

Desktop virtualization resolves DTM deployment hassle



The virtualization of server systems is one of the top trends in the IT industry. But also the virtualization of workstation desktops gains momentum. M&M Software together with customers and supported by hands-on experience from project business has developed an innovative concept called FDT Remote Server which is based on these technologies. The solution allows the seamless integration of diagnostic functions of external systems into existing SCADA systems and their context-driven display in the event of a malfunction. This allows the plant operator to react faster and well-directed on critical situations in the plant.

The FDT-Standard not only eases the engineering and parameterization of intelligent field devices, it also assists the plant operators and the maintenance engineers with a host of diagnostic functions in the form of field device-specific Graphical User Interfaces (GUI). When the control system reports an error for one field device, the plant operator can analyze in detail the condition of this particular field device online by using the dialogues of the respective Device Type Manager (DTM). Ideally for a reported fault the appropriate DTM user interface is automatically offered by the control system.

FDT in its present form sometimes reaches its limits in large-scale plants with many operator stations in different sections. Besides the FDT frame application, all DTMs used in the project have to be installed in any computer system where the user interfaces of these DTMs should be displayed. This distribution of the components to many computer systems and especially any necessary update of these software components are time-consuming and error-prone.

It is possible to overcome these problems elegantly with the use of the latest technologies for desktop virtualization. For this purpose, M&M Software has developed the concept of the Remote FDT Server which is based on the smart combination of virtualization technologies with in-house developed *fdtCONTAINER* products.

Instead of an installation in all operator stations, all necessary DTMs are only installed in one central PC system, the Remote FDT Server, together with the *fdtCONTAINER application*, which is used to manage the plant's FDT projects.

If one operator station requires the specific view of a certain DTM during the plant operation, the corresponding component of the DTM is not started locally at the control station. Instead a message is sent to the Remote FDT Server which starts the requested view locally in an FDT-frame application and publishes the content via Remote Desktop. This Remote Desktop is then displayed in a window on the operator station monitor. All input by the operator inside of this window is forwarded to the surface of the Remote FDT Server.

Figure 1 shows a possible usage scenario for the Remote FDT Server.

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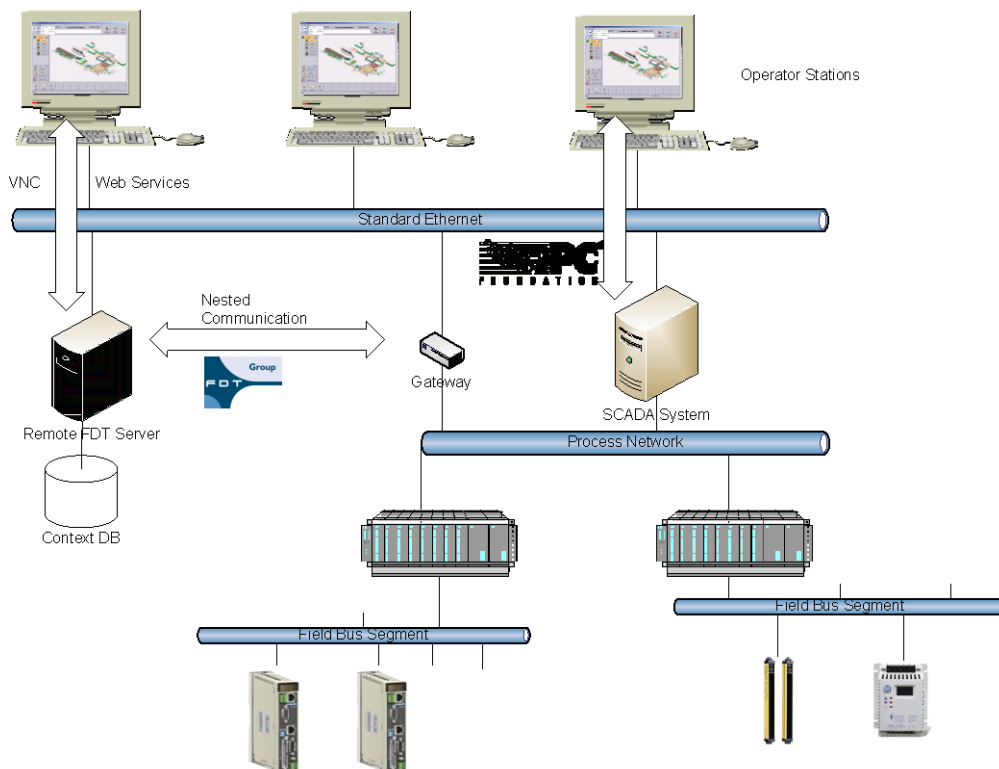


Figure 1: Hardware and Communication architecture

The Remote Desktop functionality is provided by the VNC (Virtual Network Computing) technology which is based on open standards for desktop virtualization and supports both physical computers and virtual machines. There are client components for a variety of operating systems available for VNC. DTM user interfaces can be visually integrated into practically every SCADA-HMI and also into web-based systems. And this not only on Windows OS platforms.

The concept includes a lean display component for the client-side, which allows an easy integration of the Remote Desktops in existing SCADA Systems. The used FDT frame application is modified in such a way, that it only provides those functions which are necessary and permitted for operation mode.

Additionally the Remote FDT Server implements Web Services. These Web Services allow the client system (in this case the operator station) to remotely control the displayed view of the FDT frame application on the Remote FDT Server. So the best-fitting view for the current error context is already selected and will be shown immediately after the start of the display component on the client side.

A context database on the Remote FDT Server contains information about which DTM functions are to be displayed for which error context. This database can be generated automatically from the existing engineering data. The project-specific configuration work for the Remote FDT Server is thus minimized.

However, the provision of certain engineering functions via Remote Desktop is not limited to FDT only. In principle every application can be integrated into such a Remote Server. Even

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for the case that the planned application for integration does not by itself provide an appropriate programming interface which allows remote control. In this case the remote control of the user interface views can be done from outside and without modification of the application by using UI Automation. UI Automation is a Microsoft technology which is mainly used for the automatic testing of Windows applications. It can also be used in general for the remote control and automation of applications.

This converts the Remote FDT Server into a general Remote Operation Station. In the next extension level it can additionally serve as Host for Virtual Machines (VM). A separate VM with the respective necessary operating system version is provided for each application. Given the appropriate hardware base, this combination of different technologies results in a highly robust application architecture.

The Remote Operation Station is a central unit which provides useful diagnostic functions from existing engineering tools for the distributed use in the plant. The solution is flexible and adaptable to different requirements and also integrates very well into existing system environments. The end-user benefits in the sense of much less service- and maintenance effort for the installed DTM base.

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For many years, international companies such as Bosch, Endress+Hauser, Omron, Foxboro and Sick have been placing their trust in M&M Software.

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