

GMCE IP Addressing Scheme

For Magnus VLF GMCE Devices and Workstations

Document Number
719-00738A

09 Aug 2006

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Revision History

Revision	Date	Author	Comments
1	July 15,2006	Jose M. Delgado	

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INTRODUCTION

The new GMCE (Gigabit Master Control Electronics) board uses TCP/IP to communicate externally to the workstation (Copper port) and Thermal 3 (Fiber port) head.

A single GMCE board or multiple GMCE boards will "bring themselves online" on the TCP/IP Ethernet network by using the BOOTP protocol provided by a single NT service module called CreoBOOTP Server. The Everest (TH3) thermal head uses the same scheme.

This startup protocol allows the GMCE board to obtain the following information:

- IP Address x 2 (1 for Copper port, 1 for Fiber port)
- Subnet Mask x 2 (1 for Copper port, 1 for Fiber port)
- Gateway IP Address x 1
- Windows Workstation IP Address
- Product specific main firmware binary file to download
- Product specific startup non-volatile parameters binary file to download (for STG subsystem)
- Current Time and Data (Workstation time/date)

GMCE based systems actually use a set of smaller subnets, using additional IP addresses depending upon how many GMCE boards (and possible TH3 heads) are in a system.

Table 1 shows how a system that could be using up to 12 GMCEs uses the IP addresses and net masks. With our IP assignment scheme, we just need 48 unused IP addresses to configure a machine with 16 GMCE devices and 16 workstations. This can be built out of any class C subnet. The table shows a sample configuration of 12 workstations and 12 GMCE devices.

2. PURPOSE

This document discusses the IP addressing scheme used in the Magnus VLF GMCE device and the associated workstation. The workstation servers can have up to 3 NIC cards that need to be configured with IP addresses and subnet masks. The NIC cards are:

- LAN card for connection to the customer's network. This is normally a Gigabit card in the more recent Dell servers, with the PE 2800 having 2 Gigabit ports. These ports are built-in in the mother board.
- GMCE Intel PRO/1000 MT Server Adapter. This is an additional PCI-X NIC card for the exclusive use of the GMCE.
- Edge Detect Camera Intel PRO/100 M Desktop Adapter. This is to be used by field engineers when connecting their laptops to workstation located in a separate area from the device to adjust and troubleshoot the edge detect camera.

3. SETTINGS

3.1 Local Area Network NIC card settings

The settings for this card will depend on the customer's choice of IP addressing class and subnet requirements. These settings in most cases will be done automatically through DHCP.

Note: The 169.254.255.100 – 110 range of addresses will be used for the RRAS address pool as a default. It should always be changed on site by the installer to match the site's LAN subnet.

3.2 GMCE Intel PRO/1000 MT Server Adapter

This card will be configured with a default address and subnet as indicated on table 1. The shaded area in the table represents the factory default TCP/IP configuration for a single GMCE board system, or the first GMCE board in a multi-GMCE board system.

GMCE Unit #	GMCE Copper port	GMCE Fiber port	Everest Thermal Head port	Workstation NIC port
Net mask	255.255.255.192	255.255.255.128	255.255.255.128	255.255.255.128
0	192.168.100.193	192.168.100.193	192.168.100.145	192.168.100.209
1	192.168.100.194	192.168.100.194	192.168.100.146	192.168.100.210
2	192.168.100.195	192.168.100.195	192.168.100.147	192.168.100.211
3	192.168.100.196	192.168.100.196	192.168.100.148	192.168.100.212
4	192.168.100.197	192.168.100.197	192.168.100.149	192.168.100.213
5	192.168.100.198	192.168.100.198	192.168.100.150	192.168.100.214
6	192.168.100.199	192.168.100.199	192.168.100.151	192.168.100.215
7	192.168.100.200	192.168.100.200	192.168.100.152	192.168.100.216
8	192.168.100.201	192.168.100.201	192.168.100.153	192.168.100.217
9	192.168.100.202	192.168.100.202	192.168.100.154	192.168.100.218
10	192.168.100.203	192.168.100.203	192.168.100.155	192.168.100.219
11	192.168.100.204	192.168.100.204	192.168.100.156	192.168.100.220

Table 1

So, the default addressing for the **GMCE0 NIC** card will be:

Workstation NIC port IP 192.168.100.209

Subnet mask 255.255.255.128

At customers sites where they use the same Class C address 192.168.100.XXX and subnet mask of 255.255.255.XXX, the solution will be to modify the third number to the **200** range.

Case 1:

For example, if the customer address is:

IP Address 192.168.100.XXX

Subnet Mask 255.255.255.XXX

Change the NIC card to:

IP Address 192.168.**200**.209

Subnet Mask 255.255.255.128

Case 2:

In the case of the customer having a wider subnet range, such as:

IP Address 192.168.100.XXX

Subnet Mask 255.255.**YYY.XXX**

Change the NIC card to:

IP Address 10.1.100.209

Subnet Mask 255.255.255.128

These changes should also be made in **CreoBootp.ini** file as shown below for the highlighted parameter with the chosen range. Remember that there 4 pairs of settings that need to be changed as shown in table 1. We will change the addressing to match case 2.

[BOOTPS]

; Version of this Bootp Server's Bootp.Ini file

; Format is Major.Minor.Revision

VERSION_INI_FILE = 1.32.01

; This IP must belong to the subnet of NETMASK_CO !!!

; Your Windows machine's 1000Gbit NIC card should be set to this ip address.

IPADDR_BOOTP =10.1.100.209

; Un-comment the following line if you need to support a 2nd NIC.

;IPADDR_BOOTP2 = 192.168.100.210

; The EVENT_MSG_DLL must include the full path

EVENT_MSG_DLL =C:\Creo\Firmware\CBootpMsg132.Dll

; The following parameter is used for single headed systems. With this parameter

; set to TRUE, the MAC address for the Everest head is ignored.

SINGLE_EV_HEAD =TRUE

; The following parameter is use to enable/disable the GMCE Ram-Log Buffer "Bridge" code support:

; Set to TRUE/FALSE or YES/NO

RAMLOG_BUFFER_SUPPORT =NO

[PORTS]

```
; *** Firmware TCP Ports In Use ***
;                   FTP - Data:
TCP_PORT_FTP_DATA           =   20
;                   FTP - Control:
TCP_PORT_FTP_CONTROL        =   21
;                   Telnet:
TCP_PORT_TELNET             =   23
;                   RCON TCP/IP Server:
TCP_PORT_RCONSERVER         =  5000
;                   Everest Diagnostics Stream (binary):
TCP_PORT_DIAGNOSTIC_STREAM    =  5001
;                   Everest Auto-Focus Stimulus File D/L:
TCP_PORT_AUTOFOCUS_STIMULUS   =  5002
;                   DTL Serial Port Server:
TCP_PORT_DTLSERVER          =  5556
;                   SCON TCP/Ip Server:
TCP_PORT_SCONSERVER         =  6001
;                   Ram Log Buffer Server:
TCP_PORT_RAMLOGBFR          =  6004
;                   DTL over TCP/IP Protocol Channel 0:
TCP_PORT_DTLPROTO0          =  6005
;                   DTL over TCP/IP Protocol Channel 1:
TCP_PORT_DTLPROTO1          =  6006
;                   RCON TCP/IP Server - simulation:
TCP_PORT_RCONSERVER_SIM     =  9876
; *** Firmware UDP Ports In Use ***
;                   BOOTP Client query handler:
UDP_PORT_BOOTPCLIENT        =   68
;                   CAN Bus Raw Packet Server:
UDP_PORT_CANSERVER          =  6000
;                   Raster Image Data Server:
UDP_PORT_IMAGESERVER        =  5003
; *** Software (Workstation) TCP Ports In Use ***
```

; BOOTP Server - Block Copy Service:

TCP_PORT_BOOTPBLOCK_COPY = 3688

; PSRM Component:

TCP_PORT_PSRM_RASTER_FC_PORT = 15057

TCP_PORT_PSRM_RASTER_FC_PORT_MASTER = 15057

TCP_PORT_PSRM_RASTER_FC_PORT_SLAVE = 15058

; PSRM Component:

TCP_PORT_PSRM_RASTER_DATA_PORT = 15151

TCP_PORT_PSRM_RASTER_DATA_PORT_MASTER = 15151

TCP_PORT_PSRM_RASTER_DATA_PORT_SLAVE = 15152

; Statistics Event Manager Port:

TCP_PORT_STAT_EVENT = 18103

; Creo Feature Licensing Server:

TCP_PORT_CFL_PORT = 7096

; BOOTP Event Server:

TCP_PORT_BOOTPEVENT = 10168

; *** Software (Workstation) UDP Ports In Use ***

; Bootp Server port:

UDP_PORT_BOOTPSERVER = 67

; PSRM Component:

UDP_PORT_PSRM_GMCE_CLIENT_PORT = 18001

UDP_PORT_PSRM_GMCE_CLIENT_PORT_MASTER = 18001

UDP_PORT_PSRM_GMCE_CLIENT_PORT_SLAVE = 18002

[GMCE0]

; Indicate whether this logic unit is active. Values: Yes/No, True/False, or 0/1.

ACTIVE =Yes

; GMCE copper port IP Address:

IPADDR_CO =10.1.100.193

; This must be a subnet of the NETMASK_FI !!!:

NETMASK_CO =255.255.255.192

; GMCE fiber port IP Address:

IPADDR_FI =10.1.100.193

; This must be same subnet as the workstation !!!:

NETMASK_FI =255.255.255.128

; Should be set to the workstation's 1000GBit NIC Card's Ip Address:

GATEWAY_GMCE =10.1.100.209

; Reserved, set to GMCE boards MAC Address:

MAC_GMCE =FF:FF:FF:FF:FF:FF

; Set to Path where this file exists, and where NVS image files exist:

BIN_PATH_GMCE =C:\Creo\Firmware

; GMCE "Main" Firmware to download (Product Specific):

FWFILE_GMCE =3244GFMWp14402.Bin

; GMCE STG/NVS parameters image file to download at boot time:

NVSFILE_GMCE =GMCENVS00.Bin

; Everest Thermal Head Ip Address:

IPADDR_EV =10.1.100.145

; Everest Thermal Head Netmask:

NETMASK_EV =255.255.255.128

; Everest Thermal Head MAC Address (Ignored if "SINGLE_EV_HEAD=TRUE"):

MAC_EV =FF:FF:FF:FF:FF:FF

; Maximum Ethernet Frame Size allowed to this GMCE:

MAXFRAMESIZE_GMCE = 9014

; This entry must be present.

; It is currently the same as IPADDR_BOOTP for single GMCE machines.

; It may be different for machines with multiple GMCE boards.

; Workstation IP Address:

IPADDR_WS=10.1.100.209

For Further reference, please refer to the GME Intel/PRO 1000 MT Server Adapter, Installation, Configuration & Testing Document Number 719-00735A.

3.3 Edge Detect Camera Intel PRO/100 M DeskTop Adapter

Set the IP address: 169.254.0.1

Set the Subnet mask: 255.255.0.0

For further reference on how to install and setup this adapter, please refer to: Magnus Edge Detect Camera Service Laptop Setup, Document Number 719-0065.