MoxGRAF

Getting Started

Getting Started

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What's next …

- Take a hands-on tour of the Workbench and play with demos

  Walk through an existing project, start a simple project, create a basic distributed project, or create a project having an IEC 61499 program distributed across two resources with detailed instructions in the *Hands On* guide. You access the *Hands On* guide from the Start menu of Windows by choosing **Programs**, then **Mox Group Corporate**, then **Help 5.2**, then **Tutorial**. For details on these demos, see the "How to Use the Demos" section on page 2.

- Read the release notes

  The Readme.txt file relates the significant enhancements and known issues for **MoxGRAF** versions. The Release.txt file lists the bug corrections. You access these files from the start menu by choosing **Programs**, then **Mox Group Corporate**, then **MoxGRAF 5.2**, then **Readme** or **Release** respectively.

- Consult the documentation

  There is a lot more documentation. For more information, see "Documentation Set" on page 6.

- Customize **MoxGRAF** targets

  With the PRO Run-time Development Kit (PRDK), set up one of the available target platforms or develop a target for use with any other platform from a new OS template. You can also define network drivers for IXL communication or for data bindings.

  With the PRO Input/Output (PIO) development kit (included in the PRDK or available separately), add I/O devices to the **MoxGRAF** kernel. You can also develop "C" functions, function blocks, conversion functions, and I/O devices.

How to Use the Demos

You can execute application simulation demos that accompany **MoxGRAF**. These demos, called *BasicDemo*, *Demo*, *FermDemo*, and *Project1* to *Project5*, were copied on your computer during the installation procedure. For *Demo*, you can walk through an existing project by following detailed instructions provided in the Hands On on-line manual. Another demo, *Alarms and Events*, running either on Windows NT or Windows 2000, displaying alarms and events notification, is also available if you installed Alarms and Events Management. For all other demos, MOX Group Corporate invites you to explore.

To use the Demo demo

1. In the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **MoxGRAF 5.2**.

    The Workbench starts.

2. Open the PRJLIBRARY.MDB file in the Demo directory:
    Documents and Settings/All Users/Documents/
    MOX Group Corporate/Projects/MoxGRAF 5.2/Prj/
    Demo/PRJLIBRARY.MDB

3. Follow the instructions in the *Walking Through an Existing Project* section in the *Hands On* on-line manual, accessed from the Start menu by choosing **Programs**, then **Mox Group Corporate**, then **Help**, then **Tutorial**.

To use the fermentation demo

The fermentation demo uses the Advanced Options features.

1. In the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **MoxGRAF 5.2**.

    The Workbench starts.

2. Open the PRJLIBRARY.MDB file in the following directory:
Documents and Settings/All Users/Documents/
MOX Group Corporate/Projects/MoxGRAF 5.2/Prj/
FermDemo/PRJLIBRARY.MDB

3. In the Debug menu, choose **Simulation**.

The simulation begins. You can view variables and trace programs dynamically.

4. To use the **MoxGRAF** OPC DA server:

   a) Minimize the Workbench window.

   b) If **MoxGRAF** has been used previously, verify the MoxGRAF OPC DA server's setup:

      i) In the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **OPC DA Server**.

      The OPC DA Setup window appears.

      ii) Make sure the Directory of Project File field is:
      Documents and Settings/All Users/Documents/
      MOX Group Corporate/Projects/MoxGRAF 5.2/Prj/
      FermDemo/

      iii) Close the OPC DA Setup program.

5. To use a HMI:

   i) Start the HMI and select the MoxGRAF OPC DA server (ICSTriplex.IsagrafOPCDA20.1) as the data source.
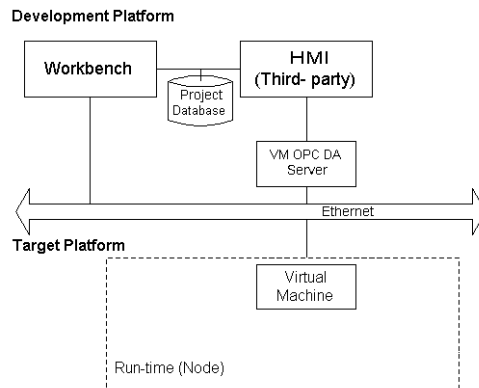
   ii) Browse and use the project variables.

MoxGRAF **Overview**

MoxGRAF is the environment in which you develop then monitor control applications, made up of resources, i.e., virtual machines at run time. These applications are made up of :

I/O points and variables

Control logic in any IEC-61131-3 language as well as the IEC 61499 distribution method.

Figure 1 shows the main and other modules making up the **MoxGRAF** environment.

Since the Workbench is connected to the network making up the control system, once resources are developed, these can be downloaded to target nodes. Resources are made up of variables and IO points as well as programs developed using any of the five languages (SFC: Sequential Function Chart (or Grafcet), ST: Structured Text, IL: Instruction List, FBD: Function Block Diagram, and LD: Ladder Diagram) of the IEC 61131-3 standard or Flow Chart. You can also use the IEC 61499 language, i.e., distribution method, where individual IEC 61499 function blocks belonging to IEC 61499 programs are distributed across multiple resources.

Resources can share variables using internal bindings or external bindings. Internal bindings are between resources within the same project. External bindings are between resources belonging to different projects. When developing IEC 61499 programs, bindings are automatically created between function blocks declared in different resources.

At run time, from the Workbench, you can monitor the state of virtual machines running on their target nodes. You can also choose to run an application in simulation mode.

The PRDK enables the setting up of run-time modules for the available target platforms (Windows NT, VxWorks, QNX, Linux, and RTX) or the development of custom modules for other target platforms. The run-time module, running on a target node using a real-time operating system, is the link to the physical field equipment. This module executes the instructions contained in resources, downloaded from the Workbench. The run-time module holds the virtual machine. The virtual machine, a virtual PLC, reads variables and I/O points, executes your process control application, and writes to variables and I/O points in a cyclic loop.

The PIO enables the addition of I/O devices to the **MoxGRAF** kernel as well as the development of "C" functions, function blocks, and conversion functions. It also enables the development of IXL clients such as the OPC DA server, HiBeam data server, and Workbench for the currently ported target platforms.

You can receive notification of run-time system events from target nodes (run-time modules) using a logger and viewer.

Documentation Set

This *Getting Started* guide is part of the **MoxGRAF** documentation set; an online copy (in PDF format) can be accessed from the **MoxGRAF** Installation window or from the Start menu of windows, by choosing **Programs**, then Mox Group Corporate, then **Help 5.2**, then **Getting Started**. The other components of this set are:

- *User's Guide*, in an online format (HTML) which you access from within the software itself by choosing the Help>Contents command or from the Start menu of windows, by choosing **Programs**, then **Mox Group Corporate**, then **Help 5.2**, then **Help**.

- *Hands On* guide, in an online format (HTML), walking you through an existing application and guiding you in the development of a simple or distributed application, accessed from the Start menu of windows, by choosing **Programs**, then **Mox Group Corporate**, then **Help 5.2**, then **Tutorial**.

- *Release Notes (Readme.txt* and *Release.txt)*, in online format (text), containing the latest information on **MoxGRAF**, are accessed from the Start menu of windows by choosing **Programs**, then **Mox Group Corporate**, then **MoxGRAF 5.2**, then **Readme** or **Release** respectively.

- *Developer's Guides*, in an online format (HTML), helping you with the development of **MoxGRAF** add-ons: Target Definition Builder, PRDK, and PIO. The PRDK and PIO tools are available separately.

You read PDF (Portable Document Format) documents using Adobe Acrobat Reader 4.0 or later. This software is included on the **MoxGRAF** CD-ROM, in the Acrobat Reader directory.

System Requirements for Development Platforms

Minimum Requirements

To use **MoxGRAF**, you need the following hardware and software:

- A computer with a Pentium IV or compatible processor, running at 350 MHz (depending on the operating system)
- 128 MB of RAM (depending on the operating system)
- A hard disk with 300 MB of free space (once the operating system is installed)
- A CD-ROM drive on the Windows network, for installation purposes only
- A VGA monitor having at least 800 X 600 pixels screen resolution
- The Windows 2000 with SP 4 or Windows XP with SP2 (both with Power User priveleges), Windows Vista
- A serial port or the TCP/IP network

Additional Recommendations

For optimal performance, MOX Group Corporate recommends the following hardware and software:

- A computer with a Pentium IV or compatible processor, running at 1 GHz or higher (depending on the operating system)
- 512 MB of RAM (depending on the operating system)
- A hard disk with 1 GB of free space
- An SVGA monitor having 1024 X 768 pixels screen resolution
- A TCP/IP network (instead of a serial port)
- The Windows 2000 with SP 4 or Windows XP with SP2 operating system (both with Power User priveleges), Windows Vista

Installation on Development Platforms

From the **MoxGRAF** CD-ROM, you can choose to install the following items:

- **MoxGRAF** products

- Third-party products for use with **MoxGRAF**

- Acrobat Reader, required to view the PDF documents contained in the documentation

After installing **MoxGRAF** products, read the release notes included with the product. These are accessed from the Start menu of windows by choosing **Programs**, then **Mox Group Corporate**, then **MoxGRAF 5.2**, then **Readme**.

To install MoxGRAF products

MOX Group Corporate recommends disabling all anti-virus software during the installation process and using all default folder destinations.

Note: When installing on Windows 2000, Windows XP, or Windows Vista make sure the file signature verification is not set to block. You access the file signature verification options in the Control Panel by double-clicking System, then on the Hardware tab, clicking **Driver Signing**.

1. If you use Windows NT, Windows 2000, Windows XP, or Windows Vista, log in with a user name having administrator rights.

2. Place the **MoxGRAF** CD-ROM in the drive.

3. Do one of the following steps:

    ▪   If autorun is enabled on your computer, proceed to step 4.

    ▪   If autorun is not enabled on your computer, in Windows Explorer, locate the **MoxGRAF** CD-ROM and double-click **Autorun.exe** (in the root directory).

4. On the installation window, click once on the **MoxGRAF 5.2 products** option.

5. Follow the on-screen instructions.

6. When the installation is complete, restart your computer.

To uninstall MoxGRAF components

You can choose to uninstall individual **MoxGRAF** components. When uninstalling multiple components, you can choose to restart your computer after removing all components. Uninstalling **MoxGRAF** products using the **MoxGRAF Products Uninstaller** provides a thorough removal of installed programs and files, whereas, uninstalling using the Add\Remove Programs utility leaves behind certain files, projects, and shortcuts.

Note: After uninstalling, make sure to restart your computer before attempting to install any other **MoxGRAF** component.

1. If you use Windows NT, Windows 2000, Windows XP, or Windows Vista, log in with a user name having administrator rights.

2. From the Start menu of windows, choose **Programs**, then **Mox Group Corporate**, then **Uninstall**, then **MoxGRAF Products Uninstaller**, then the component to remove from the computer.

The selected component is removed from the computer.

How to License MoxGRAF

MoxGRAF you just installed allows you to build control applications made up of virtual machines running on hardware components, called target nodes.

You can use **MoxGRAF** components for a trial period of 30 days before requiring licensing. To have a fully operational version of the product, you need to license it.

When using third-party library projects, you need to enable their use by licensing them. However, you initiate the licensing of these projects from within the Workbench either when adding the dependency or at any other time.

Licensing is available as dedicated licenses or floating licenses. Dedicated licenses are installed on a specific computer running **MoxGRAF**, whereas, floating licenses are distributed across a network for use with any computer running **MoxGRAF**, to a maximum of the number of licenses at any given time. You can combine dedicated and floating licenses on a network.

For dedicated licenses, you can license using either a hardware or software key. When using a hardware key, a dongle which you place on the parallel or USB port of your computer running **MoxGRAF** is delivered pre-programmed with the selected feature set. For floating licenses, you can also license using either a hardware or software key. When using a hardware key, a dongle which you place on the parallel or USB port of a network computer, is delivered pre-programmed with the number of floating licenses of the selected feature set. When using a software key for dedicated or floating licenses, you need to obtain an authorized license. You license products in the License Manager.

Note: When using a hardware key for a dedicated license from previous versions, you need to have the dongle reprogrammed to use this latest version.

MoxGRAF is available as a feature set:

- Essential, one Workbench and one run-time module running a single virtual machine

- Multiscan, one Workbench and one run-time module running multiple virtual machines

- Distributed, one Workbench and multiple run-time modules running multiple virtual machines

Although licenses are only valid on a single computer, you can transfer them from one computer to another.

To access the License Manager

To modify licensing, you need to log in with a user name having administrator rights. On Windows Vista, users not having administrator rights can view licensing information.

▶ From the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **Licensing**.

Adding Licensing

You can obtain authorized dedicated and floating licenses for **MoxGRAF** components.

To obtain authorized licenses for MoxGRAF

You need only one set of user codes and registration keys when licensing **MoxGRAF**.

1. On the Add Licensing tab, from the list of available components, select the components requiring licensing.

2. Click —> to move your selection to the list of Selected Components.

    For **MoxGRAF**, you will be prompted to select a feature set: Essential, Multiscan, or Distributed.

    A setup code and user codes appear in their respective fields.

3. Send the licensing information:

    a) Click **Send**.

        A pre-addressed email appears holding the setup code and both user codes into which you need to include your contact information and purchase order number. For additional purchases, you need to provide a credit card number.

    b) Include all required information then send the email. When ordering floating licenses, also include the number of license servers and the number of floating licenses.

    The original setup code and user codes as well as a registration keys will be returned via e-mail.

4. Upon reception, make sure the setup and user codes are the same as those in the License Manager window, then copy and paste the registration keys in their respective fields.

5. Click **Proceed**.

    If licensing is successful, MoxGRAF and the other selected components appear greyed in the Selected Components list.

When licensing is complete, stop then restart MoxGRAF and the other newly licensed components.

Updating and Upgrading Licensing

You may need to update software or hardware licensing when passing from a previous version to a more current one. You can also upgrade licensing to change feature sets. When using a hardware key, you need to have the dongle reprogrammed (remote updating and upgrading is available).

To update or upgrade licensing

Updating licensing is the same for both software and hardware licenses. Upgrading hardware licenses is also the same as updating licensing. For software upgrades, you need to remove the previous license then add the license with the new feature set.

1. From the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **Licensing**.

   On the Add Licensing tab, note that the previously licensed components are listed in the Selected Components list.

2. Send the licensing information:

   a) Click **Send**.

   A pre-addressed email appears holding the upgrade setup code and both user codes into which you need to include your contact information and purchase order number. For additional purchases, you need to provide a credit card number.

   b) Include all required information then send the email.

   The update setup code and user codes as well as a registration keys will be returned via e-mail.

3. Upon reception, make sure the upgrade setup and user codes are the same as those in the License Manager window, then copy and paste the registration keys in their respective fields.

4. Click **Proceed**.

The more recent version of the selected components is available for use.

Transferring Licensing

You can transfer licensing for **MoxGRAF** and other licensed components from one computer to another.

To transfer a license to a new computer

Transferring a license from one computer to another requires creating a license transfer disk, then removing the license from the currently licensed computer and copying it to this transfer disk before it can be installed on the new computer. The floppy disk must be formatted and blank.

1. From the new computer, prepare the license transfer disk:

   a) Install the licensed components to transfer.

   b) Insert a floppy disk in the computer's drive.

   c) From the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **Licensing**.

   d) On the Transfer License tab, select the drive holding the floppy disk, then click **Create Transfer Disk**.

   The license transfer disk is created.

   e) Remove the license transfer disk from the new computer's drive.

2. Transfer the licenses from the currently licensed computer to the license transfer disk:

   a) In the currently licensed computer's drive, insert the license transfer disk.

   b) From the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **Licensing**.

    c)   On the Transfer License tab, select the drive holding the transfer disk, then click **Transfer Licenses to Disk**.

The licenses are removed from the computer and copied to the license transfer disk.

    d)   Remove the license transfer disk from the computer's drive.

3. Install the license on the new computer:

    a)   In the new computer's drive, insert the license transfer disk holding the licenses.

    b)   From the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **Licensing**.

    c)   On the Transfer Licensing tab, select the drive holding the transfer disk, then click **Complete Transfer**.

The licenses are transferred to the new computer and transferred components are activated.

Removing Licensing

You can remove authorized licenses from a computer.

To remove authorized licenses

1. From the Start menu of Windows, choose **Programs**, then **Mox Group Corporate**, then **Licensing**.

2. On the Remove Licensing tab, from the list of licensed components, select the components for which you want to remove licensing.

3. Click —> to move the components to the list of Selected Components.

A setup code as well as user codes appear in their respective fields.

4. Send the licensing information:

   a) Click **Send**.

   A pre-addressed email appears holding the setup code and both user codes and into which you need to include your contact information and order number.

   b) Include all required information then send the email.

   A user code as well as registration keys will be returned via e-mail.

5. Upon reception, enter the user code and both registration keys into their respective fields, then click **Proceed**.

   A confirmation code appears in the Confirmation Code field.

6. Reply to the email including the Confirmation Code as well as your name, address, and telephone number.

Setting Floating Licenses

When using floating licenses with **MoxGRAF**, you need to set a primary license server on the network. You can choose to add a secondary license server on the same network. You set primary and secondary license servers by specifying the IP address of the computer on which each server is installed and the port number to use and whether to manually or automatically start the server. You also need to specify the IP addresses of the license servers for each **MoxGRAF** instance that uses the floating licenses. While running license servers, you can obtain a report providing information about the license servers such as their IP address and license usage.

The primary and secondary servers cannot simultaneously distribute licenses across a network.

You can start license servers from the License Manager, from a command line, or from a scheduled task.

To set floating licenses

1. On the computers running the primary and secondary license servers, indicate the IP address and port information:

   a) From the Start menu of Windows, choose **Programs**, then Mox Group Corporate, then **Licensing**.

   b) On the Set Floating Licenses tab, specify the IP address and port for the primary license server, then specify whether to start and stop the server manually or automatically.

      When choosing to manually start and stop the license server, you need to click **Start Server**.

   c) To use a secondary license server, specify the IP address and port for the secondary server, then specify whether to start and stop the server manually or automatically.

2. On each computer running a **MoxGRAF** instance, specify the IP address of the primary and secondary license servers.

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    a) From the Start menu of Windows, choose **Programs**, then Mox Group Corporate, then **Licensing**.

    b) On the Set Floating Licenses tab, specify the IP address of the primary and secondary license servers.

3. To obtain a report providing information about the license servers and license usage, click **Report**.

To start license servers from a command line or a scheduled task

The primary or secondary license server can be started from a command line. The following examples indicate the starting of the primary and secondary license servers where these are installed in the default location.

```
"C:\Program Files\Mox Group Corporate\Shared\
Licensing\LicenseManager50.exe" –AutoPrimary
```

```
"C:\Program Files\Mox Group Corporate\Shared\
Licensing\LicenseManager50.exe" –AutoSecondary
```

The primary and secondary license servers can be started from a scheduled task to run at system startup. Each server requires its own task.

1. From the Control Panel, access **Scheduled Tasks**, then **Add Scheduled Task**.

2. In the Scheduled Task Wizard, follow the on-screen instructions to set the LicenseManager50.exe program to start when the computer starts.

3. When the task is created, in the Scheduled Tasks section of the Control Panel double-click the new task.

4. In the Run field, define the command line for the primary or secondary license server.

Technical Support

Contacting Us

For technical support on **MoxGRAF 5.2**, visit our web site at http://www.mox.com.au or contact us:

- Send an e-mail to support@mox.com.au

- Send a fax to +61 7 3713 7566

- Call +61 7 3713 7588

- Write to us:

  MOX Group Corporate
  6 Enterprise Street
  Richlands, Queensland
  4077
  Australia