**Salto Defualt ports**

Outgoing: 8095/tcp

Incoming: 8096/tcp

The following information is to assist IT professionals when configuring Gallagher Command Centre to connect through routers and firewalls.

**Communication between Gallagher Controllers and Gallagher Command Centre Server PC (ALL Versions):**

**Keyword Decimal Description Reference**

ftp 21/tcp: File Transfer [Control] Software download to FTController (vEL5.21 or lower)

bootps 67/udp: Bootstrap Protocol Server BootP

bootpc 68/udp: Bootstrap Protocol Client BootP

www 80/tcp: World Wide Web HTTP Internet Explorer to FTController Connection

Cardax 1072/tcp: CARDAX FTController Connection (enable both ways)

**Notes:**

I. CARDAX port 1072 is required for Gallagher Controller to Server communications

II. FTP ports 20 and 21 are only required for updating FTController software via CCFT Server

III. BootP ports 67/68 are only required if BootP/BootStrap Protocol required for assigning FTController IP addresses

IV. WWW port 80 is only required if web browsing to FTController required (Controller Dip Switch 1)

V. If a gateway is defined for the Controller, ICMP must be enabled between the FTController and its gateway as the

FTController will first ping the gateway if it needs to send a message to an address outside of its subnet.

**Communication between Gallagher Controllers and Gallagher Command Centre Server PC (ALL Versions):**

**Keyword Decimal Description Reference**

epmap 135/tcp DCE endpoint resolution Client Connection

(various) ????/tcp DCOM (5 x dynamic ports) Licence Verification, Alarms and Events, CCNTSAD

Cardax 1072/udp CARDAX Intercom

(various) ????/udp ???? Camera

**Multi-Server (vEL6.00 or later):**

**Keyword Decimal Description Reference**

configurable 4840/tcp GALLAGHER Multi-Server OPCUA connection

**Visitor Management Client (vEL5.21 or later):**

**Keyword Decimal Description Reference**

microsoft-ds 445/tcp Microsoft-DS Service ClickOnce

configurable 4243/tcp GALLAGHER Visitor Mangement Client

**Premier Client (vEL7.00 or later):**

**Keyword Decimal Description Reference**

microsoft-ds 445/tcp Microsoft-DS Service ClickOnce

configurable 4840/tcp GALLAGHER Premier Client

**Sagem Biometric Reader (vEL5.10 or later):**

**Keyword Decimal Description Reference**

Morpho (Sagem) 11010/tcp Morpho (Sagem) Command Centre to Reader communications

**Notes:**

 Port 135 is required for initiating Client/Server connection

 Port 1072 is only required for the Gallagher Command Centre Client connection if intercom functionality is required.

 Restricting DCOM dynamic port assignment is discussed below. See also Testing DCOM below.

 Command Centre Camera live viewing - currently the camera to client UDP port is dynamically assigned and there is no mechanism for restricting it.

 In a WAN environment, DNS (or at least HOSTS file) may need to be enabled/configured

 For Premier Client, TCP port 445 is only required if using ClickOnce. If client files are copied it is not required.

**Testing port 1072 using Telnet**

In a situation when ports are restricted on the network, you can ping the Gallagher Controller but it won't come on-line, you can use telnet to test if port 1072 has been opened.

The following 2 examples show a failed and OK telnet connection to a Gallagher Controller from the Gallagher Command Centre Server PC.

**Note:** This must work both ways - from the Server to Gallagher Controller and Gallagher Controller to Server.

 **Failed Connection:** C:\TELNET <FTC IPAddress> 1072

Connecting To <FTC IP Address>... Could not open a connection to host on port

1072: Connection failed

 **OK Connection:**  C:\TELNET <FTC IPAddress> 1072

(screen blanks, cursor top left for 25 seconds)

Connection to host lost.

**Testing DCOM**

The following may be used for troubleshooting a client PC failing to connect to the Gallagher Command Centre server. This may be either unable to logon or partial performance of the client

e.g. no events or alarms, MLWs not updating (Hardware window blank or not updating), Find tool not finding items, etc.

 For a network where the TCP/UDP ports have been restricted ensure you have allocated a DCOM range for use of the client PC(s) as per "Restricting DCOM port assignments" below,

you will require 5 ports reserved for each concurrent client connection that is required.

 If the site has a DNS sever, ensure that its IPAddress is configured in "Network and Dial-up Connections\Local Area Connection - Properties\Internet Protocol (TCP/IP) - Properties\".

 If there is no DNS server available then add an entry in the HOSTS file of each PC in the following format: <IPADDRESS> <HOSTNAME>

e.g. If the Server was called FTSERVER and its IPAddress was 192.168.1.1 then the entry in the Client PC's HOSTS file would be:

192.168.1.1 FTSERVER

The HOSTS file is located in the <SYSTEM>\SYSTEM32\DRIVERS\ETC directory where <SYSTEM> is normally C:\WINNT or C:\WINDOWS

 Reboot the PC to ensure all changes take effect

 Ensure that you can ping the PC host names (client to server and server to client).

 Test the DCOM connection. This can be by either starting the Gallagher Command Centre Client and ensuring events/alarms/items are displayed or there is a Microsoft utility available for testing DCOM between 2 pc's. It can be downloaded from the Microsoft Web

site by searching for the Microsoft Knowledge Base Article: 259011 - SAMPLE: A Simple DCOM Client Server Test Application.

**Note:** DCOM will not work thru a firewall where NAT is used. See Microsoft Knowledge Base article 154596

The client must be able to reach the server by its actual IP address.

You cannot use DCOM through firewalls that do address translation (i.e. where a client connects to

virtual address 198.252.145.1 which the firewall maps transparently to the server's actual address

of, say, 192.100.81.101). This is because DCOM stores raw IP addresses in the interface

marshaling packets and if the client cannot connect to the address specified in the packet, it won't

work.

**Testing network connectivity using PING**

If you are using PING to test the connectivity of a network using routers/firewalls, ensure that these connectivity devices will pass ICMP packets.

**Restricting DCOM port assignments:**

The dynamic ports are required for DCOM (negotiated by Microsoft DCE RPC end-point mapper for its DCOM services). Up to 5 DCOM ports may be required per concurrent client connection.

The Client/Server establishes a connection initially using TCP port 135 which then negotiates DCOM port assignments for further communications. The architecture of DCOM allows it to use dynamic port

assignment for communication, however it is possible to restrict the range that it will use for particular cases e.g. firewalls/routers.

**The method for restricting the dcom port range is as follows:**

 Select Start\Run and enter "dcomcnfg"

 Windows XP only

· Expand "Component Services"

· Expand "Computers"

· Right-Click on "My Computer" and select "Properties"

 Select "Default Protocols" tab

 Select "Connection-Oriented TCP/IP" and click on "Properties"

 Select "Add Port Range" and add a range of port numbers to use e.g. 5001-5005 (ensure any other applications running on the PC are not using these ports and allow at least 5

ports per each client that will be required to connect to the server at any one time (concurrent connections)). For example if the site had 4 workstations 20 ports would be

required, in this case these 20 ports would need to be added. e.g. 5000-5020.

 Select OK and OK.

 This is required on the Server PC and may be required on the Client PC's (as the Client can initiate callbacks), where this is the case the same port range should be added to the Workstations as the server, e.g. 5000-5020.

More information is available from the Microsoft web site by searching for the Knowledge Base Article: 154596 - HOWTO: Configure RPC Dynamic Port Allocation to Work with Firewalls.

**Additional Information:**

The following applications and utilities may also assist with the configuration, networking or use of Gallagher Command Centre.

I. DNS (or HOSTS file if DNS unavailable)

II. Time Synchronisation - Intercom (Client PC must be within 30 seconds of Server for

III. Intercom to work at Client PC e.g. NET TIME command (port 445?) DHCP (If broadcast is disabled but directed broadcasts are allowed - BootP for FTControllers (v2.xx Command Centre and above)

IV. Terminal Services (thin client method for connecting to Command Centre)

V. VPN (secure method for connecting to Command Centre via a public network)

VI. DCOMCNFG (Restricting DCOM port assignments)

VII. IPCONFIG (networking)

VIII. PING (networking)

IX. NBTSTAT (networking)

X. ARP (networking)

XI. RDP5.1 (required if sound redirection is required to terminal services client - currently only supported on Windows XP)

**Changing the Listen Port**

This is required when the FTAPI or Middleware Framework is installed on the same PC as the Command Centre Server Software.

**To Change the Controller Port, use the following procedure:**

 Stop the Cardax FT Command Centre services.

 Open up the registry editor and browse to HKEY\_LOCAL\_MACHINE\SOFTWARE\Cardax\Command Centre FT

 Create a new DWORD value and rename it to ListenPort.

 Edit the value of ListenPort by selecting the **decimal radio** button and then typing in the desired port number.

**Note:** The valid range is **1024 to 65535**. Do not try to use port numbers outside of that range, or use 1072 as this will be used by the FTC Router Service.

 Start the CCFT services and logon to Cardax FT Command Centre.

**Note:** All of the Controllers will appear as offline and will not come online by themselves. Select “Push Configuration” on each Controller in turn.

**Notes:**

If multiple Cardax FT Controller communications servers are being used then steps 1 to 4 need to be repeated for each one.

When using a port number other than the default of 1072, if a Controller is restarted with DIP switch 2 on then it will be unable to communicate with the server until an operator selects ‘Push Configuration’ on that Controller.

This causes a connection to be initiated by the server rather than from the Controller and tells the Controller what port number to connect to.

The command netstat an can be used to check that the controller service is indeed now listening on a different port number, or after Step 1 to initially Check that some other program is not already listening on the port number you intend to use.

All Controllers and the Cardax FT Controller API all still talk to each other using port 1072. It is only communication with the server that is now on a different port.