SGConfig (cont'd)

- Added support for including all referenced application definitions when creating device/project/local repository archives. Device/project/local repository archives are self-contained and include all the application definitions referenced by any D2x devices contained in them. There is no need to copy or import application definitions separately.
- Improved usability and overall performance of all operations in the Migration Wizard.
- Improved speed when browsing the file system.
- Added support for specifying the licenses available on D400 devices.
- Ability to extract electronic documentation for D2x devices and display it while configuring D2x embedded applications
- Ability to view multiple windows simultaneously

Request access to the GE's substation automation technical support website by contacting the substation automation technical support team; then, download and install SGConfig: http://site.ge-energy.com/prod_serv/products/substation_automation/en/tech_support_login.htm

WESMAINT

WESMAINT is a maintenance facility that resides in the D20 and D200. It uses a series of menu and screens displayed on a PC or VT100 terminal to create a simple interface. WESMAINT presets a window through which field technicians and programmers can look directly into the equipment to view collected data and system status and, for some applications, make changes to the configuration. The wesmaint facility makes commissioning, troubleshooting and regular maintenance of the RTU database easy to do.

Using the WESMAINT facility, you can access standard data displays such as:

- Digital inputs and outputs
- Analog inputs and outputs
- Transition counters
- Sequence-of-event (SOE) and change-of-state (COS) data
- Device status information
- Error log
- User log
- System status
- CCU (central control unit) communication status, if a redundant system is installed.

PROMAINT

Similar to WESMAINT, PROMAINT is the maintenance facility for the I/O peripheral modules. PROMAINT combines maintenance and monitor functions. The maintenance portion is used to view data, or to verify that the board is functioning correctly by, for example, forcing a control point and then checking to see whether the control operation took effect.

This monitor facility is intended for advanced users to interpret commands from the maintenance port, such as storing data to memory. It can also execute various application-dependent commands once an application program has been downloaded from the D20/D200.

68K Monitor

The 68K Monitor functions are primarily debugging tools that users can access via a PC or a VT100 terminal with a keyboard. Monitor functions include memory examination, dumping and editing, setting break points, single-step modes, communication port loop-back tests, mark and space modem adjustments, and CPU usage and process profiling.

Table 1: D20/D200 Product Comparison

	D20	D200
Maximum Processor Boards	• 1 when a non-VME chassis is used • 2 processor boards plus Ethernet module when a VME chassis is used	6 processor boards plus Ethernet module
Maximum I/O Boards	• 31 (without repeaters) • 120 (with repeaters)	• 124 (without repeaters) • 480 (with repeaters)
VME Backplane	Optional	Standard
Maximum Serial Ports	• 7 + 1 Maintenance Port – Non-VME chassis • 21 + 3 Maintenance Port – VME chassis	49 + 7 maintenance ports
Base Software	Standard D20 Base, CCU Base	CCU Base
Applications Software	Full suite of GE Energy automation application software and protocols	Full suite of GE Energy automation application software and protocols
Typical Number of Applications *	5 - 7*	5 - 7 per node*

Hardware Overview

There are basically three types of D20 RTU hardware arrangements:

- D20 Chassis, Single-slot (or non-VME) – supports one processor module
- D20 Chassis, Multiple-slot (VME) – supports up to 2 processor modules plus an Ethernet module
- D200 Chassis, Multiple-slot (VME) – supports multiple processor modules plus an Ethernet module

Figure 2: D20 Chassis single-slot non-VME type

D20 Chassis (single-slot, non-VME)

The D20 chassis is a 3U horizontal slot chassis. The non-VME version of the D20 chassis is equipped with a rear-mounted termination board that provides power connection and serial port access to the D20 system.

Non-VME versions of the D20 provide a single horizontal Eurocard slot, into which the D20ME board is installed.

D20 Chassis (multiple-slot, VME)

The VME version of the D20 chassis is equipped with five horizontal expansion slots for VME-compatible modules:

The VME version of the D20 chassis is equipped with a rear-mounted termination board for power connections and serial ports for one processor board. An optional rack-mounted serial port panel is available to support the seven serial ports on a second processor board.

The D20 hardware consists of a rack-mountable chassis containing one or more processor boards, power supplies and modems.

The D20 interfaces with substation equipment either through D.20 peripheral I/O modules, or directly through RS-232, RS-485, or Ethernet links.

The D20 can support up to:

- Two D.20 ports, each supporting up to 31 I/O peripherals, without repeaters, and
- 120 I/O D.20 peripherals, with repeaters
- 21 RS-232 or RS-485 ports (7 per processor board)
- Two Ethernet channels

D200 Chassis (multiple-slot, VME]

The D200 chassis is equipped with a rear-mounted termination board for power connections and serial-port access.

The D200 has the computing power and expandability needed to provide substation automation in larger substations. This is achieved through an innovative design that employs multiple D20 processors, communicating over a VME bus:

- RS-232/RS-485 ports support large numbers of host systems and IEDs
- VME bus architecture provides high scalability and performance for adding serial ports, LAN options, and memory
- Data is integrated and coordinated, so different applications access a single, real-time database
- Optional redundant configuration for high reliability at critical sites
- ironment, in accordance with applicable IEEE® and IEC® standards

D200 hardware is similar in design to the D20 hardware, but it has significantly more physical capacity. Based on a 9-slot VME chassis, the D200 illustrated in figure 4 can support up to:

- 4 D.20 ports, each supporting up to 31 I/O peripherals, without repeaters, and 120 I/O peripherals, with repeaters
- 49 RS-232 or RS-485 ports (seven per D20ME or D20ME II Main Processor)
- Two Ethernet channels

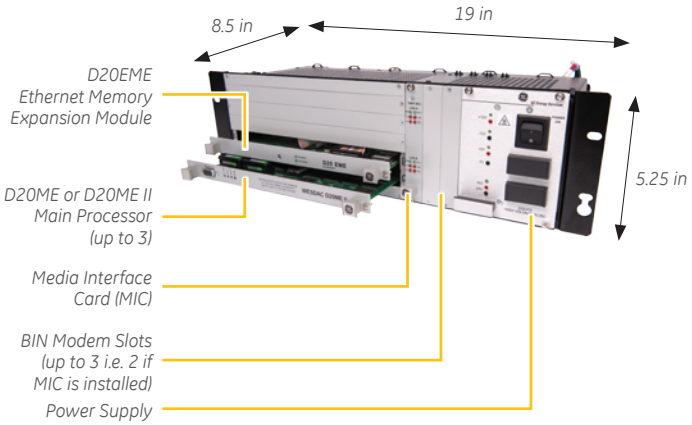

Figure 3: D20 Chassis, multiple-slots, VME type

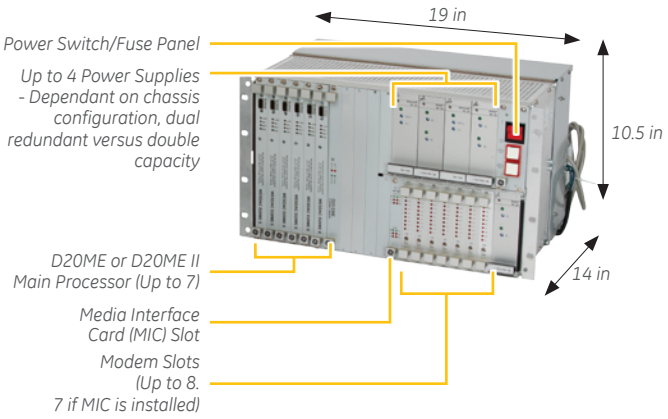

Figure 4: D200 Chassis, multiple-slots, VME-type

D20 Accessories

D20 Power Supplies

D20 power supplies are switch-mode converters that provide output power for the D20 main processor, VME cards, modems and D20 peripheral I/O modules, as required. The power supplies are designed to accept standard voltage inputs and meet the power requirements of the D20.

Table 2: Commonly used D20 Power Supplies

TYPE	OLD LEGACY PART NUMBER	NEW SMART PART NUMBER	INPUT	OUTPUT	MOUNTING
Chassis-mounted (D20)	580-2004	D20ME-S-A-U-U	20 – 60 VDC	+5 V, 7 A +12 V, 2 A -12 V, 1 A 24 VDC, 3 A	Chassis
Chassis-mounted (D20)	580-2005	D20ME-S-B-U-U	20 – 60 VDC	+5 V, 7 A +12 V, 2 A -12 V, 1 A 48 VDC, 1.5 A	Chassis
Chassis-mounted (D20)	580-2006	D20ME-S-C-U-U	100 – 300 VDC or 85 – 264 VAC	+5 V, 7 A +12 V, 2 A -12 V, 1 A 24 VDC, 3 A	Chassis
Chassis-mounted (D20)	580-2007	D20ME-S-D-U-U	100 – 300 VDC or +85 – 264 VAC	+5 V, 7 A +12 V, 2 A -12 V, 1 A 48 VDC, 1.5 A	Chassis

Please refer to the hardware users manual for details on the available power supply options in the D20.

D20 Modems

The D20 modems handle communications to the host computer or other intelligent device.

Special modem requirements can be addressed through the use of third-party modems, which are connected to the D20/D200 through external RS-232 connections.

Table 4 D20/D200 Modems

MODEM	SPECIFICATIONS
WESDAC 202/V.23 Chassis-mount and Rack-mount	• 1200 bps Bell 202 or CCITT V.23 • Designed for 300 to 1200 bps asynchronous operation on unconditioned lines • Available as a 19" rack-mount assembly (GE Part Number 520-0090), or as a BIN mount or chassis mount module that can be installed in the D20/D200 chassis (GE Part Number 520-0120).
Telenetics Chassis-mount	• Dial-up or leased line • 2-wire or 4-wire • Various versions available, up to 57.6 kbps