIIG Cyber PCI 850** RS-232 board or the **Edgeport USB to RS-232** Hub with **Multi-DNC /2 for Windows** and the **Control RocketPort** boards or **RocketPort** Ethernet based hardware for all of the other **Multi-DNC** modules.

"Star" or "Hub" DNC network configuration

The DNC network can either be set up in a "**STAR**" configuration, with each CNC directly connected to a centralized **Multi-DNC** computer, **eliminating switch boxes** (either manual or electronic) **OR** a "**HUB**" configuration can be used, with one or more shop floor hub devices that are centrally located to minimize RS-232 cabling distance.

Client-Server Architecture

Client Server is an option that allows multiple **Multi-DNC** Clients to control one or more **Multi-DNC** Servers over a TCP/IP network. **Any** file can be sent to **any** CNC Control at **any time!**

Control Ethernet Based hardware

The **Control Ethernet based hardware** consists of hub devices mounted on the shop floor with from 4 to 32 RS-232 ports per Hub. **Multi-DNC** running under Windows XP Pro, 2003 and 2000 can use these **"virtual" COM ports** over the network. The advantage is shorter RS-232 cabling and centralized network management. Multiple hubs are used for large shops.

Easy connections to LAN's and UNIX systems

Several Multi-DNC for Windows nodes can be connected over PC-LAN networks such as Windows or Novell NetWare to support larger installations. **Direct connection to UNIX** systems is over TCP/IP supported directly in Windows XP Pro, 2003, 2000.

Sub folder Searching

A option in **Remote** **automatically searches** through multiple **branching sub-folders** for the requested CNC program. This enables the management of CNC programs by customer or project, rather than just by Machine Connection.

Restart – 4 ways

Allows the DNC operator to **start a program from any point in the file**. In case of tool breakage, and enables (4) ways to give CNC operators the maximum amount of flexibility. Also, a new **Safe Start Block** Editor lets you easily change the initialization codes that you send before a Restart.

Sub-Program Expander

Sub Expand is a Direct DNC (drip feed) feature where **Multi-DNC** Sends a Main program and automatically **expand out the Sub-program calls** just like a CNC control. The sub-program is then run in a Direct DNC mode. Multiple level sub-programs and sub program looping are supported.

Local Copy before Sending

The Local Copy option **automatically copies** the CNC program from its normal position to the **local hard disk before sending**. This is important for Direct DNC (drip feed) when the CNC programs reside on a networked drive, so that any network problems while sending will not affect the Direct DNC operation.

Remote Features

Remote uploads and downloads directly from the CNC control

Remote mode is a unique feature that allows the CNC operator to upload, download, or run the CNC control in a direct (“drip feed”) DNC mode **right from the control itself** without requiring any add-on hardware.

The CNC operator does this...

To “**get**” a file at the CNC control, the CNC operator creates a simple 2 to 3 line **Remote** “Command” program that contains the name of the file within a comment line. The CNC operator then “**punches**” out this file and sets up the control to “**read**”. **Multi-DNC** receives the file request, finds the file, and automatically sends it back to the CNC. To **store** files at the DNC computer, the CNC operator just punches the file and it is automatically named, saved, and stored in the correct folder.

Remote sends back Directory Listings

The CNC operator can output a **Remote** “Command” program with the characters “**RMTDIR**” and the DNC system will send back a listing of all of the programs available for downloading in the form of a CNC program itself. The CNC operator then “marks” which program(s) he wants and sends the list back to **Multi-DNC**

Remote lets you Restart programs

Remote also allows you to **Restart** a program from the CNC control when a tool breaks during direct (drip feed) DNC. After the CNC operator stops the flow of data he sends a small program back to the DNC system to tell it to **backup** a given number of lines, backup to a block number or backup to a Bookmark. A Block Number, Bookmark, or code for a number of Repeats can be sent before the requested file name so that you can also **skip forward to start the file at a point other than the top of the file**

File Management Features

Files, Packets, or Jobs

Multi-DNC v7.0 can send **single or multiple CNC program files** to a CNC Controller’s memory or run in a Direct DNC (drip feed) mode.

Or...**Packets** can be created in the Packet Manager and used in **Multi-DNC**. A **Packet** is a series of CNC programs that are associated together for a particular operation along with notes about the operation; or a series of CNC programs that must be run in a specific sequence.

Or...**Jobs** can be created in **Job BASE** and used in **Multi-DNC**. **Jobs** are linked CNC programs, CAD drawings, Tool lists, Setup sheets, Digital pictures, Word documents, PDF files, Excel spreadsheets, and all can be viewed as part of a **Job** in **Job BASE**.

Passwords

Password protection of **up to 20 different Multi-DNC functions** can be set up for individual users. For example, to guard against unauthorized editing of CNC programs or changing of machine setups.

Long File Names

255 character file names are fully supported, without DOS 8.3 limitations. User defined file types are automatically added to the operating system Registry, allowing you to “**double click**” in Windows Explorer for XP Pro, 2003, or 2000 to send files to CNC Controllers or to view files.

Event Logs – CNC Viewer – Database Window – Remote Commands by E-mail

Multi-DNC v7.0 keeps an on-going [Event Log](#) for every Machine as well as an overall "System" event log. The Event Log gives a view of your overall shop's communication activities on a real time basis and you can also see the specific events for each Machine Connection. The [CNC Viewer](#) shows the "live" CNC code as it is sent or received and allows you to stop and start the data flow for Drip Feed DNC operations. The [Database Window](#) shows Machine Events when the Machine Event Monitoring (MEM) option is installed with Multi-DNC. [Remote](#) Commands received by [E-mail](#) are shown in another window.

[System Event Log](#) shows all Events – date and time stamped.

Index	Description	Filename	Date
1003	Start Remote,Fadal CNC 88HS Control		2/9/2004 7:41:06 PM
1003	Abort,Fadal CNC 88HS Control		2/9/2004 7:41:00 PM
1001	Program Number	BRACKET 78	2/9/2004 7:40:37 PM
1003	Remote File Request, Primary folder	C:\Xpert DNC\Send\mill-sample.nc	2/9/2004 7:37:12 PM
1001	Program Number	BRACKET 78	2/9/2004 7:34:54 PM
1001	Start Remote,Haas VF-3 Mill		2/9/2004 7:34:33 PM
1002	Abort,Fadal CNC 88 Control		2/9/2004 6:35:08 PM

Single Block
 Drip Feed
 SUB Expand
 Block Skip
 Auto Split
 Safe Start

[CNC Viewer](#) showing "live" CNC Code sending to a CNC Control.

Index	Description	Filename	Date
N695	G2 X1.7357 Y1.1895 R.5013		
N696	X1.804 Y1.4421 R.5012		
N697	X2.9624 Y2.1075 R1.3411		
N698	X4.206 Y1.2685 R1.3411		
N699	X4.2315 Y1.137 R.3512		
N700	X4.0597 Y.835 R.3512		
N701	G3 X3.5878 Y.0057 R.9645		
N702	X3.9835 Y-.7732 R.9645		

Single Block
 Drip Feed
 SUB Expand
 Block Skip
 Auto Split
 Safe Start

[Database Event Log](#) shows Machine Events when using MEM.

Index	Name	Value	Date
1001	Spindle	Stop	2/9/2004 7:35:09
1001	Spindle	Start	2/9/2004 7:35:03
1001	Cycle	Start	2/9/2004 7:35:03
1001	Parts/Cycle	1	2/9/2004 7:34:54
1001	Program Number	BRACKET 78	2/9/2004 7:34:54
1001	Mode	Run	2/9/2004 7:34:43
1002	Aborted File Transfer	C:\Xpert DNC\Send\Dnc test small.nc	2/9/2004 6:35:08

Single Block
 Drip Feed
 SUB Expand
 Block Skip
 Auto Split
 Safe Start

[Remote Commands](#) received by [E-mail](#) are shown.

Index	Description	Command	Date
1003	REMOTE Command by EMail	%00(SND-FRAME BASE.NC)00%00	2/9/2004 7:49:32 PM
1003	REMOTE Command by EMail	%00(SND-MILL-SAMPLE.NC)00%00	2/9/2004 7:37:10 PM

Single Block
 Drip Feed
 SUB Expand
 Block Skip
 Auto Split
 Safe Start

Event Logs can be printed or exported to HTML file

The **Event Log** can also be printed to the current Windows printer or exported as an HTML formatted file to send to Technical Support to diagnose system issues.

The Editor Features

Multi-DNC CNC Editor for large CNC programs.

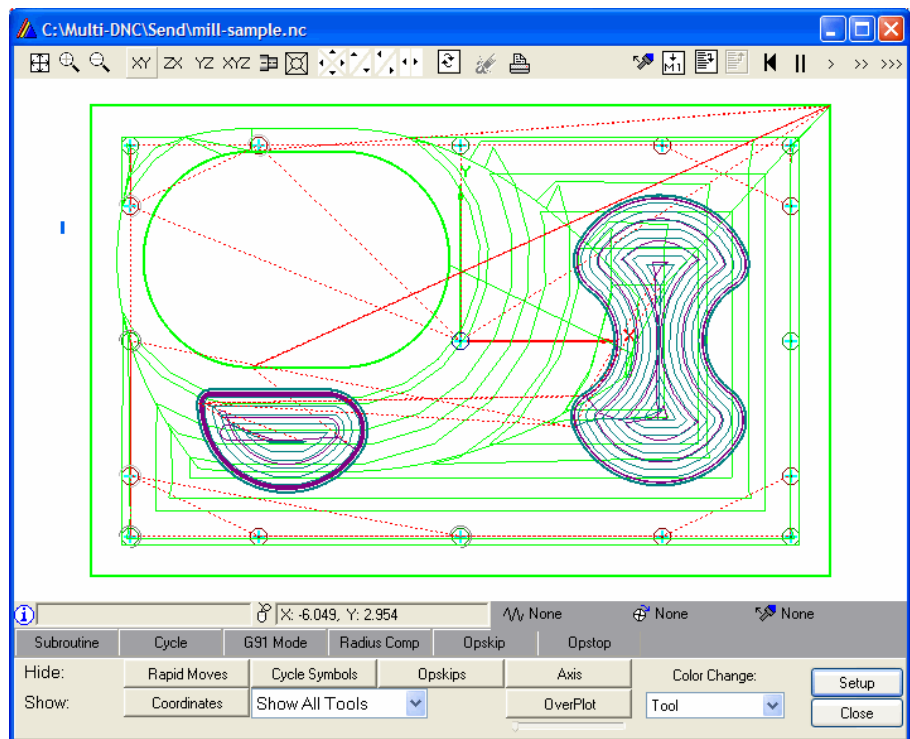
Standard Windows layout

Resequence

Very large CNC code programs (**up to 90 MB**) can be edited using virtual memory. Virtual memory is fast: **a 16 MB CNC program (900,000 lines) is loaded and ready to edit in 3 seconds**, and there are no artificial limitations to the number of lines in an CNC program.

The **Editor** uses all of the **standard Windows interface** functions, so that if you are familiar with using Windows word processors, it will be easy to learn. But many specialized functions for editing CNC programs have been added such as **3-D Backplotting**, **Resequencing**, and **Colorizing**.

Allows you to re-sequence the Program "N" blocks for a selected block or the **entire file**. There are many options for suppressing N blocks on certain lines or only numbering Tool Change lines.



Integrated 3D Backplotting

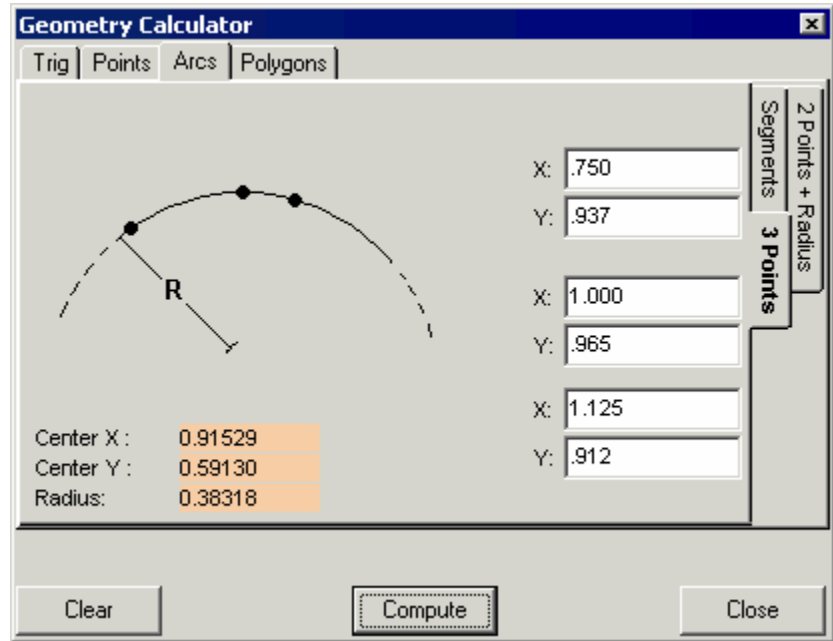
Graphical Icons for simplicity

Displays graphic wireframe tool paths with many viewing options. **Graphic manipulation** is easy with dynamic zoom, pan, and rotation. Program can be single stepped both forwards and backwards. Partial toolpaths (such as a single tool) can be easily shown to lessen the complexity of wireframe graphics. Rapid moves are shown as dashed lines and each tool shows as a different color. Or different colors can be shown based on feedrate or speed changes within the CNC program. Canned cycles can be shown as symbols at each hole location as in the example above.

Multiple files can be open in the **Editor** concurrently, and graphical Icons support all of the most used functions of the **Editor**, such as searching for the next Tool Change, Speed Change, or Feedrate change, or instantly go to the top or bottom of a file.

Graphic Calculators

The **Editor** has graphic calculators to help with right angle or oblique triangle solutions, as well as distances between two points and several arc calculators such as calculating an unknown radius from three points on an arc. All of the calculator “answers” can be pasted back into a CNC program.



Analysis of CNC Programs

The **Editor** has an analysis tool that determines the approximate time that a CNC program will take to run, including individual times for all of the Rapid, Linear, and Circular moves in a CNC program.

“Colorizing” of text

Allow the use of “Colorizing” to show different colors for “**G**” codes, “**M**” codes or **Comments**, making it easier to visually locate particular types of Word Address codes as you are editing the files. The Colorizing is for display purposes only and will not be printed or saved with the CNC code.

HELP!

Context sensitive pop up help is available throughout the DNC system. The 300-page **Multi-DNC Users Guide** is provided in an on-line form using Adobe Acrobat™ 6.0 Reader. It documents the setup and usage of **Multi-DNC** and the **Multi-DNC Editor**, and is also a valuable reference guide for connecting computers to CNC machine tools.

Web Site <http://www.multi-dnc.com>
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