



GENESIS64 – Communication through a Firewall, DMZ or Cloud



APPLICATION NOTE

August 2014

Description: Guide to setting up communication through a Firewall, DMZ or the Cloud.

General Requirement: Basic knowledge of GENESIS64, networking/firewall knowledge.

Introduction

Many times there is a firewall that an outside client must bypass to access data located on an internal server. This document will describe how to achieve this by using so called **Edge Server** situated in the Cloud, Web Server in DMZ, or eventually on a Firewall.

Edge Server is actually a FrameWorX Server with platform services which does nothing other than forwarding the incoming traffic to another FrameWorX Server located on the local network. The FrameWorX Server running on the internal network then handles everything and sends the responses back to the client via the Edge FrameWorX Server.

The big advantage is that you don't need to open any new ports in your firewalls, because all the public communication runs via HTTP (port 80).

NOTE: In fact you can specify other ports or different communication channel such as HTTPS or NET.TCP.

We will assume that you have following setup (see network diagram which is shown below):

- **Edge Server** with an external IP address (193.85.188.171).
- **FrameWorX Server** (GENESIS64 Application Server) inside your intranet with an internal name/IP address (172.16.0.241).
- **Firewall** (Firewall) between Edge and FrameWorX Server). Traffic goes over firewall, but it is not necessary to open a new port unless you want to use a different port or communication channel.
- **Client PC** (WebHMI Client)

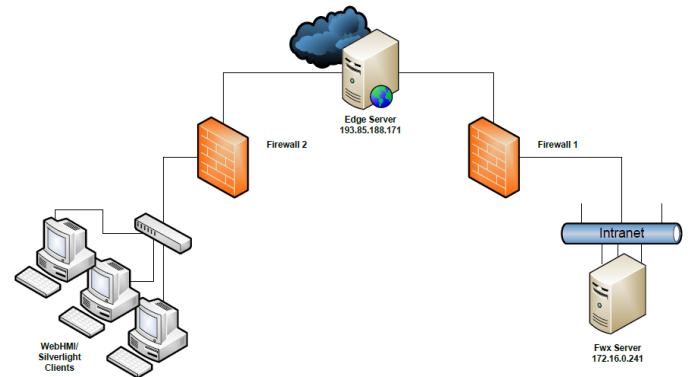


Figure 1 - Network diagram for Edge Solution

Setting up the Edge Server

1. **Start Workbench** by clicking on Start → All Programs → ICONICS → Workbench.
2. Click on **Tools** → **Platform Services**.
3. Change the Server Role to **Forwarding** as shown in Figure 2.
4. Click on the **Advanced** tab and type in the name or IP address of your FrameWorX Server machine (the internal PC with FrameWorX Server). See Figure 2 for more details.

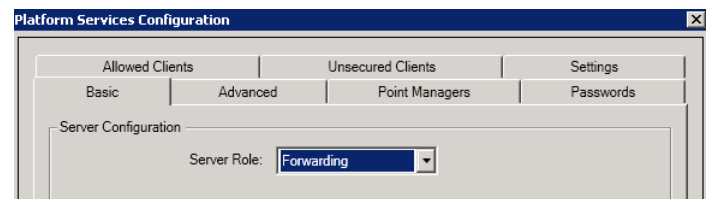


Figure 2 - Adding the forwarded server on the Edge Server

5. Click **OK** to save the changes.
6. Restart **ICONICS FrameWorX** via the Services Control Panel.

Setting up the FrameWorX Server

For security reasons it must be the internal FrameWorX server which initiates the connection to the Edge server.

1. **Start Workbench**.
2. Click on **Tools** → **Platform Services**.
3. Click on the **Advanced** tab.
4. Check the box for "Enable Reporting to Server(s) in Azure or DMZ".
5. Type the name or IP address of your Edge server into the list of Server URLs.



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NOTE: In order to improve communication speed we recommend using NET.TCP communication channel between the Edge server and the application FrameWorX server. In order to do that you have to specify the protocol and port in the name of the Edge server such as "net.tcp://EdgeServer:9778/NetTcp" instead of stating "EdgeServer" when following step 5.

If the default port 9778 for NET.TCP communication is not convenient you can modify it. You just need to edit the Edge Server IcoFwxServer.exe.config file which is located in C:\Program Files\ICONICS\GENESIS64\Components. Find the section with "the setting for reverse Fwx communication" and modify the port of the above mentioned protocol. Restart both FrameWorX Servers.

- Click **OK** to save the changes. You should see your Edge server in the list as shown in **Error! Reference source not found.**

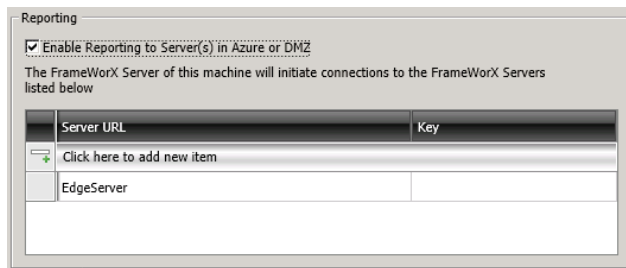


Figure 3 - Enabling Reporting to Edge Servers(s)

- Restart **ICONICS FrameWorX** via the Services Control Panel.

Setting Up the Clients

- Start Workbench on the Edge server
- Click on **Tools → FrameWorX Server**.
- Change the server node to your Edge Server name or IP address and select the HTTP protocol (port 80) as shown in Figure 4 unless you want the clients to use a different channel or port.

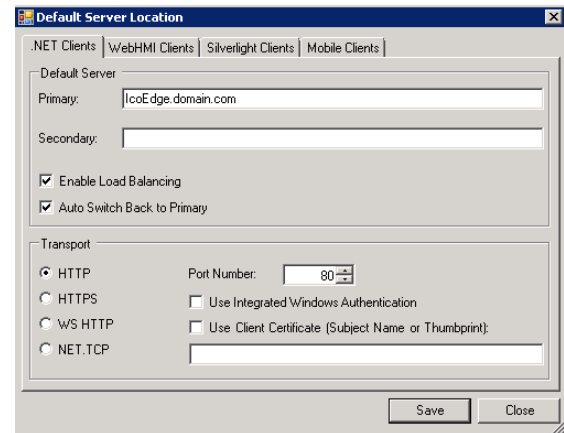


Figure 4 - Settings for .NET Clients

NOTE: .NET Clients tab influences only local .NET clients such as Workbench Classic or GraphWorX64. It has no effect on remote .NET clients because they read the settings from their respective local configuration files. If you have such clients modify their Default Server Location settings to use the Edge Server.

- Click **Save** to apply the changes.

NOTE: The HTTP protocol is slower than NET.TCP. For more details about protocols and ports used by ICONICS products, see the Knowledge Base article KB-2820.

- Click on the **WEBHMI Clients** tab and make sure that the right server node/protocol/port is configured. By default it is NET.TCP selected, but you can change it to HTTP if necessary.
- Click **Save** to apply the changes.
- Repeat step 5-6 for **Silverlight Clients**. Note that the HTTP protocol is already set as default, because Silverlight clients run best over this protocol.

Reading Data via Edge

You can now connect .NET, WebHMI, and Silverlight Clients to the Edge server. To test this, follow these steps:

- Create new a GraphWorX64 display with some data points from your GENESIS64 Server. Save it and publish it to your web server (most likely your Edge server is also your web server).
- Open your client and connect to the display you just published. You will see the OPC points and controls with data coming from your GENESIS64 server through the Edge server.



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Licensing and Security

There is no specific license required for Edge server. All the requests for license from clients are forwarded.

Security context cannot be forwarded in the current version due to requests aggregation. If you want to deploy ICONICS security you have to synchronize the security configuration on the Edge server with security configuration on the application server.

GENESIS64 through DMZ or the Cloud

Configuring an Edge server to work through DMZ or the Cloud is similar to the steps above. For more details how to configure GENESIS64 in the Cloud (e.g. Microsoft Azure) refer to Cloud documentation and application notes.