INSTALLATION AND OPERATION MANUAL

Egate-20

Channelized Ethernet Gateway

Version 1.1

RAD
data communications
The Access Company

Egate-20

Channelized Ethernet Gateway

Version 1.1

Installation and Operation Manual

Notice

For further information contact RAD at the address below or contact your local distributor.

International Headquarters
RAD Data Communications Ltd.

24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: 972-3-6458181
Fax: 972-3-6498250, 6474436
E-mail: market@rad.com

North America Headquarters
RAD Data Communications Inc.

900 Corporate Drive
Mahwah, NJ 07430, USA
Tel: (201) 5291100, Toll free: 1-800-4447234
Fax: (201) 5295777
E-mail: market@radusa.com

 Publication No. 406-200-07/08

Limited Warranty

RAD warrants to DISTRIBUTOR that the hardware in the Egate-20 to be delivered hereunder shall be free of defects in material and workmanship under normal use and service for a period of twelve (12) months following the date of shipment to DISTRIBUTOR.

If, during the warranty period, any component part of the equipment becomes defective by reason of material or workmanship, and DISTRIBUTOR immediately notifies RAD of such defect, RAD shall have the option to choose the appropriate corrective action: a) supply a replacement part, or b) request return of equipment to its plant for repair, or c) perform necessary repair at the equipment's location. In the event that RAD requests the return of equipment, each party shall pay one-way shipping costs.

RAD shall be released from all obligations under its warranty in the event that the equipment has been subjected to misuse, neglect, accident or improper installation, or if repairs or modifications were made by persons other than RAD's own authorized service personnel, unless such repairs by others were made with the written consent of RAD.

The above warranty is in lieu of all other warranties, expressed or implied. There are no warranties which extend beyond the face hereof, including, but not limited to, warranties of merchantability and fitness for a particular purpose, and in no event shall RAD be liable for consequential damages.

RAD shall not be liable to any person for any special or indirect damages, including, but not limited to, lost profits from any cause whatsoever arising from or in any way connected with the manufacture, sale, handling, repair, maintenance or use of the Egate-20, and in no event shall RAD's liability exceed the purchase price of the Egate-20.

DISTRIBUTOR shall be responsible to its customers for any and all warranties which it makes relating to Egate-20 and for ensuring that replacements and other adjustments required in connection with the said warranties are satisfactory.

Software components in the Egate-20 are provided "as is" and without warranty of any kind. RAD disclaims all warranties including the implied warranties of merchantability and fitness for a particular purpose. RAD shall not be liable for any loss of use, interruption of business or indirect, special, incidental or consequential damages of any kind. In spite of the above RAD shall do its best to provide error-free software products and shall offer free Software updates during the warranty period under this Agreement.

RAD's cumulative liability to you or any other party for any loss or damages resulting from any claims, demands, or actions arising out of or relating to this Agreement and the Egate-20 shall not exceed the sum paid to RAD for the purchase of the Egate-20. In no event shall RAD be liable for any indirect, incidental, consequential, special, or exemplary damages or lost profits, even if RAD has been advised of the possibility of such damages.

This Agreement shall be construed and governed in accordance with the laws of the State of Israel.

Product Disposal

To facilitate the reuse, recycling and other forms of recovery of waste equipment in protecting the environment, the owner of this RAD product is required to refrain from disposing of this product as unsorted municipal waste at the end of its life cycle. Upon termination of the unit's use, customers should provide for its collection for reuse, recycling or other form of environmentally conscientious disposal.

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

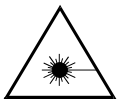
Safety Symbols

Warning

This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.

Protective ground: the marked lug or terminal should be connected to the building protective ground bus.



Warning

Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached.

Please observe the following precautions:

- Before turning on the equipment, make sure that the fiber optic cable is intact and is connected to the transmitter.
- Do not attempt to adjust the laser drive current.
- Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.
- The use of optical devices with the equipment will increase eye hazard.
- Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.

ATTENTION: The laser beam may be invisible!

In some cases, the users may insert their own SFP laser transceivers into the product. Users are alerted that RAD cannot be held responsible for any damage that may result if non-compliant transceivers are used. In particular, users are warned to use only agency approved products that comply with the local laser safety regulations for Class 1 laser products.

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective ground terminal. If a ground lug is provided on the product, it should be connected to the protective ground at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in grounded racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Some products may have panels secured by thumbscrews with a slotted head. These panels may cover hazardous circuits or parts, such as power supplies. These thumbscrews should therefore always be tightened securely with a screwdriver after both initial installation and subsequent access to the panels.

Connecting AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

In cases when the power distribution system is IT type, the switch must disconnect both poles simultaneously.

Connecting DC Power

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC power systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC power supply is electrically isolated from any AC source and that the installation complies with the local codes.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

If the DC power supply is floating, the switch must disconnect both poles simultaneously.

Connecting Data and Telecommunications Cables

Data and telecommunication interfaces are classified according to their safety status.

The following table lists the status of several standard interfaces. If the status of a given port differs from the standard one, a notice will be given in the manual.

Ports	Safety Status
V.11, V.28, V.35, V.36, RS-530, X.21, 10 BaseT, 100 BaseT, Unbalanced E1, E2, E3, STM, DS-2, DS-3, S-Interface ISDN, Analog voice E&M	SELV Safety Extra Low Voltage: Ports which do not present a safety hazard. Usually up to 30 VAC or 60 VDC.
xDSL (without feeding voltage), Balanced E1, T1, Sub E1/T1	TNV-1 Telecommunication Network Voltage-1: Ports whose normal operating voltage is within the limits of SELV, on which overvoltages from telecommunications networks are possible.
FXS (Foreign Exchange Subscriber)	TNV-2 Telecommunication Network Voltage-2: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are not possible. These ports are not permitted to be directly connected to external telephone and data lines.
FXO (Foreign Exchange Office), xDSL (with feeding voltage), U-Interface ISDN	TNV-3 Telecommunication Network Voltage-3: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are possible.

Always connect a given port to a port of the same safety status. If in doubt, seek the assistance of a qualified safety engineer.

Always make sure that the equipment is grounded before connecting telecommunication cables. Do not disconnect the ground connection before disconnecting all telecommunications cables.

Some SELV and non-SELV circuits use the same connectors. Use caution when connecting cables. Extra caution should be exercised during thunderstorms.

When using shielded or coaxial cables, verify that there is a good ground connection at both ends. The grounding and bonding of the ground connections should comply with the local codes.

The telecommunication wiring in the building may be damaged or present a fire hazard in case of contact between exposed external wires and the AC power lines. In order to reduce the risk, there are restrictions on the diameter of wires in the telecom cables, between the equipment and the mating connectors.

Caution To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.

Attention Pour réduire les risques s'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.

Some ports are suitable for connection to intra-building or non-exposed wiring or cabling only. In such cases, a notice will be given in the installation instructions.

Do not attempt to tamper with any carrier-provided equipment or connection hardware.

Electromagnetic Compatibility (EMC)

The equipment is designed and approved to comply with the electromagnetic regulations of major regulatory bodies. The following instructions may enhance the performance of the equipment and will provide better protection against excessive emission and better immunity against disturbances.

A good ground connection is essential. When installing the equipment in a rack, make sure to remove all traces of paint from the mounting points. Use suitable lock-washers and torque. If an external grounding lug is provided, connect it to the ground bus using braided wire as short as possible.

The equipment is designed to comply with EMC requirements when connecting it with unshielded twisted pair (UTP) cables. However, the use of shielded wires is always recommended, especially for high-rate data. In some cases, when unshielded wires are used, ferrite cores should be installed on certain cables. In such cases, special instructions are provided in the manual.

Disconnect all wires which are not in permanent use, such as cables used for one-time configuration.

The compliance of the equipment with the regulations for conducted emission on the data lines is dependent on the cable quality. The emission is tested for UTP with 80 dB longitudinal conversion loss (LCL).

Unless otherwise specified or described in the manual, TNV-1 and TNV-3 ports provide secondary protection against surges on the data lines. Primary protectors should be provided in the building installation.

The equipment is designed to provide adequate protection against electro-static discharge (ESD). However, it is good working practice to use caution when connecting cables terminated with plastic connectors (without a grounded metal hood, such as flat cables) to sensitive data lines. Before connecting such cables, discharge yourself by touching ground or wear an ESD preventive wrist strap.

FCC-15 User Information

This equipment has been tested and found to comply with the limits of the Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Installation and Operation manual, may cause harmful interference to the radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Emission Requirements

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warning per EN 55022 (CISPR-22)

Warning	This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures.
Avertissement	Cet appareil est un appareil de Classe A. Dans un environnement résidentiel, cet appareil peut provoquer des brouillages radioélectriques. Dans ces cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.
Achtung	Das vorliegende Gerät fällt unter die Funkstörgrenzwertklasse A. In Wohngebieten können beim Betrieb dieses Gerätes Rundfunkströrungen auftreten, für deren Behebung der Benutzer verantwortlich ist.

Mise au rebut du produit

Afin de faciliter la réutilisation, le recyclage ainsi que d'autres formes de récupération d'équipement mis au rebut dans le cadre de la protection de l'environnement, il est demandé au propriétaire de ce produit RAD de ne pas mettre ce dernier au rebut en tant que déchet municipal non trié, une fois que le produit est arrivé en fin de cycle de vie. Le client devrait proposer des solutions de réutilisation, de recyclage ou toute autre forme de mise au rebut de cette unité dans un esprit de protection de l'environnement, lorsqu'il aura fini de l'utiliser.

Instructions générales de sécurité

Les instructions suivantes servent de guide général d'installation et d'opération sécurisées des produits de télécommunications. Des instructions supplémentaires sont éventuellement indiquées dans le manuel.

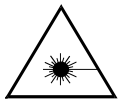
Symboles de sécurité

Avertissement

Ce symbole peut apparaitre sur l'équipement ou dans le texte. Il indique des risques potentiels de sécurité pour l'opérateur ou le personnel de service, quant à l'opération du produit ou à sa maintenance.

Danger de choc électrique ! Evitez tout contact avec la surface marquée tant que le produit est sous tension ou connecté à des lignes externes de télécommunications.

Mise à la terre de protection : la cosse ou la borne marquée devrait être connectée à la prise de terre de protection du bâtiment.



Avertissement

Certains produits peuvent être équipés d'une diode laser. Dans de tels cas, une étiquette indiquant la classe laser ainsi que d'autres avertissements, le cas échéant, sera jointe près du transmetteur optique. Le symbole d'avertissement laser peut aussi être joint.

Veuillez observer les précautions suivantes :

- Avant la mise en marche de l'équipement, assurez-vous que le câble de fibre optique est intact et qu'il est connecté au transmetteur.
- Ne tentez pas d'ajuster le courant de la commande laser.
- N'utilisez pas des câbles ou connecteurs de fibre optique cassés ou sans terminaison et n'observez pas directement un rayon laser.
- L'usage de périphériques optiques avec l'équipement augmentera le risque pour les yeux.
- L'usage de contrôles, ajustages ou procédures autres que celles spécifiées ici pourrait résulter en une dangereuse exposition aux radiations.

ATTENTION : Le rayon laser peut être invisible !

Les utilisateurs pourront, dans certains cas, insérer leurs propres émetteurs-récepteurs Laser SFP dans le produit. Les utilisateurs sont avertis que RAD ne pourra pas être tenue responsable de tout dommage pouvant résulter de l'utilisation d'émetteurs-récepteurs non conformes. Plus particulièrement, les utilisateurs sont avertis de n'utiliser que des produits approuvés par l'agence et conformes à la réglementation locale de sécurité laser pour les produits laser de classe 1.

Respectez toujours les précautions standards de sécurité durant l'installation, l'opération et la maintenance de ce produit. Seul le personnel de service qualifié et autorisé devrait effectuer l'ajustage, la maintenance ou les réparations de ce produit. Aucune opération d'installation, d'ajustage, de maintenance ou de réparation ne devrait être effectuée par l'opérateur ou l'utilisateur.

Manipuler des produits sous tension

Règles générales de sécurité

Ne pas toucher ou altérer l'alimentation en courant lorsque le câble d'alimentation est branché. Des tensions de lignes peuvent être présentes dans certains produits, même lorsque le commutateur (s'il est installé) est en position OFF ou si le fusible est rompu. Pour les produits alimentés par CC, les niveaux de tension ne sont généralement pas dangereux mais des risques de courant peuvent toujours exister.

Avant de travailler sur un équipement connecté aux lignes de tension ou de télécommunications, retirez vos bijoux ou tout autre objet métallique pouvant venir en contact avec les pièces sous tension.

Sauf s'il en est autrement indiqué, tous les produits sont destinés à être mis à la terre durant l'usage normal. La mise à la terre est fournie par la connexion de la fiche principale à une prise murale équipée d'une borne protectrice de mise à la terre. Si une cosse de mise à la terre est fournie avec le produit, elle devrait être connectée à tout moment à une mise à la terre de protection par un conducteur de diamètre 18 AWG ou plus. L'équipement monté en châssis ne devrait être monté que sur des châssis et dans des armoires mises à la terre.

Branchez toujours la mise à la terre en premier et débranchez-la en dernier. Ne branchez pas des câbles de télécommunications à un équipement qui n'est pas mis à la terre. Assurez-vous que tous les autres câbles sont débranchés avant de déconnecter la mise à la terre.

Connexion au courant du secteur

Assurez-vous que l'installation électrique est conforme à la réglementation locale.

Branchez toujours la fiche de secteur à une prise murale équipée d'une borne protectrice de mise à la terre.

La capacité maximale permissible en courant du circuit de distribution de la connexion alimentant le produit est de 16A. Le coupe-circuit dans l'installation du bâtiment devrait avoir une capacité élevée de rupture et devrait fonctionner sur courant de court-circuit dépassant 35A.

Branchez toujours le câble d'alimentation en premier à l'équipement puis à la prise murale. Si un commutateur est fourni avec l'équipement, fixez-le en position OFF. Si le câble d'alimentation ne peut pas être facilement débranché en cas d'urgence, assurez-vous qu'un coupe-circuit ou un disjoncteur d'urgence facilement accessible est installé dans l'installation du bâtiment.

Le disjoncteur devrait déconnecter simultanément les deux pôles si le système de distribution de courant est de type IT.

Connexion d'alimentation CC

Sauf s'il en est autrement spécifié dans le manuel, l'entrée CC de l'équipement est flottante par rapport à la mise à la terre. Tout pôle doit être mis à la terre en externe.

A cause de la capacité de courant des systèmes à alimentation CC, des précautions devraient être prises lors de la connexion de l'alimentation CC pour éviter des courts-circuits et des risques d'incendie.

Les unités CC devraient être installées dans une zone à accès restreint, une zone où l'accès n'est autorisé qu'au personnel qualifié de service et de maintenance.

Assurez-vous que l'alimentation CC est isolée de toute source de courant CA (secteur) et que l'installation est conforme à la réglementation locale.

La capacité maximale permissible en courant du circuit de distribution de la connexion alimentant le produit est de 16A. Le coupe-circuit dans l'installation du bâtiment devrait avoir une capacité élevée de rupture et devrait fonctionner sur courant de court-circuit dépassant 35A.

Avant la connexion des câbles d'alimentation en courant CC, assurez-vous que le circuit CC n'est pas sous tension. Localisez le coupe-circuit dans le tableau desservant l'équipement et fixez-le en position OFF. Lors de la connexion de câbles d'alimentation CC, connectez d'abord le conducteur de mise à la terre à la borne correspondante, puis le pôle positif et en dernier, le pôle négatif. Remettez le coupe-circuit en position ON.

Un disjoncteur facilement accessible, adapté et approuvé devrait être intégré à l'installation du bâtiment.

Le disjoncteur devrait déconnecter simultanément les deux pôles si l'alimentation en courant CC est flottante.

Glossary

Address	A coded representation of the origin or destination of data.
Agent	In SNMP, this refers to the managed system.
Analog	A continuous wave or signal (such as human voice).
ANSI	American National Standards Institute.
Attenuation	Signal power loss through equipment, lines or other transmission devices. Measured in decibels.
AWG	The American Wire Gauge System, which specifies wire width.
Balanced	A transmission line in which voltages on the two conductors are equal in magnitude, but opposite in polarity, with respect to ground.
Baud	Unit of signaling speed equivalent to the number of discrete conditions or events per second. If each signal event represents only one bit condition, baud rate equals bps (bits per second).
Bipolar	Signaling method in E1/T1 representing a binary "1" by alternating positive and negative pulses, and a binary "0" by absence of pulses.
Bit	The smallest unit of information in a binary system. Represents either a one or zero ("1" or "0").
Bit Interleaving/Multiplexing	A process used in time division multiplexing where individual bits from different lower speed channel sources are combined (one bit from one channel at a time) into one continuous higher speed bit stream.
bps (Bits Per Second)	A measure of data transmission rate in serial transmission.
Bridge	A device interconnecting local area networks at the OSI data link layer, filtering and forwarding frames according to media access control (MAC) addresses.
Buffer	A storage device. Commonly used to compensate for differences in data rates or event timing when transmitting from one device to another. Also used to remove jitter.
Bus	A transmission path or channel. A bus is typically an electrical connection with one or more conductors, where all attached devices receive all transmissions at the same time.
Byte	A group of bits (normally 8 bits in length).

Carrier	A continuous signal at a fixed frequency that is capable of being modulated with a second (information carrying) signal.
Cell	The 53-byte basic information unit within an ATM network. The user traffic is segmented into cells at the source and reassembled at the destination. An ATM cell consists of a 5-byte ATM header and a 48-byte ATM payload, which contains the user data.
Channel	A path for electrical transmission between two or more points. Also called a link, line, circuit or facility.
Channelized E1/T1	E1 or T1 service that is divided into individual 64 kbps channels (or channels that are multiples of 64 kbps such as a 256 kbps channel made from four 64 kbps channels), as opposed to unchannelized service, which uses the entire bandwidth of the E1 (2.048 Mbps) or T1 (1.544 Mbps). Channelized E1 or T1 lines can consist of switched lines with in-band signaling or leased lines.
Clock	A term for the source(s) of timing signals used in synchronous transmission.
Congestion	A state in which the network is overloaded and starts to discard user data (frames, cells or packets).
Data	Information represented in digital form, including voice, text, facsimile and video.
Data Link Layer	Layer 2 of the OSI model. The entity, which establishes, maintains, and releases data-link connections between elements in a network. Layer 2 is concerned with the transmission of units of information, or frames, and associated error checking.
Diagnostics	The detection and isolation of a malfunction or mistake in a communications device, network or system.
Digital	The binary ("1" or "0") output of a computer or terminal. In data communications, an alternating, non-continuous (pulsating) signal.
E3	The European standard for high speed digital transmission, operating at 34 Mbps.
Encapsulation	Encapsulating data is a technique used by layered protocols in which a low level protocol accepts a message from a higher level protocol, then places it in the data portion of the lower-level frame. The logistics of encapsulation require that packets traveling over a physical network contain a sequence of headers.
Equalizer	A device that compensates for distortion due to signal attenuation and propagation time with respect to frequency. It reduces the effects of amplitude, frequency and/or phase distortion.
Ethernet	A local area network (LAN) technology which has extended into the wide area networks. Ethernet operates at many speeds, including data rates of 10 Mbps (Ethernet), 100 Mbps (Fast Ethernet), 1,000 Mbps (Gigabit Ethernet), 10 Gbps, 40 Gbps, and 100 Gbps.

Flow Control	A congestion control mechanism that results in an ATM system implementing flow control.
Frame	A logical grouping of information sent as a link-layer unit over a transmission medium. The terms packet, datagram, segment, and message are also used to describe logical information groupings.
Framing	At the physical and data link layers of the OSI model, bits are fit into units called frames. Frames contain source and destination information, flags to designate the start and end of the frame, plus information about the integrity of the frame. All other information, such as network protocols and the actual payload of data, is encapsulated in a packet, which is encapsulated in the frame.
Full Duplex	A circuit or device permitting transmission in two directions (sending and receiving) at the same time.
FXO (Foreign Exchange Office)	A voice interface, emulating a PBX extension, as it appears to the CO (Central Office) for connecting a PBX extension to a multiplexer.
FXS (Foreign Exchange Subscriber)	A voice interface, emulating the extension interface of a PBX (or subscriber interface of a CO) for connecting a regular telephone set to a multiplexer.
G.703	An ITU standard for the physical and electrical characteristics of various digital interfaces, including those at 64 kbps and 2.048 Mbps.
Gateway	Gateways are points of entrance and exit from a communications network. Viewed as a physical entity, a gateway is that node that translates between two otherwise incompatible networks or network segments. Gateways perform code and protocol conversion to facilitate traffic between data highways of differing architecture.
HDLC (High-Level Data Link Control)	A synchronous, bit-oriented link layer protocol for data transmission. Frame Relay is an example of an HDLCbased packet protocol.
Half Duplex	A circuit or device capable of transmitting in two directions, but not at the same time.
Impedance	The combined effect of resistance, inductance and capacitance on a transmitted signal. Impedance varies at different frequencies.
In-Band Signaling	The transmission of signaling information over the same path as data and/or voice information. Another term for in-band signaling is robbed-bit signaling. Robbed-bit refers to the 8 kbps of each channel used for signaling.
Interface	A shared boundary, defined by common physical interconnection characteristics, signal characteristics, and meanings of exchanged signals.
IP Address	Also known as an Internet address. A unique string of numbers that identifies a computer or device on a TCP/IP network. The

	format of an IP address is a 32-bit numeric address written as four numbers from 0 to 255, separated by periods (for example, 1.0.255.123).
Jitter	The deviation of a transmission signal in time or phase. It can introduce errors and loss of synchronization in high speed synchronous communications.
Laser	A device that transmits an extremely narrow and coherent beam of electromagnetic energy in the visible light spectrum. Used as a light source for fiber optic transmission (generally more expensive, shorter lived, single mode only, for greater distances than LED).
Leased Line	A permanent telephone connection between two points that is rented for exclusive use from a telecommunications common carrier. In contrast to a normal dial-up connection, a leased line is always active. Typically, the highest speed data connections require a leased line connection. For example, a T1 channel is a type of leased line that provides a maximum transmission speed of 1.544 Mbps.
Loopback	A type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all or part of a communications link or network.
Manager	An application that receives Simple Network Management Protocol (SNMP) information from an agent. An agent and manager share a database of information, called the Management Information Base (MIB). An agent can use a message called a traps-PDU to send unsolicited information to the manager. A manager that uses the RADview MIB can query the RAD device, set parameters, sound alarms when certain conditions appear, and perform other administrative tasks.
Master Clock	The source of timing signals (or the signals themselves) that all network stations use for synchronization.
Multidrop	A communications configuration in which multiple devices share a common transmission facility (or multipoint line), although generally only one may transmit at a time. Usually used with some kind of polling mechanism to address each connected terminal with a unique address code.
Multiplexer	At one end of a communications link, a device that combines several lower speed transmission channels into a single high speed channel. A multiplexer at the other end reverses the process. Sometimes called a mux. See **Bit Interleaving/Multiplexing**.
Network	(1) An interconnected group of nodes. (2) A series of points, nodes, or stations connected by communications channels; the collection of equipment through which connections are made between data stations.
Node	A point of interconnection to a network.
Packet	An ordered group of data and control signals transmitted through a network, as a subset of a larger message.

parameters	Parameters are often called arguments, and the two words are used interchangeably. However, some computer languages such as C define argument to mean actual parameter (i.e., the value), and parameter to mean formal parameter. In RAD CLI, parameter means formal parameter, not value.
Payload	The 48-byte segment of the ATM cell containing user data. Any adaptation of user data via the AAL will take place within the payload.
Physical Layer	Layer 1 of the OSI model. The layer concerned with electrical, mechanical, and handshaking procedures over the interface connecting a device to the transmission medium.
Polling	See **Multidrop**.
Port	The physical interface to a computer or multiplexer, for connection of terminals and modems.
prompt	One or more characters in a command line interface to indicate that the computer is ready to accept typed input.
Protocol	A formal set of conventions governing the formatting and relative timing of message exchange between two communicating systems.
Routing	The process of selecting the most efficient circuit path for a message.
Serial Transmission	A common mode of transmission, where the character bits are sent sequentially one at a time instead of in parallel.
Single Mode	Describing an optical wave-guide or fiber that is designed to propagate light of only a single wavelength (typically 5-10 microns in diameter).
Space	In telecommunications, the absence of a signal. Equivalent to a binary 0.
Sync	See **Synchronous Transmission**.
Synchronous Transmission	Transmission in which data bits are sent at a fixed rate, with the transmitter and receiver synchronized.
T1	A digital transmission link with a capacity of 1.544 Mbps used in North America. Typically channelized into 24 DS0s, each capable of carrying a single voice conversation or data stream. Uses two pairs of twisted pair wires.
Telnet	The virtual terminal protocol in the Internet suite of protocols. It lets users on one host access another host and work as terminal users of that remote host. Instead of dialing into the computer, the user connects to it over the Internet using Telnet. When issuing a Telnet session, it connects to the Telnet host and logs in. The connection enables the user to work with the remote machine as though a terminal was connected to it.

Timeslot	A portion of a serial multiplex of timeslot information dedicated to a single channel. In E1 and T1, one timeslot typically represents one 64 kbps channel.
VLAN-Aware	A device that is doing the Layer 2 bridging according to the VLAN tag in addition to the standard bridging parameters. A VLAN-aware device will not strip or add any VLAN header.
VLAN Stacking	A technique that lets carriers offer multiple virtual LANs over a single circuit. In essence, the carrier creates an Ethernet virtual private network to tunnel customer VLANs across its WAN; this helps avoid name conflicts among customers of service providers who connect to the carrier. Stacking works by assigning two VLAN IDs to each frame header. One is a "backbone" VLAN ID used by the service provider; the other one has up to 4,096 unique 802.1Q VLAN tags.

Quick Start Guide

Installation of Egate-20 should be carried out only by an experienced technician. If you are familiar with Egate-20, use this quick start guide to prepare the units for operation.

1. Installing Egate-20

Connecting the Interfaces

➤ To configure the interfaces:

1. Connect the network to the RJ-45 connector designated **E1** or **T1**.
2. Connect the user LAN to the RJ-45 connector designated **10/100 BaseT**.
3. Connect the control terminal to the front panel CONTROL connector.

   or

   Connect a Telnet host, a PC running a Web browsing application or an SNMP management station to the Ethernet port.

Note *First-time configuration requires configuration of the host (IP address) via the terminal.*

Connecting the Power

➤ To connect the power:

- Connect the power cable to the power connector on the Egate-20 rear panel.

  The unit has no power switch. Operation starts when the power is applied to the rear panel power connector(s).

2. Configuring Egate-20

Depending on the interface connections chosen in the previous section, do one of the following:

- Configure Egate-20 to the desired operation mode via an ASCII terminal connected to the front panel CONTROL port
- Manage Egate-20 over Telnet, a PC running a Web browsing application, or SNMP via the Ethernet port.

Starting a Terminal Session

➤ **To start a terminal session:**

1. Turn on the control terminal PC and set its default port parameters to 115,200 baud; 8 bits/character; 1 stop bit; no parity.
2. Set the terminal emulator to ANSI VT100 emulation (for optimal view of system menus).
3. Enter your user name and password and proceed with the management session.

Note *The Egate-20 default user name is **su**, and the default password is **1234**.*

Configuring Egate-20 Elements

➤ **To configure Egate-20 elements:**

1. From the menu Main › Configuration › System › Management › **Host IP**, configure the following parameters:
   - Host IP address
   - Host IP mask
   - Default gateway
2. From the menu Main › Configuration › System › Management › Host IP › **Encapsulation**, configure Host tagging (untagged/tagged). Note that selecting the tagged option displays the following additional parameters:
   - Host VLAN ID
   - Host VLAN Priority
3. From the menu Main › Configuration › Physical Ports › **E1** or **T1**, configure the following parameters:
   - Activation: Specify whether the network port is enabled or disabled.
   - Transmit Clock Source: Select the source of the system clock: Internal, Loopback Timing, or System Clock.
   - Framing Type: Specify framed or unframed.
   - Rx Sensitivity: Define the receiver sensitivity

     (E1: -10 dB/ -43 dB) (T1: -15 dB/-36 dB)
   - Line mode (for T1 only): Select the T1 line interface type: (DSU or CSU)
   - Line length (for T1 only):

     DSU: The length of a cable in feet between T1 port connector and the network access point

     CSU: The attenuation in dB relative to the nominal T1 transmit level.
4. From the menu Main › Configuration › **Logical Layer**, define the relevant logical ports. (One or more logical ports can be bound to each E1 port or T1 port.)

5. From the menu Main › Configuration › Application › **Bridge**, configure Forwarding mode (transparent or filter).
6. From the same menu, define the relevant bridge ports.

Contents

Chapter 1. Introduction

1.1 Overview....1-1
Product Options....1-1
Applications....1-1
Features....1-2
Ethernet Interfaces....1-2
WAN Interfaces....1-2
Bridging....1-2
Management....1-3
Timing....1-3
Diagnostics....1-3
Statistics....1-3
Event Log File....1-3
1.2 Physical Description....1-4
1.3 Functional Description....1-4
Interfaces....1-4
Ethernet Interfaces....1-4
E1/T1 Interfaces....1-4
Bridge....1-5
VLAN-Aware Mode....1-5
VLAN-Unaware Mode....1-8
VLAN Stacking....1-9
Quality of Service....1-10
Management....1-10
Inband Management....1-10
Out-of-Band Management....1-10
Management Access....1-10
Security....1-11
Statistics and Event Log....1-11
Diagnostics....1-11
1.4 Technical Specifications....1-12

Chapter 2. Installation and Setup

2.1 Site Requirements and Prerequisites....2-1
2.2 Package Contents....2-2
2.3 Required Equipment....2-2
2.4 Mounting the Unit....2-3
2.5 Connecting to Ethernet Equipment....2-3
2.6 Connecting to E1/T1 Equipment....2-3
2.7 Connecting to Terminal....2-4
2.8 Connecting to Power....2-5
Connecting to AC Power....2-5
Connecting to DC Power....2-5

Chapter 3. Operation

3.1 Turning On the Unit....3-1
3.2 Indicators....3-1
3.3 Default Settings....3-2

3.4 Configuration and Management Alternatives 3-5
Working with Terminal 3-5
Logging In 3-5
Choosing Options 3-5
Typical Configuration Screen 3-6
Navigating Tables 3-6
Help Screen Example 3-7
Working with ConfiguRAD 3-8
Web Browser Requirements 3-8
Logging In 3-8
Navigating the ConfiguRAD Menus 3-8
Working with RADview-Lite 3-9
3.5 Menu Map 3-10
3.6 Turning Off the Unit 3-12

Chapter 3. Configuration

4.1 Configuring for Management 1
Configuring IP Host Parameters 2
Entering Device Information 3
Configuring the Network Managers 4
Controlling Management Access 5
Configuring the Terminal Control Port 5
4.2 Configuring for Operation 6
Selecting the Clock Source 6
Configuring Ports at the Physical Layer 7
Configuring E1 Ports 7
Configuring T1 Ports 9
Configuring the Fast Ethernet Ports 11
Configuring Ports at the Logical Layer 12
Configuring the Bridge 14
Configuring the Static MAC Table 15
Configuring the Bridge Ports 17
Configuring VLAN Membership 20
Configuring Quality of Service (QoS) 21
4.3 Additional Tasks 23
Changing User Name and Password 24
Displaying the Inventory 24
Displaying Unit Status 26
Displaying System Status Information 26
Displaying Physical Port Status 26
Displaying Application-Level Status 27
Viewing Additional System Information 28
Transferring Software and Configuration Files 28
Resetting Egate-20 30
Resetting to Factory Defaults 30
Restarting the Unit 30

Chapter 5. Configuring Egate-20 for a Typical Application

5.1 Application Description 5-1
5.2 Configuring Egate-20 5-3
Configuring the Management Parameters 5-3
Defining the Host Parameters 5-3

Defining Managers 5-4
Configuring the E1 Physical Layer 5-5
Configuring the Logical Layer 5-6
Configuring the Application Layer 5-15
Defining Bridge Ports 5-15
Defining VLAN Memberships 5-22
5.3 Configuring RICi-E1 5-32
Configuring Host Tagging 5-32
Configuring the E1 Port 5-32
5.4 Configuring FCD-IP 5-33
Configuring the Routing: 5-33
Configuring the E1 Port 5-33

Chapter 6. Troubleshooting and Diagnostics

6.1 Monitoring Performance 6-1
Monitoring Physical Ports 6-1
Monitoring the Ethernet Port 6-1
Viewing the E1/T1 Performance Monitoring (PM) Data 6-3
Monitoring Logical Ports 6-7
6.2 Handling Alarms and Traps 6-9
Viewing the Event Log 6-9
Clearing the Event Log 6-10
6.3 Troubleshooting 6-11
6.4 Testing the Unit 6-12
Running a Ping Test 6-12
Tracing the Route 6-12
Performing a Loopback Test on E1/T1 Links 6-13
6.5 Frequently Asked Questions 6-14
6.6 Technical Support 6-14

Appendix A. Connector Pinouts

Appendix B. Boot Manager

Chapter 1
Introduction

1.1 Overview

Egate-20 is a channelized Ethernet gateway that aggregates and switches traffic from Fast Ethernet over up to eight E1 or T1 circuits. The traffic from the E1 or T1 ports is transmitted through the Egate-20 Ethernet ports, thus allowing remote users to connect to the packet network through specific VLANs.

Egate-20 provides full L2 switching (bridge) functionality between the Ethernet ports and the E1/T1 port, including VLAN-unaware and VLAN-aware bridging modes supporting VLAN-based L2 VPNs.

Egate-20 supports fully-channelized E1/T1 applications: up to 248/102 framed over E1 or T1 channels.

Four electrical Fast Ethernet (10/100BaseT) physical ports are provided. Statistics are collected to enable performance monitoring and troubleshooting.

The unit supports Telnet, ConfiguRAD (Web-based) and SNMP for inband configuration and management, as well as an ASCII terminal for out-of-band management.

Product Options

Egate-20 is available with either E1 interfaces or T1 interfaces. The unit supports all-E1 or all-T1 connections; it does not, however, support a combination of both of these interface types.

Applications

Typical applications include Ethernet VPN services over E1 or T1 lines, and aggregation of enterprise LANs over E1 or T1.

Figure 1-1 illustrates a typical application, where Egate-20 connects users at three remote LANs to the packet network over E1/T1 with an SDH/SONET connection.

For instructions on setting up a similar application using channelized E1 or T1, see *Chapter 5*.

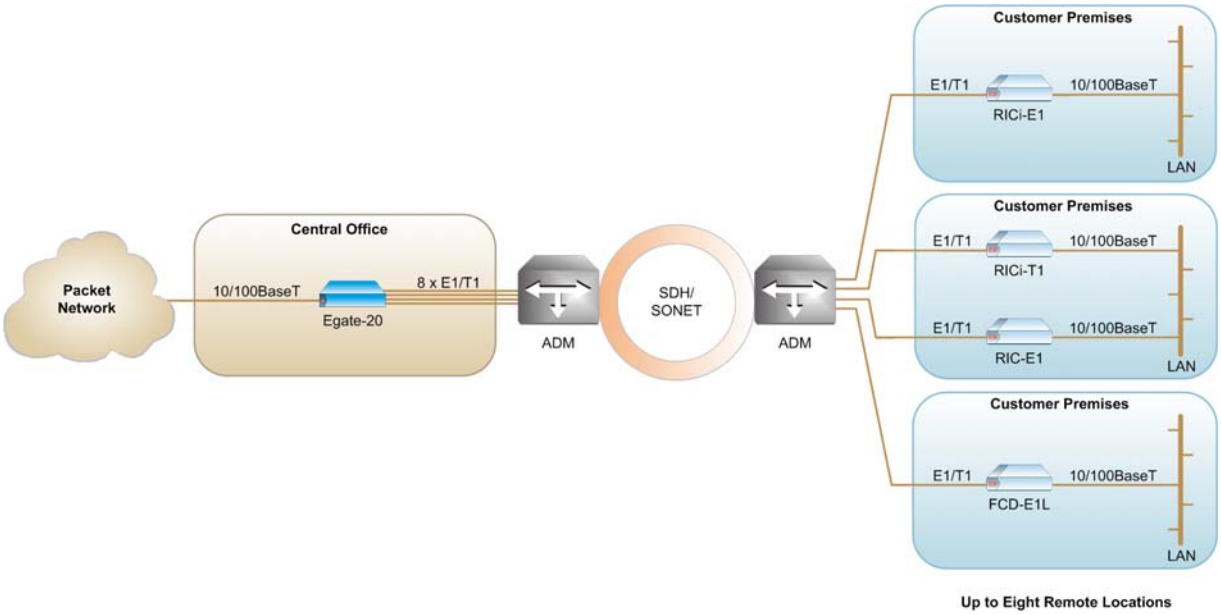


Figure 1-1. Aggregating Ethernet over E1/T1 Traffic

Features

Egate-20 is an Ethernet-over-E1/T1 gateway that aggregates and switches traffic from Fast Ethernet, over up to eight E1 or T1 circuits.

Egate-20 has:

- Four Fast Ethernet interfaces
- Up to 248/192 logical ports
- One control port for out-of-band management via an ASCII terminal.

Ethernet Interfaces

The four Fast Ethernet interfaces (10/100BaseT) operate in full-duplex or half-duplex, with flow control (PAUSE).

WAN Interfaces

Egate-20 supports eight E1 interfaces (framed or unframed) or eight framed T1 interfaces.

Remote loopbacks are available.

Bridging

Egate-20 provides a bridging function between its various bridge ports:

- Fast Ethernet ports
- E1 or T1 (Ethernet over E1/T1) and logical ports
- Internal host.

The internal bridge operates in VLAN-Unaware or VLAN-Aware mode.

The VLAN-aware bridge allows the user to create a subgroup of bridge ports within the bridge. Each such subgroup is associated with a unique VID. Frames can be forwarded only between bridge ports that are members of the same VLAN, thus enabling a total separation between different VLAN users within the same bridge.

In VLAN-unaware mode, the bridge ignores VLAN tags and forwards frames only according to their source and destination MAC addresses.

Egate-20 supports QoS mapping from bridge ports, Ethernet VLAN priority, or IP ToS in order to egress queue priority at the E1/T1 level.

Management

The Egate-20 management software supports a number of functions: Viewing of system information, and modification of configuration parameters and mode of operation (including setting system default values and resetting the unit) are the most basic functions of the software. In addition, the software enables monitoring of Egate-20 performance, initiation of connectivity tests, and remote software and configuration-file download/upload.

These functions can be performed using the following methods:

- OOB management via a local ASCII terminal connected to the V.24 (RS-232) DCE control port
- Inband management (local and remote) via an Ethernet or E1/T1 port
- ConfiguRAD: This tool is a user-friendly Web-based element management system for remote device configuration and maintenance. It is embedded in Egate-20 and provided at no extra cost. ConfiguRAD can be run from any standard Web browser.
- RADview-Lite: RAD's SNMP-based element management software, providing SNMP traps, status polling, and configuration download. Remote element management is available in RADview-Lite via the ConfiguRAD Web-based application, or by using Telnet.
- TFTP for file downloads and uploads.

Timing

Egate-20 can have a single clock domain with master and fallback sources for timing. The clock source can be an internal oscillator or loopback timing (LBT).

Diagnostics

Egate-20 supports activation of remote loopbacks for the E1/T1 ports, as well as Ping tests and Trace Route.

Statistics

Egate-20 provides statistics and counter capabilities in the physical Ethernet and E1/T1 levels.

Event Log File

The Log File includes entries at the system, Ethernet and E1/T1 levels.

1.2 Physical Description

Egate-20 is a compact unit, 1U high and 8.5" wide. It can be mounted in a 19" rack or used as a standalone unit. *Figure 1-2* shows a three-dimensional view of Egate-20 with Ethernet and E1/T1 interfaces

Figure 1-2. Egate-20 3D View

LEDs and interface and control connectors are located on the front panel. For more information see *'Controls and Indicators'* in *Chapter 3.*

The power supply connector is located on the rear panel.

1.3 Functional Description

This section describes the major functional features of Egate-20.

Interfaces

Ethernet Interfaces

The Ethernet physical interface is an electrical 10/100BaseT. The interface supports autonegotiation.

The Ethernet interface supports Ethernet and 802.3 standards.

E1/T1 Interfaces

E1 connections support a data rate of 2.048 Mbps, framed or unframed, and are G.703-and G.704-compliant.

T1 connections support a data rate of 1.544 Mbps and D4 and ESF framing, compliant with AT&T TR62411 and ANSI T1.403 standards.

Bridge

Egate-20 has multi-port bridging capability with up to 253 bridge ports, consisting of one host port, four Ethernet ports, and up to 248/192 E1/T1 logical ports. The bridge supports two modes of operation: VLAN-Aware and VLAN-Unaware.

The mechanism of each mode can be described as five distinct processes:

Ingress	Checks each frame entering the bridge to decide if and how this frame should be passed on to the forwarding process
Learning	Learns new MAC table entries (MAC only or MAC VID pairs)
Aging	Checks the forwarding MAC table periodically
Forwarding	Decides to which bridge port/ports to forward the frame
Transmission	(VLAN-aware mode only) Selects the format of the transmitted frame at the output port: With VLAN ID (tagged) or Without VLAN ID (untagged).

Bridge features and these five processes are described below for each mode.

VLAN-Aware Mode

This mode enables creation of sub-groups of bridge ports within the bridge. Each sub-group is defined per VLAN and is associated with a unique VLAN ID (VID). Frames containing a VID can be forwarded only between bridge ports that are members of this specific VLAN, thus enabling a total separation between different VLAN users within the same bridge.

Bridge Features

The bridge is a full VLAN-aware bridge as per 802.1q. Learning and forwarding are according to MAC address and VID, and learning of up to 2,048 MAC table entries (MAC + VID pairs) is supported. Egate-20 enables configuration of the aging time as well as MAC table viewing (learned MACs).

Ingress Process

The ingress process is composed of three steps: frame admission, ingress filtering and PVID assignment to untagged/priority-only tagged frames.

Frame admission Has two modes of operation (configured per bridge port):

- **Admit all frames** – all frames arriving from the port are admitted and proceed to the ingress filtering process. PVID is assigned to untagged or priority-only tagged frames.
- **Admit only VLAN tagged frames** – only VLAN tagged frames are admitted and allowed to proceed to the ingress filtering process. Untagged or priority-only tagged frames are discarded.

Ingress filtering

One of the following modes (configured per bridge port):

- **Enable** – performs ingress filtering according to VID. This means that only frames that share a VID assigned to this bridge port are admitted.
- **Disable** – all frames are forwarded.

Only admitted frames that pass filtering are submitted to learning and forwarding processes.

PVID assignment

Per bridge port configuration.

In VLAN-aware mode, each received frame entering the bridge is associated with a single VID. If the received frame does not contain a VLAN ID (untagged or priority-only tagged frames), a specific PVID is assigned to these frames before they move on to the forwarding process.

This means that the untagged/priority tagged frames that have passed the admission/ingress filtering are tagged with PVID and proceed to the forwarding process. If Tag Stacking is enabled, tagged frames are double-tagged (VID and PVID).

For untagged frames that were tagged during this process to VID=PVID, the priority tag is assigned at the VLAN priority field, according to the default priority configuration.

Table 1-1 summarizes the behavior of the ingress process.

Table 1-1. Ingress Process

Frame Admission Mode	Ingress Filtering Mode	Bridge Behavior
Admit all frames	Enable	VLAN tagged frames with a VID (or PVID for untagged/priority-tagged frames) that do not include the bridge port in their VLAN member set are dropped.
	Disable	All frames pass.
Admit VLAN tagged frames	Enable	VLAN tagged frames with a VID that do not include the bridge port in their member set are dropped. Untagged/priority-only tagged frames are dropped.
	Disable	All VLAN-tagged frames pass. Untagged/priority-only tagged frames are dropped.

Frames that pass this stage are submitted to the forwarding process and to the learning process.

Learning Process

The learning process observes the source MAC address (SA) and the VID of the received frame, and updates the forwarding database with the MAC-VID pair and with the bridge port that the frame was received from. The Forwarding Database (FDB) is also referred to as a MAC table.

Entries in the MAC table can be dynamic (inserted by the learning process) or static (inserted by configuration). A dynamic entry has an aging time associated with it.

The Egate-20 VLAN-aware bridge is an Independent VLAN Learning (IVL) bridge.

The learning process inserts a new dynamic entry to the MAC table, and this entry consists of a MAC-VID pair and bridge port.

The following existence rules apply:

- If the MAC-VID pair already exists for the same port, the aging time is updated.
- If the MAC-VID pair already exists but for a different bridge port (dynamic entry) the new entry overrides the existing one.
- If the MAC-VID pair already exists for a different bridge port (static entry) the static entry prevails.

Aging Process

The aging process checks the forwarding MAC table periodically. Each dynamic entry-aging period that has exceeded the configured Aging Time Limit is deleted. The aging period is the time since the last frame for this entry has entered the bridge. The periodic check of the MAC table (aging time intervals) results in actual aging times that can reach up to twice the value that was configured by the user.

Forwarding Process

The forwarding process is performed based on the frame destination MAC VID pair. The frame is forwarded to the bridge port that was specified in the MAC table for this MAC VID pair entry.

Untagged frames are forwarded according to the PVID that was attached to that frame during the ingress process.

Frames are forwarded, dropped or flooded according to these guidelines:

Forwarded	If the bridge port of the pair entry (DA, VID) in the MAC table is both an active bridge port and a member of the VLAN, then the frame is forwarded to that bridge port only.
Dropped	• If the bridge port for the pair entry (DA, VID) in the MAC table is the port on which the frame was received, then the frame is dropped. • If there are no active ports associated with the frame's VID, or if the VID is not defined at all, then the frame is dropped.

Flooded

- If the pair (DA, VID) is not learned and does not exist in the MAC table. The frame is transmitted to all bridge ports that are associated with the frame's VLAN ID.
- Multicasts and broadcasts are flooded only through the bridge ports whose VLAN ID is identical to the frame's VLAN ID.

Transmission Process

After the forwarding process identifies the destination bridge port/ports to which the frame should be transmitted, the transmission process transmits it with the appropriate format.

For each VLAN and port, the user can configure the frame format to be used:

VLAN-tagged

- VLAN-tagged frames are transmitted unchanged
- Untagged frames are transmitted tagged with priority according to the default priority of the ingress bridge port, and VID=PVID of the port from which they have entered
- Priority-tagged frames are transmitted tagged with original priority and
  VID = PVID.

Untagged All frames are transmitted as untagged.

VLAN-Unaware Mode

In this mode the bridge forwarding ignores the VLAN ID of VLAN-tagged frames.

Each Ethernet packet received from each bridge port (Ethernet or E1s) is forwarded according to its destination MAC address.

Bridge Features

Learning and forwarding in the bridge is according to MAC address only. Learning of up to 2048 MAC addresses and VLAN tagged frames transparency (forwarding according to MAC only) is supported. Egate-20 enables configuration of the aging time, and MAC table viewing (learned MACs).

Ingress Process

All frames are accepted in this mode: untagged, priority-tagged or VLAN-tagged.

Learning and forwarding is based on the MAC addresses, with no regard to the VLAN. This mode is sometimes regarded to as transparent mode, due to "tag transparency".

Learning Process

The learning process observes the source MAC address (SA) of the received frame and updates the forwarding database (FDB) with the MAC and the bridge port that the frame was received from. (FDB is also referred to as MAC table).

The learning process inserts a new entry into the MAC table. This entry consists of MAC and bridge port.

The following existence rules apply:

- If the MAC already exists for the same bridge port, the aging time is updated.
- If the MAC already exists, but for a different bridge port, the new entry will override the existing one (dynamic entry).

Aging Process

The aging process checks the forwarding MAC table periodically. Each dynamic-entry aging time period that has exceeded the configured Aging Time Limit is deleted. The aging time period is the period of time since the last frame for this entry has entered the bridge. The periodic check of the MAC table (aging time intervals), results in actual aging times that can reach up to twice the value that was configured by the user.

Forwarding Process

The forwarding process is performed based on the frame MAC Destination Address (MDA). The frame is forwarded to the Bridge/port specified in the MAC table for this MAC.

Frames are forwarded, dropped or flooded at this stage for the following reason:

Forwarded	A frame is forwarded according to its DA, to the bridge port where its DA was learned.
Dropped	If the port for that DA entry in the MAC table is the port on which the frame was received, the frame is dropped.
Flooded	• If there is no information regarding the DA in the MAC table then the frame is flooded to all ports • Frames with multicast or broadcast address are flooded to all ports.

Transmission Process

In this bridge mode (VLAN-Unaware), the frames are transmitted unchanged: No tags are added or removed.

VLAN Stacking

VLAN Stacking mode for a bridge port refers to the addition of a tag to an incoming frame either at ingress or egress (regardless of whether it already has an existing VLAN tag), and removal of a tag at ingress or egress when the frame leaves from this port.

This setting is independent of the bridge activity.

Quality of Service

Egate-20 supports QoS mapping to priority queues (4 PQ, strict priority, per bridge port) according to one of the following:

- VLAN priority (802.1p)
- DSCP (ToS byte) (see *Figure 1-3*)
- IP Precedence (see *Figure 1-4*)
- Port-based.

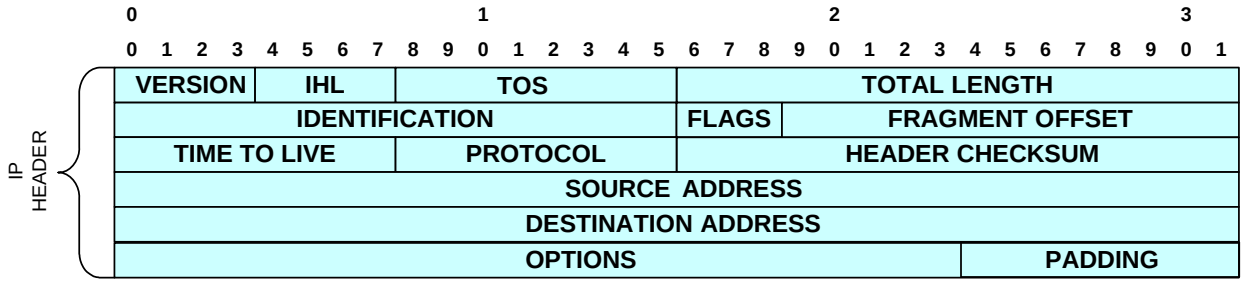


Figure 1-3. IP Header

Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
DS5	DS4	DS3	DS2	DS1	DS0	XX	XX

DSCP: six bits (DS5–DS0)

Figure 1-4. ToS Byte DSCP Field

Management

The performance of Egate-20 can be monitored locally from an ASCII terminal, or from a remote site using Telnet or the ConfiguRAD Web-based application. RADviewLite is also supported.

Inband Management

Egate-20 supports inband management via Telnet, SNMP and Web (ConfigureRAD). Configuration, monitoring and statistics are available.

Out-of-Band Management

Egate-20 enables full configuration and diagnostics via an ASCII terminal. The ASCII terminal is connected to the Control Port on the Egate-20 front panel.

ASCII terminal activation is described in *Chapter 3* including general instructions for navigating through the system menus and windows and modifying data.

Management Access

The Egate-20 architecture allows access from every bridge port to both the Egate-20 host and remote site devices. In certain configuration modes, a total separation of management traffic from user traffic can be achieved.

VLAN-Based Management Scheme

In this VLAN-based management, traffic coming from the remote CPE uses two VLANs: one for user traffic, for which the CPE may use tag stacking, and the other for management traffic. All CPEs connected to the Egate-20 share the same management VLAN.

In VLAN aware mode, Egate-20 forwards the management traffic to the Ethernet cloud network management station. As a different VLAN is used, total separation between user traffic and management traffic is maintained.

Security

ASCII terminal, Telnet and Web access are password protected. After a period of 15 minutes of inactivity during which no character is entered, the system exits to the password screen.

Egate-20 supports the following access authorization levels:

- Super-user mode for configuration and monitoring
- User mode for monitoring and configuration view only.

Statistics and Event Log

Egate-20 provides statistics and counters at the physical Ethernet level, and frame statistics at the E1/T1 level.

Events are stored and time-stamped in an event log file. Up to 1000 cyclic entries are maintained. The log file is maintained at E1/T1, Ethernet and system levels. For more information, see *Chapter 6*.

Diagnostics

There are several types of diagnostics and troubleshooting procedures (for more information see *Chapter 6)*:

- Loop-based troubleshooting via an E1/T1 external loop towards the line.
- Ping tests
- Trace Route
- Events/Traps – Traps can be masked, per manager IP address, per configuration.

1.4 Technical Specifications

E1 Interfaces	*Number of Ports*	8
	Standards	G.703
	Framing	Framed/Unframed
	Data Rate	2.048 Mbps
	Line Coding	HDB3
	Line Impedance	120 Ω, balanced 75 Ω, unbalanced (via an adapter cable)
	Interface type, connector	Electrical, RJ-45
T1 Interfaces	*Number of Ports*	8
	Standards	ANSI T1.403
	Framing	D4, ESF
	Data Rate	1.544 Mbps
	Line Coding	B8Zs
	Line Impedance	100 Ω, balanced
	Interface type, connector	Electrical, RJ-45
Fast Ethernet Interfaces	*Number of Ports*	*4*
	Standards	10/100BaseT, relevant sections of IEEE 802.3, 802.3u, 802.1p and 802.1Q
	Data Rate	100 Mbps
	Maximum Frame Size	1536 bytes
	Interface type, connector	Electrical, RJ-45
	Range	100 meters/328 feet on UTP category 5 cables
	Autonegotiation modes	Full duplex / half duplex, flow control (pause)

Internal Bridge	*Ports*	Up to 253/197: • Fast Ethernet (up to 4) • For local host (1) • E1/T1 (up to 248/192)
	LAN Table	Up to 2,048 MAC addresses (learned)
	Operation Mode	VLAN-Aware, VLAN-Unaware
	Filtering and forwarding	Transparent or filter
Control Port	*Interface*	RS-232/V.24 (DTE asynchronous)
	Data Rate	9.6, 19.2, 115.2 kbps
	Connector	DB-9, female
Monitoring	*Statistics*	System and physical layer alarms ETH over E1/T1 frame counters Ethernet physical layer statistics and frame counters
Indicators	*PWR (green)*	On: Egate-20 is powered on Off: Egate-20 is powered off
	RDY (green)	On: Self test succeeded Off: Self test or diagnostics underway
	ALM (red)	On: Interface alarm Off: No Alarm
	LINK (green) for each Ethernet port	On: Ethernet link is up Off: Ethernet link is down
	ACT (yellow) for each Ethernet port	Blinking: Ethernet frame received or sent within the last second Off: No frame received or sent within the last second
	LOC (red) for each E1 port	On: Local sync loss Off: No loss
	LOC (red) for each T1 port	On: Local sync loss ("Red alarm") Off: No loss

	REM (red) for each E1 port	On: Remote sync loss Off: No loss
	REM (yellow) for each T1 port	On: Remote sync loss (“Yellow alarm”) Off: No loss
Power	*AC Source*	100 to 240 VAC (±10%), 50 to 60 Hz
	DC Source	-48 VDC nominal
	Power Consumption	9W max
Physical	*Height*	43.7 mm (1.7 in / 1U)
	Width	215.9 mm (8.5 in)
	Depth	300.0 mm (11.8 in)
	Weight	2.2 kg (4.7 lb)
Environment	*Temperature*	0°–50°C (32°–122°F)
	Humidity	Up to 90%, non-condensing

Chapter 2

Installation and Setup

This chapter describes:

- *Site Requirements and Prerequisites*
- *Package Contents*
- *Connecting to Ethernet Equipment*
- *Connecting to E1/T1 Equipment*
- *Connecting to Power*.

Egate-20 is delivered completely assembled. It is designed for installation as a desktop unit or for mounting in a 19-inch rack. For rack installation instructions, refer to the *Rack Mounting Kit for 19-inch Racks* guide that comes with the RM-35 kit.

Warning

No internal settings, adjustment, maintenance and repairs should be performed by either the operator or the user. Such activities must be performed only by skilled personnel who are aware of the hazards involved.

Always observe standard safety precautions during installation, operation and maintenance of this product.

2.1 Site Requirements and Prerequisites

AC-powered Egate-20 units should be installed within 1.5 meters (5 feet) of an easily accessible grounded AC outlet capable of furnishing the required supply voltage, in the range of 100 to 240 VAC, 50 or 60 Hz.

Allow at least 90 cm (36 inch) of frontal clearance for operator access. For continuous product operation allow at least 10 cm of frontal clearance and at least 15 cm at rear of the unit for cable connections and ventilation. For proper ventilation, keep at least 2.5 cm clearance from the sides and top of the product.

The ambient operating temperature of Egate-20 is 0° to 50° C (32° to 122°F), at a relative humidity of up to 90%, non-condensing.

2.2 Package Contents

The Egate-20 package contains the following items:

- Egate-20 unit
- AC power cord
- AC/DC adapter plug (only if DC option ordered)
- CBL-RJ45/2BNC/E1 – Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors (if an unbalanced E1 interface is ordered)
- CBL-DB9-DB9M-STR – DB-9 to DB-9 control port cable (if ordered)
- RM-35 kit for mounting one or two units in a 19-inch rack (if ordered)
- WM-35 kit for mounting one unit on a wall (if ordered)
- Technical documentation CD – Includes this manual and the relevant DC power connection supplements, RM kit documentation, and the relevant RADview documentation.

2.3 Required Equipment

Egate-20 needs no special tools for installation. You need a screwdriver to mount Egate-20 in a 19-inch rack.

Egate-20 is equipped with an appropriate (country or region dependent) power cord to be connected from the power socket on the rear panel to the mains.

Refer to the following table to determine which cables and connectors are required for installation. *Appendix A* specifies all the electrical connector pinouts.

Table 2-1. Required Cables and Connectors

Interface	Cable/Connector
Control port	Straight RS-232/V.24 cable with DB-9 female connector for ASCII terminal
Fast Ethernet interface	RJ-45, 8-pin connection media
E1/T1 interface	RJ-45, 8-pin connection media. For an unbalanced E1 interface, use the provided adapter cable

2.4 Mounting the Unit

Egate-20 is designed for installation as a desktop unit or mounted in a rack.

- For rack-mounting instructions, refer to the installation kit manual.
- If Egate-20 is to be used as a desktop unit, place and secure the unit on a stable, non-movable surface.

Refer to the clearance and temperature requirements in *Site Requirements and Prerequisites.*

2.5 Connecting to Ethernet Equipment

The Egate-20 Fast Ethernet interfaces terminate in 8-pin RJ-45 connectors.

➤ **To connect the Fast Ethernet interface:**

- Connect the LAN cables to the unit's RJ-45 connector designated LAN, on the front panel.

2.6 Connecting to E1/T1 Equipment

The Egate-20 E1/T1 interfaces terminate in 8-pin RJ-45 connectors.

➤ **To connect the balanced E1 or T1 interface:**

- Connect an E1 or T1 line cable to one of the unit's RJ-45 connector designated E1 1 to 8.

Note

For unbalanced E1 connections, use the RAD-supplied adapter cable (RJ-45 to a pair of BNC connectors).

➤ **To connect the unbalanced E1 interface (if used):**

1. Connect the RJ-45 connector of the adapter cable to the RJ-45 port designated E1.
2. Connect the **transmit** cable to the **red** coaxial connector of the adapter cable marked "→" (see *Figure 2-1*).
3. Connect the **receive** cable to the **green** coaxial connector of the adapter cable marked "←" (see *Figure 2-1*).

Figure 2-1. CBL-RJ45/2BNC/E1 Adapter Cable

2.7 Connecting to Terminal

➤ **To connect the ASCII terminal:**

- Connect the unit's CONTROL port to an ASCII terminal or an out-of-band management station with a straight RS-232 cable.

Caution Terminal cables must have a frame ground connection. Use ungrounded cables when connecting a supervisory terminal to a DC-powered unit with floating ground. Using improper terminal cable may result in damage to supervisory terminal port.

2.8 Connecting to Power

Egate-20 has either AC power or DC power.

Connecting to AC Power

AC power is supplied to Egate-20 via a standard 3-prong plug with an integral fuse holder.

AC power should be supplied through the 1.5m (5 ft) standard power cable terminated by a 3-prong plug. The cable is provided with the unit.

Warning

Before switching on this unit and connecting or disconnecting any other cable, the protective ground terminals of this unit must be connected to the protective ground conductor of the mains power cord. If you are using an extension cord (power cable) make sure it is grounded as well.

Any interruption of the protective (grounding) conductor (inside or outside the instrument) or disconnecting of the protective ground terminal can make this unit dangerous. Intentional interruption is prohibited.

➤ **To connect AC power:**

1. Connect the power cable to the power connector on the Egate-20 rear panel.
2. Connect the power cable to mains outlet.

   The unit turns on automatically upon connection to the mains.

Connecting to DC Power

➤ **To connect DC power:**

- Refer to the DC power supply connection supplement, located on the Technical Documentation CD or at the back of the printed version of this manual. Refer also to the safety instructions at the beginning of this document.

Chapter 3

Operation

This chapter:

- Explains power-on and power-off procedures
- Provides a detailed description of the front panel controls and indicators and their functions
- Summarizes the default settings
- Describes the configuration alternatives
- Explains how to navigate menus
- Illustrates the management menu hierarchy.

For a detailed explanation of the device configuration menus, see *Chapter 4*.

3.1 Turning On the Unit

➤ To turn the Egate-20 unit on:

- Connect the power cord to the mains.

  The PWR indicator lights up and remains lit as long as Egate-20 receives power.

Egate-20 requires no operator attention once installed, with the exception of occasional monitoring of front panel indicators. Intervention is only required when the unit must be configured to its operational requirements, or when diagnostic tests are performed.

3.2 Indicators

The unit's LEDs are located on the front panel. *Table 3-1* lists the functions of the LED indicators.

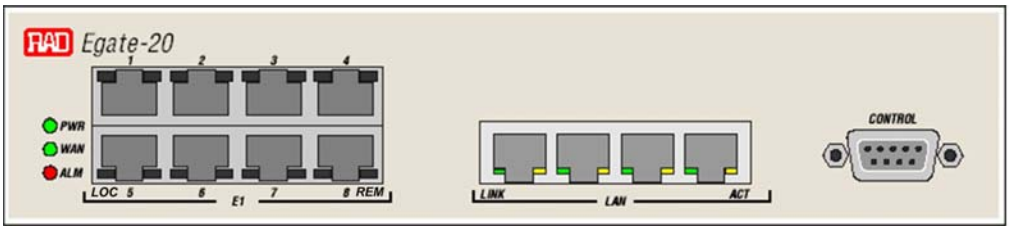


Figure 3-1. Egate-20 Front Panel for E1 Interfaces

Table 3-1. Egate-20 LED Indicators

Name	Color	Function
PWR	*Green*	On: Egate-20 is powered Off: Egate-20 is off
ALM	*Red*	On: interface alarm detected Off: no alarm currently detected
RDY	*Green*	On: Self test succeeded Off: Self test or diagnostics underway
LOC for each E1 port	*Red*	On: Local sync loss Off: No loss
RED for each T1 port	*Red*	On: Local sync loss Off: No loss
REM for each E1 port	*Red*	On: Remote sync loss Off: No loss
YEL for each T1 port	*Yellow*	On: Remote sync loss Off: No loss
LINK for each Ethernet port	*Green*	On: Ethernet link is up Off: Ethernet link is down
ACT for each Ethernet port	*Yellow*	Blinking: Ethernet frame received or sent within the last second Off: No frame received or sent within the last second

3.3 Default Settings

Configuration parameters in Egate-20 may or may not have default values. Configuration parameters that have default values fall into one of two categories:

- **Set/configured defaults** – For example, terminal bit rate, which is 19200 bps and set on power up. These defaults are presented on the screen.
- **Not set/configured defaults** – These defaults are not visible when entering the screen and are presented by a blank field. They show up after a **Save** operation is done in the particular screen. For example, the ingress filtering parameter shows the default value after changes in the bridge configuration screen are saved.

Configuration parameters that do not have default values must have values entered in their respective fields, or the **Save** operation will fail.

The following tables list the default settings of the Egate-20 configuration parameters.

Table 3-2. Default System Settings

Parameter	Default Value
Device Name	Egate-20
Description	E1/T1 Multi-port Channelized Ethernet Gateway
Location	The Location of the Device
Contact Person	Name of Contact Person
Host IP address	0.0.0.0
Host IP mask	255.255.255.0
Host default gateway	0.0.0.0
Read community	Public
Write community	Private
Trap community	Public
Host Tagging	Untagged
Telnet access	Enable
SNMP access	Enable
Web access	Enable
Baud rate	115.2 kbps

Table 3-3. Default E1 Settings

Parameter	Default Value
Activation	Up
Transmit Clock Source	LBT
Line type	Balanced
Frame Type	Unframed
Receiver sensitivity	-43
Line code	HDB3

Table 3-4. Default T1 Settings

Parameter	Default Value
Activation	Up
Transmit Clock Source	LBT
Frame Type	Framed - ESF
Line Mode	CSU

Parameter	Default Value
Line BuildOut	0 dB
Sync	Fast
Receiver Sensitivity	-36
Line code	B8ZS

Table 3-5. Default Ethernet Settings

Parameter	Default Value
Port Status	Up
Autonegotiation	Enable
Max Capability Advertised	100base - TX full duplex mode
Flow Control	Enable

Table 3-6. Default Logical-Layer Settings

Parameter	Default Value
Port Name	(Logic)
Protocol	HDLC
Active Timeslots	(None)

Table 3-7. Default Bridge Settings

Parameter	Default Value
Aging Time	300
Forwarding Mode	Transparent
VLAN Mode	Unaware

Table 3-8. Default Bridge-Port Settings

Parameter	Default Value
Activation	Enable
Ingress Filtering	Disable
Accept Frame Type	All
Port VID/ Stacking	2
Copy Original Priority	Disable
Default Priority Tag	0
Egress Tag Handling	None
Ingress Tag Handling	None

3.4 Configuration and Management Alternatives

Configuration and monitoring operations can be performed from an ASCII terminal connected to the control port, from a PC running a Web browser via ConfiguRAD, or via RADview-Lite. These alternatives are detailed in the following three sections.

Working with Terminal

Egate-20 includes a V.24/RS-232 asynchronous DTE port, designated CONTROL and terminated in a 9-pin D-type female connector. The control port continuously monitors the incoming data stream and immediately responds to any input string received through this port.

The Egate-20 control port can be configured to communicate at the following rates: 9.6, 19.2, or 115.2 kbps.

➤ **To start a terminal control session:**

1. Make sure all Egate-20 cables and connectors are properly connected (for more information, refer to *Chapter 2*).
2. Start an ASCII terminal emulation application (for example: Windows HyperTerminal, Procomm).
3. Turn on the control terminal PC and set its default port parameters to 115,200 baud rate, 8 bits/character, 1 stop bit, no parity.
4. Set the terminal emulator to ANSI VT-100 emulation (for optimal view of system menus).
5. When the initialization and self-test are over, a menu appears displaying initialization and self-test results.

Logging In

➤ **To log in:**

1. Enter **SU** for user name with read/write permission.
2. Enter **1234** for (default) password.

Note *It is recommended to change default passwords to prevent unauthorized access to the unit. For more information, refer to* Chapter 4*.*

Choosing Options

➤ **To choose an option:**

1. Type the number corresponding to the option, and press **‹Enter›**.
2. When any change is made in the menu, the **Save** option appears as the last option in the menu.

3. Type the number corresponding to the **Save** option in the current menu, and press **<Enter>** to save your change.

   Egate-20 updates its database with a new value or displays a new menu for the selected option.

4. If you press <**ESC**> to exit the menu without saving your changes, the following message appears:

   "**Do you want to save changes (Y/N/C)?**"

   Type the appropriate letter to save or not save your changes (**Y**es/**N**o/**C**ancel).

Note

When a menu option has only two values, typing the option number and clicking ***<Enter>*** *toggles between the available values.*

Typical Configuration Screen

The following figure shows the layout of a typical configuration screen, with main elements displayed.

```
                  Product title line (Egate-20)
                       Short error message

1. Sub Menu>
2. Sub Menu>
3. Parameter X [Range] ... (value)
4. Parameter Y>            (Select a value from the list)
5. Table Z []

prompt>
Main>Configuration>System>

Help line message
Help line of keyboard shortcuts, such as “Esc-prev” for
returning to the previous menu
-----------Division screen line ------------------
Scroll messages
```

Figure 3-2. Typical Configuration Screen

Navigating Tables

Some of the Egate-20 management screens, such as the Inventory and Manager screens, are tables, which are larger than regular menus and require scrolling to navigate between parameters.

Use the following keys (case-sensitive) for table navigation:

- **<Ctrl>+L** – scroll left, **Left Arrow** – move left
- **<Ctrl>+R** – scroll right, **Right Arrow** – move right
- **Up Arrow** – move up
- **Down Arrow** – move down
- **<Tab>** – select the next changeable cell

- G<row number>, <col number> – go to the specified cell.

Note

You can display these navigation keys by typing <?> from a table.

The following figure shows a Manager List table.

```
                              EGATE-20
Main Menu>Configuration>System>Management>Manager List

Manager ID    Manager IP   Manager IP Mask   Manager Trap Mask
    1.        1.1.1.1         255.255.255.0      Unmask
|   2.        2.2.2.2         255.255.255.0      Unmask
v   3.        3.3.3.3         255.255.255.0      Mask
    4.        4.4.4.4         255.255.255.0      Unmask
    5.        5.5.5.5         255.255.255.0      Unmask

1. Change cell                        … (1.1.1.1)

ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 3-3. Sample Table Screen (Manager List)

Help Screen Example

The following figure shows a typical Help screen, which summarizes the keyboard shortcuts that are available in the functional screen from which the Help screen was invoked.

The Help screen is invoked by typing the '**?**' symbol from the relevant functional screen.

```
Table Hot Keys

'L'  - move left
'd'  - scroll down       'D' - move down
'a'  - add row           't' - remove row
'm'  - represent entry as menu
'c'  - clear table
TAB  - select next changeable cell

S <row number>,<col number> - select cell
```

Figure 3-4. Typical Help Screen

Working with ConfiguRAD

ConfiguRAD is a Web-based remote access terminal management program. It provides a user-friendly interface for configuring, collecting statistics and performing diagnostic tests on the Egate-20 units.

Web Browser Requirements

Internet Explorer 6.0 or higher, running on Windows 98SE, Windows 2000 or Windows XP, can be used to access the Egate-20 ConfiguRAD supervision utility from any location using Internet protocols.

Logging In

➤ **To log in via Web browser:**

1. Connect the Ethernet port of Egate-20 to the LAN.
2. Open the Web browser.
3. Disable any pop-up blocking software, such as Google Popup Blocker.
4. Enter the IP address of the Egate-20 in the address field of the browser in the following format: **http://'IP address'** and then press **<Enter>** to command the browser to connect (**'IP address'** stands for the actual Egate-20 IP address which has to be assigned via an ASCII terminal).
5. After the opening window is displayed (see *Figure 3-5*), click **LOGIN**.
6. In the Password Entry window, enter your user name (read/write user default is **su**) and password (default is **1234**).

   The ConfiguRAD Main menu is displayed.

Note

- *It is recommended to change default passwords to prevent unauthorized access to the unit. For more information, refer to 'Additional Tasks and Options' in Chapter 4.*
- *Egate-20 allows two management sessions to be active simultaneously: one network session (Telnet, ConfiguRAD, RADview-Lite) and one ASCII terminal session.*
- *If no user input is detected for five minutes during a ConfiguRAD session, Egate-20 automatically disconnects from the management station.*

Navigating the ConfiguRAD Menus

At the left-hand bottom corner, ConfiguRAD provides the following auxiliary management tools:

- **Status** – shows the number of users currently managing Egate-20.
- **Trace** – opens an additional pane for system messages, progress indicators (ping, software and configuration file downloads) and alarms.
- **Refresh All** – refreshes the data currently displayed.

➤ **To choose an option:**

1. Click a link in the ConfiguRAD screen to display the next menu.
2. Once the target screen is displayed, select a value from the dropdown box or enter it in a text box.

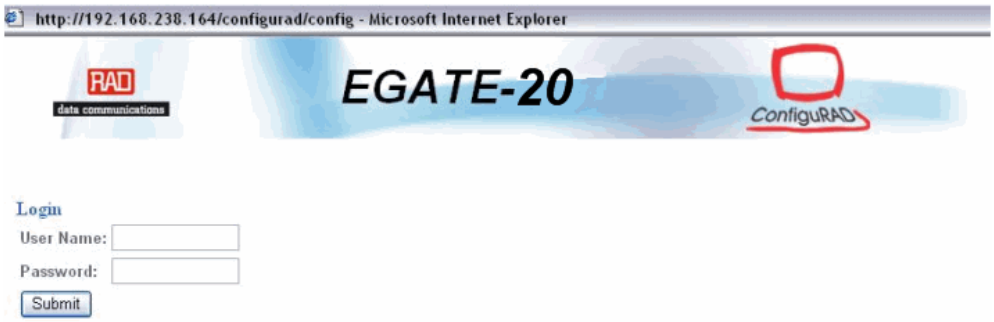


Figure 3-5. ConfiguRAD Login Screen

Working with RADview-Lite

RADview-Lite is a user-friendly and powerful SNMP-based access management system, which allows access to Egate-20 over a network via the ConfiguRAD interface. The management access is provided via RADview-Lite, and the actual menus are presented via ConfiguRAD's Web interface.

For more details about RADview-Lite, contact your local distributor or refer to Technical Documentation CD.

3.5 Menu Map

All management screens of Egate-20 are accessed via the main menu. The main menu options are:

Inventory Displays information on the functional blocks of the unit. For more information, refer to *Chapter 4*.

Configuration Defines parameters for the Egate-20 system, physical layer (Ethernet, E1/T1 ports), bridge and quality of service. For more information, refer to *Chapter 4*.

Monitoring Displays port connection status, log file contents, Ethernet status and physical characteristics, and MAC table for running applications. For more information, refer to *Chapter 6*.

Diagnostics Initiates diagnostic tests (ping, trace route and loopbacks). For more information, refer to *Chapter 6*.

Utilities Manages the transfer of software updates from a remote server. For more information, refer to *Chapter 4*.

```
                              Egate-20
Main Menu

1. Inventory              []
2. Configuration           >
3. Monitoring              >
4. Diagnostics             >
5. Utilities               >

>
Please select item <1 to 5>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 3-6. Main Menu

The following menu map can be used as a quick path guide when performing configuration, diagnostics, and other management functions.

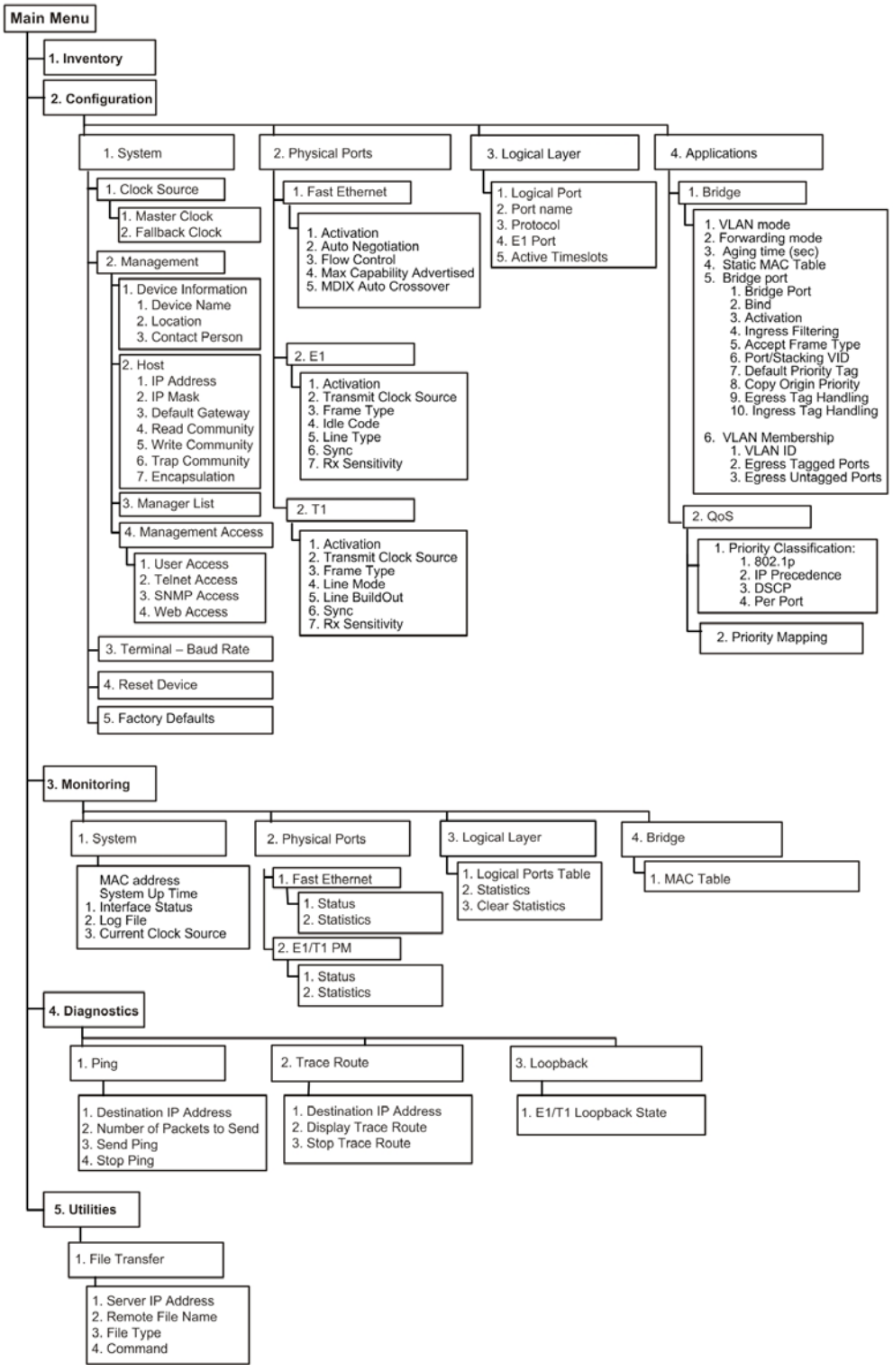


Figure 3-7. Menu Map

3.6 Turning Off the Unit

➤ To power off the Egate-20 unit:

- Remove the power cord from the power source.

Chapter 4

Configuration

This chapter describes the Egate-20 configuration screens and explains their parameters. Although the given examples are from a terminal screen, the information is relevant for Telnet and ConfiguRAD as well, as their menus are the same as those of the terminal.

The complete menu tree of the Egate-20 management software is shown in *Chapter 3*.

The configuration procedure for Egate-20 includes the following stages:

1. Device, IP, and management access settings
2. Physical ports and user interfaces
3. Logical port definitions
4. Configuring the internal bridge
5. Configuring quality of service.

4.1 Configuring for Management

The first parameters to be configured are the system parameters. This includes:

- *Entering Device Information*
- *Selecting the Clock Source*
- *Configuring IP Host Parameters*
- *Configuring the Network Managers*
- *Configuring the Terminal Control Port*.

➤ **To access the System menu:**

- From the Configuration menu, select **System**.

  The System menu appears.

Note

Terminal Configuration options are masked for Telnet and ConfiguRAD sessions.

```
                              Egate-20
Main Menu> Configuration> System

1. Clock Source         >
2. Management           >
3. Terminal             >
4. Reset Device         >
5. Factory Defaults     >
>
Please select item <1 to 5>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-1. System Menu

Configuring IP Host Parameters

You can manage Egate-20 via a network management station connected to one of the unit's ports. In order to establish a proper connection, it is necessary to configure the following: Host IP address, subnet mask, default gateway, its trap, read and write communities. In addition, by selecting forwarding mode and VLAN parameters, it is possible to create a separate management VLAN.

➤ **To define the host IP parameters:**

1. From the Management menu, select **Host IP**.

   The Host IP menu appears:

```
                              Egate-20
Main Menu> Configuration> System> Management> Host IP

1. IP Address           ... (0.0.0.0)
2. IP Mask              ... (255.255.255.0)
3. Default gateway      ... (0.0.0.0)
4. Read community       ... (public)
5. Write community      ... (private)
6. Trap community       ... (public)
7. Encapsulation        >
8. Save
>
Please select item <1 to 8>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-2. Host IP Menu

2. From the Host IP menu, perform the following:
   - Select **Address** to define the IP address of the IP host.
   - Select **Mask** to define the host IP subnet mask.
   - Select **Default Gateway** to set the default gateway IP address

- Select **Read Community** to enter the name of a community with read-only authorization.
- Select **Write Community** to enter the name of a community with write authorization.
- Select **Trap Community** to enter the name of a community to which Egate-20 should send traps.

3. Select **Encapsulation** to define VLAN tagging performed by the host.

   The Encapsulation menu appears:

```
                              Egate-20
Main Menu> Configuration> System> Management> Host IP> Encapsulation

1. Host tagging                        (Tagged)
2. Host VLAN ID [1-4094]          ... (2)
3. Host Priority Tag [0-7]        ... (0)
4. Save

Please select item <1 to 4>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-3. Encapsulation Menu

4. From the Encapsulation Menu, select the **Host Tagging**: Untagged or Tagged.
   - **Untagged**: The host sends and receives frames with no VLAN tag to/from the bridge.
   - **Tagged**: The Egate-20 host receives frames only if they are tagged with the host's VLAN ID, and it sends frames to the bridge with this tag.
5. Select **Host VLAN ID** to specify the host VLAN ID (1–4094). This option is displayed only when Tagged is selected for Host Tagging.
6. Select **VLAN Priority** to specify the priority level for the host VLAN (0–7). This option is displayed only when Tagged is selected for Host Tagging.
7. Select **Save**.
8. Return to the Host IP menu and select **Save**.

Entering Device Information

The Egate-20 management software allows you to assign a name to the unit, and specify its location to distinguish it from the other devices installed in your system. A contact person can also be assigned. Each of these fields can hold up to 50 characters.

➤ **To view and edit device information:**

1. Follow the path: Main Menu › Configuration › System ›Management › **Device Info**

   The Device Info menu appears (see *Figure 4-4*).

2. From the Device Info menu, select **Device Name** and enter a desired name for the Egate-20 unit. The default name is Egate-20.

3. Select **Location**, and enter a description of the Egate-20's current location.
4. Select **Contact Person**, and enter the name of a contact person for this unit.
5. Select **Save**.

```
                                Egate-20
Main Menu> Configuration> System> Management> Device Information

   Description      (E1/T1 Multiport Channelized Ethernet Gateway)

1. Device Name      ... (Egate-20)
2. Location         ... (The Location of the Device)
3. Contact Person   ... (Name of Contact Person)

Please select item  <1 to 3>

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-4. Device Information Menu

Configuring the Network Managers

Define or modify the network management stations to which the SNMP agent of Egate-20 sends traps. Up to ten managers can be defined. Entering the IP address and corresponding subnet mask defines each management station. In addition, you can temporarily prevent a manager station from receiving traps by masking the network manager.

➤ **To edit the manager list:**

1. From the Management menu, select **Manager List**.

   The Manager List menu appears.

```
                                Egate-20
Main Menu> Configuration> System>Management> Manager List

Manager ID    Manager IP   Manager IP Mask   Manager Trap Mask
    1.        1.1.1.1                         255.255.255.0      Unmask
|   2.        2.2.2.2                         255.255.255.0      Unmask
v   3.        3.3.3.3                         255.255.255.0      Mask
    4.        4.4.4.4                         255.255.255.0      Unmask
    5.        5.5.5.5                         255.255.255.0      Unmask

1. Change cell            ... (1.1.1.1)

ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-5. Manager List Menu

2. To add a new network manager, enter **a** (Add).
3. Move the cursor to the Manager IP cell you wish to modify by pressing **<Tab>**. The selected cell is highlighted and the value is displayed in the **Change cell** field.

4. Select **Change cell** to enter a new IP address for the selected network manager.
5. Move the cursor to the Trap field and toggle between **Mask** and **Unmask** to mask or unmask traps for the selected management station.

Note

Entries marked "Unmask" are the active entries receiving traps.

Controlling Management Access

➤ **To modify Telnet, SNMP, or WEB access permissions for a user:**

1. Follow the path: Main Menu › Configuration › System › Management › **Management Access**.
2. Select the access level you wish to change: Telnet Access, SNMP Access, or WEB Access.
3. Select the permission setting for this access level: Enable, Disable or Manage Only.
4. From the Management Access menu, select **Save**.

```
                              Egate-20
Main Menu> Configuration> System> Management> Management Access

User Access
Telnet Access            (Enable)
SNMP Access              (Disable)
WEB Access               (Enable)


Please select item <1 to 4>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-6. Management Access Menu

Configuring the Terminal Control Port

Egate-20 allows you to set the control terminal's baud rate.

Note

The Baud Rate parameter is masked during a Telnet session.

➤ **To change the terminal baud rate:**

1. Follow the path: Main Menu › Configuration › System › **Terminal**.

   The Terminal menu appears (see *Figure 4-7*).
2. From the Terminal menu, select **Baud Rate**.
3. Select the desired baud rate (9600, 19200, or 115200). The default baud rate is 115200.
4. Select **Save**.

```
                              Egate-20
Main Menu> Configuration> System> Terminal

1. Baud Rate         >(19200 bps)
2. Save

> Please select item <1 to 2>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-7. Terminal Menu

4.2 Configuring for Operation

Selecting the Clock Source

Egate-20 can be assigned two sources for time: a master source, and a fallback that goes into action in case the master clock fails (e.g. when the link supplying the timing fails).

The master and fallback source can be assigned as the internal clock of the Egate-20 unit, or as the clock of any of the E1/T1 links. It is recommended to have different settings for the master clock and fallback clock: e.g., Rx Clock for the master clock and Internal for the fallback clock.

➤ **To select the clock sources:**

1. Follow the path: Main Menu › Configuration › System › Clock Source › **Master Clock.**

   The Master Clock Source menu appears (see *Figure 4-8*).

2. Choose one of the following, to indicate the first-priority source of timing for the Egate-20:

   - **Internal**, if you want the master clock to be the internal clock of the Egate-20 unit.
   - **Rx Clock**, if you want to set the master clock to refer to one of the E1/T1 links.

3. If you have chosen **Rx Clock**, specify the port to be used: **E1 Port 1..8 / T1 Port 1..8.**
4. Select **Save** to save master clock source settings.
5. Return to the Clock Source menu (Main Menu › Configuration › System › Clock Source) and select **Fallback Clock.**

   The Fallback Clock Source menu appears.

6. Choose one of the following, to indicate the second-priority source of timing for the Egate-20:

   - **Internal**, if you want the fallback clock to be the internal clock of the Egate-20 unit.

- **Rx Clock**, if you want to set the fallback clock to refer to one of the E1/T1 links.

7. If you have chosen **Rx Clock**, specify the port to be used: **E1 Port 1..8 / T1 Port 1..8.**
8. Select **Save** to save fallback clock source settings.

```
                              Egate-20
Main menu> Configuration> System> Clock Source> Master Clock

1. Timing Source      > (Rx Clock)
2. Port               > (E1 Port 8)
3. Save
>
Please select item <1 to 3>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-8. Master Clock Source Menu

Configuring Ports at the Physical Layer

Egate-20 has eight E1/T1 ports and four fast Ethernet interfaces. The Fast Ethernet and E1/T1 configuration menus are accessed from the Physical Ports menu.

The configuration process for E1 ports is different from the process for configuring T1 ports. See *Configuring E1 Ports* or *Configuring T1 Ports* below.

Configuring E1 Ports

➤ **To configure E1 ports:**

1. Follow the path: Main Menu › Configuration › **Physical Ports**.

   The Physical Ports menu appears:

```
                              Egate-20
Main Menu> Configuration> Physical Ports

1. Fast Ethernet                        >
2. E1                                   >

Please select item <1 to 2>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-9. Physical Ports Menu (E1)

2. From the Physical Ports menu, select **E1**.

   The E1 menu appears (see *Figure 4-10*).

3. Configure E1 port parameters. (See *Table 4-1* for details).
4. Select **Save** to finish the user E1 port configuration.
5. Repeat the procedure for all E1 ports used.

```
                              Egate-20
Main menu> Configuration> Physical ports> E1

   Port                              (1)
1. Activation                        (Up)
2. Transmit clock source             (LBT)
3. Frame type                  >     (Framed – CRC4)
4. Idle code [00 – ff]         ...   (7C)
5. Line type                   >     (Balance)
6. Sync                              (FAST)
7. Rx Sensitivity                    (-43 db)
8. Save

f – forward
Please select item <1 to 6>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-10. E1 Menu

Table 4-1. E1 Port Parameters

Parameter	Possible Values	Remarks
Port number	1–8	Index of E1 ports **Default: 1** (Read Only)
Frame type	Unframed Framed–CRC4 Framed–NoCRC4	**Default: Unframed**
Activation	Enable/Up Disable/Down	Set the administrative status of the E1 port **Default: Enable/Up**
Transmit clock source	Loopback Timing Internal Clock System	Transmit clock source of the E1 port **Default: LBT (Loopback Timing)**
Idle code	00 – ff	Transmitted when there is no traffic over the E1 port. ***Note**: This parameter appears only if **Frame type** is **Framed–CRC4** or **Framed-NoCRC4**.*
Line Type	Balance Unbalanced	**Default: Balanced**
Sync	FAST CCITT	Specifies the speed of synchronization. ***Note**: This parameter appears only if **Frame type** is **Framed–CRC4** or **Framed-NoCRC4**.*
Rx Sensitivity	-12 db -43 db	**Default: -43 db**

Configuring T1 Ports

➤ **To configure T1 ports:**

1. Follow the path: Main Menu › Configuration › **Physical Ports**.

   The Physical Ports menu appears.

```
                              Egate-20
Main Menu> Configuration> Physical Ports

1. Fast Ethernet      >
2. T1                 >

Please select item <1 to 2>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-11. Physical Ports Menu (T1)

2. From the Physical Ports menu, select **T1**.

   The T1 menu appears (see *Figure 4-12*).

3. Configure T1 port parameters (see *Table 4-2* for details).
4. Select **Save** to finish the user T1 port configuration.
5. Repeat for each additional T1 port used.

```
                              Egate-20
Main menu> Configuration> Physical ports> T1

   Port                    (1)
1. Activation              > (Up)
2. Transmit clock source   > (LBT)
3. Frame type              > (Framed-ESF)/(Framed-D4)
4. Line Mode               > (CSU)
5. Line BuildOut           > (0 dB)
6. Sync                    > (FAST)
7. Rx Sensitivity          > (-15 dB)


>
f - Forward
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-12. T1 Menu

Table 4-2. T1 Port Parameters

Parameter	Possible Values	Remarks
Port	1–8	Index of T1 ports **Default: 1** (Read Only)
Activation	Up Down	Set the administrative status of the T1 port **Default: Up**
Line Mode	DSU CSU	
Line BuildOut (dB)	0 dB -7.5 dB -15 dB -22.5 dB	Controls the link transmit signal **Default: 0 dB**
Line Length	0–133 ft 134–266 ft 267–399 ft 400–533 ft 534–655 ft	Controls the link transmit signal **Default: 0–133 ft.** (Line BuildOut: active only in Line Mode DSU)
Idle Code	00–FF	Byte pattern of the data received/transmitted in the T1 idle timeslots (Fr amed only). **Default: 00**
Sync	FAST CCITT	The restore time parameter is used to change the synchronization algorithms to reduce the time required for the port to return to normal operation after local loss of synchronization (LOF event). **Default: FAST**
Rx Sensitivity	-15 dB 36 dB	Controls the sensitivity of the receive equalizer. **Default: -15 dB**

Configuring the Fast Ethernet Ports

The following parameters can be configured for the Ethernet ports at the physical level:

- Autonegotiation
- Flow Control
- Maximum advertised capability for autonegotiation procedure
- Data rate and duplex mode, (only when autonegotiation is disabled)
- MDIX Auto Cross-Over.

➤ **To configure the Fast Ethernet port:**

1. Follow the path: Main Menu›Configuration›Physical Ports menu› **Fast Ethernet**.

   The Fast Ethernet menu appears (see *Figure 4-13*).

2. Configure the Fast Ethernet port parameters.
3. Select **Save** to finish the port configuration.

```
                              Egate-20
Main menu> Configuration> Physical ports> Fast Ethernet

   Port number                 (1)
1. Activation                  (Up)
2. Auto Negotiation            (Enable)
3. Flow Control                (Enable)
4. Max Capability Advertised   (100base – TX Full Duplex)
5. MDIX Auto Cross Over        (Enable)
6. Save
f – forward
Please select item from 1 to 6
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-13. Fast Ethernet Menu

Table 4-3. Fast Ethernet Parameters

Parameter	Possible Values	Remarks
Port number	1–4	Fast Ethernet port number **Default: 1 (Read only)**
Activation	Up Down	Fast ethernet activation **Default: Up**
Auto-negotiation	Enable Disable	Enables autonegotiation signaling over the Ethernet.
Flow Control	Enable Disable	The flow control parameter is used to configure the default administrative PAUSE mode for this interface. **Default: Enable**
Max Capability Advertised	10baseT Half Duplex 10baseT Full Duplex 100baseTX Half Duplex 100base TX Full Duplex	The Max Capability Advertised parameter specifies the set of capabilities advertised by the local auto-negotiation entity. **Default: 100base – TX Full Duplex**
MDIX Auto Cross-Over	Enable Disable	Enables and disables Auto Cross Over functionality. **Default: Enable**

Configuring Ports at the Logical Layer

One or more logical ports can be bound to each of the E1/T1 physical ports.

In order to change or delete any logical ports, you must first erase any associations with a bridge port.

➤ **To configure logical ports:**

1. Follow the path: Main Menu › Configuration › **Logical Layer**.

   The Logical Layer menu appears.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1–248/192]  ... (1)

 2. Port name                 ... (Logic)
    Protocol                  >   (HDLC)
 3. E1/T1 Port [1-8]          ... (1)
 4. Active timeslots          ... (1-5, 10)

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-14. Configuring the Logical Layer

2. From the Logical Layer menu, configure the logical layer according to *Table 4-4*.
3. Select **Save** to finish the logical layer port configuration.

➤ **To configure the active timeslots for framed physical ports:**

1. From the Configuration›**Logical Layer** menu, after specifying one or more framed physical ports, select **Active Timeslots**.

   The Active Timeslots menu appears.

```
                                    Egate-20
Configuration> Logical Layer> Active Timeslots (1-5)

 1. [1-31]... (1-5)
 2. Delete Range...

>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 4-15. Active Timeslots Screen

2. To add a new range, enter **a,** and specify a range.

3. Select a set of timeslots. Individual values or ranges can be entered.
4. To delete a range, select **Delete Range** and enter a range for deletion: for example, 6-10.

Table 4-4. Logical Port Parameters

Parameter	Possible Values	Remarks
Logical Port	1–248/192	Index of logical port. This appears automatically when an unframed E1/T1 port is selected. **Default: 1**
Port Name	String of up to 20 characters	Descriptive name for the logical port **Default: (Logic)**
Protocol	HDLC	Traffic protocol type **Default: HDLC** (R/O)
E1/T1 Port	1–8	Number of the physical port to which the logical port is mapped
Active Timeslots	1–31	The fractional E1/T1 active timeslots that carry traffic regarding the logical port Displayed only when the selected Physical Port is framed **Default: (none)**

Configuring the Bridge

The internal bridge of Egate-20 connects the ports of the unit. It must be configured to properly process the VLAN tags in order to maintain priority of the data flows.

The bridge operates in transparent mode (learning is disabled) or filtered mode (learning and filtering are enabled).

Configuration of the internal bridge is performed via the Applications menu.

➤ **To configure the internal bridge:**

1. Follow the path: Main Menu › Configuration › Applications › **Bridge**.

   The Bridge menu is displayed (see *Figure 4-16*).
2. From the Bridge menu, configure the following:
   - **VLAN Mode** (forwarding based on MAC address only or on VLAN+MAC):
     - Aware: Operates according to 802.1q
     - Unaware: Operates according to 802.1d
   - **Forwarding Mode** (determines whether the bridge learns MAC addresses):
     - Transparent: No learning is performed. Each received packet is forwarded to all other ports automatically, unless static MAC is used.
     - Filter: Learning and filtering are enabled.

- **Aging Time** (300 to 4080 seconds): Aging time for entries in the MAC table. If the aging time elapses, and no frame has been received from the MAC, it is erased from the MAC table.

```
                              Egate-20
Main Menu> Configuration> Applications> Bridge

1. VLAN Mode                      (Unaware)
2. Forwarding Mode                (Transparent)
3. Aging Time (sec)[300-4080]     ...(300)
4. Static MAC Table               > []
5. Bridge port                    >
6. VLAN membership                >
7. Save                           >

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-16. Bridge Menu

Note *The VLAN membership parameter appears for VLAN-aware bridge only.*

Configuring the Static MAC Table

Static MAC addresses are stored in the MAC table.

➤ **To add a static MAC address:**

1. From the Bridge menu, select **Static MAC Table**.

   The Static MAC Table appears (see *Figure 4-17*), with VLAN ID entries for a VLAN-aware bridge only.

```
                                Egate-20
Configuration> Applications> Bridge> Static MAC Table

              VLAN ID   MAC Address     Receive Bridge Port
    1         1         111111111111    1
|   2         2         222222222222    2
v   3         3         333333333333    3
    4         4         444444444444    4
    5         5         555555555555    5

x – Clear Table

ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-17. Static MAC Table

2. From the Static MAC Table, type **a** to add a static MAC address.

   The Static MAC Table display changes, entering the Add mode(see *Figure 4-18*).

```
                              Egate-20
MAC table handling
1. VLAN ID                          (1)
2. MAC Address                ... (00-00-00-00-00-00)
3. Receive Bridge Port [1-12]       (1)
4. Save

Please select item <1 to 4>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-18. Static MAC Table, Add Mode

Note *The VLAN ID parameter appears for Aware bridge only.*

3. When in Add mode, perform the following:
   - Select **MAC Address**, and enter a new MAC address.
   - Select **VLAN ID**, and choose a VLAN ID for the MAC address, between 1 to 4094.
   - Select **Receive Bridge Port**, and choose the Egate-20 interface this MAC address should be attached to.
   - Select **Save** to save the MAC address.
   - Press **<ESC>** to return to the Static MAC Table.

➤ **To remove a static address from the table:**

- From the Static MAC Table (*Figure 4-17*), select a MAC address that you want to remove and type **R**.

  The MAC address is deleted from the table.

➤ **To clear the MAC table:**

1. In the Static MAC Table (*Figure 4-17*), type **X**.

   Egate-20 displays the following message: **`Are you sure (Y/N)?`**

2. Type **Y** to confirm deletion of all MAC addresses from the table.

Configuring the Bridge Ports

➤ **To configure the bridge ports:**

1. From the Bridge menu, select **Bridge Ports**.

   The Bridge Ports menu appears.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]            ... (1)
 2. Activation                     >   (Enable)
 3. Ingress Filtering                  (Disable)
 4. Accept Frame Type                  (All)
 5. Port VID/Stacking VID [1-4094] ... (200)
 6. Copy Origin Priority               (Disable)
 7. Default Priority Tag [0-7]     ... (4)
 8. Egress Tag Handling            >   (Stacking)
 9. Ingress Tag Handling           >   (Stripping)
>
Please select item <1 to 10>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 4-19. Bridge Ports Menu

2. Select **Bridge Port Number** to specify which bridge port you wish to configure.
3. Select **Save** to save the Bridge Port Number setting.

   The **Bind** option appears in the menu.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]            ... (200)
 2. Bind                           >
 3. Activation                     >   (Enable)
 4. Ingress Filtering                  (Disable)
 5. Accept Frame Type                  (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority               (Disable)
 8. Default Priority Tag [0-7]     ... (0)
 9. Egress Tag Handling            >   (None)
10. Ingress Tag Handling           >   (None)
>

f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 4-20. Bridge Port Menu with Bind Option

4. Configure the Bridge Port parameters as described in *Table 4-5*.
5. Select **Bind**, to define to which port the bridge port should be bound.

   The Bind menu appears (see *Figure 4-21*).

Notes

- *Bridge port 1 is automatically bound to the host. This binding cannot be removed.*
- *Before you can bind a bridge port to an E1/T1 port, you must define a logical port that is bound to the E1/T1 port or to a bundle of its timeslots if the E1/T1 port is framed.*

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                (----)

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-21. Bridge Ports Bind Menu

6. In the Bind menu, select **Type**.

   The Bridge Port Bind Type menu appears.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind> Type
1. Fast Ethernet
2. E1/T1

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-22. Bridge Ports Bind Type Menu

➤ **To bind the bridge port to a Fast Ethernet port:**

1. In the Bind Type menu, select **Fast Ethernet**.

   The Bind menu appears with the Fast Ethernet port option.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                              >  (Fast Ethernet)
2. Fast Ethernet Port[1 - 4]         ...(0)
3. Save

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-23. Bridge Ports Bind Menu, Fast Ethernet

2. Select **Fast Ethernet Port[1 - 4]** and type the number of the Ethernet port to which you want to bind the bridge port.
3. Save your changes.
4. Click ‹**ESC**› to return to the bridge port menu.

   The bridge port menu shows that the bridge port is bound to the Fast Ethernet port.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

   Binded To                              (Eth Port 1)
 1. Bridge Port [1-253]              ... (200)
 2. Bind                             >
 3. Activation                       >   (Enable)
 4. Ingress Filtering                    (Disable)
 5. Accept Frame Type                    (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority                 (Disable)
 8. Default Priority Tag [0-7]       ... (0)
 9. Egress Tag Handling              >   (None)
10. Ingress Tag Handling             >   (None)
>

f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 4-24. Bridge Port Menu, Bound to Fast Ethernet Port

➤ **To bind the bridge port to an unframed E1/T1 port:**

1. In the Bind Type menu, select **E1/T1**.

   The Bind menu appears with the E1/T1 port option.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                 (E1)
2. E1/T1 Port[1 – 8]                ...(0)
3. Save

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-25. Bind Menu

2. Select **E1/T1 Port[1 – 8]** and type the number of the E1/T1 port to which you want to bind the bridge port.

   The **Logical Port** parameter appears in the Bind menu, containing the logical port that is bound to the E1/T1 port.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                 (E1)
2. E1 Port[1 – 8]                   ...(8)
3. Logical Port                     >  (Logical Port 18 – 'Logic')
4. Save

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-26. Bind Menu with Logical Port

3. Save your changes.

4. Click ‹**ESC**› to return to the bridge port menu.

   The bridge port menu shows that the bridge port is bound to the E1/T1 port.

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

   Binded To                          (E1 Port 8, Logical Port 18 – 'Logic')
 1. Bridge Port [1-253]           ... (201)
 2. Bind                          >
 3. Activation                    >   (Enable)
 4. Ingress Filtering                 (Disable)
 5. Accept Frame Type                 (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority              (Disable)
 8. Default Priority Tag [0-7]    ... (0)
 9. Egress Tag Handling           >   (None)
10. Ingress Tag Handling          >   (None)
>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 4-27. Bridge Ports Menu, Bound to E1 Port

➤ **To bind the bridge port to a framed E1/T1 port:**

1. In the Bind Type menu, select **E1/T1**.

   The Bind menu appears with the E1/T1 port option.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                (E1)
2. E1/T1 Port[1 – 8]                   ...(0)
3. Save

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-28. Bind Menu

2. Select **E1/T1 Port[1 – 8]** and type the number of the E1/T1 port to which you want to bind the bridge port.

   The **Logical Port** parameter appears in the Bind menu, containing **---**.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                (E1)
2. E1 Port[1 – 8]                  ...(7)
3. Logical Port                    >  (---)
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-29. Bind Menu with Logical Port

3. Select the **Logical Port** parameter.

   The bind menu shows a list of all logical ports bound to timeslots in the E1/T1 port.

```
                              Egate-20
...Application> Bridge> Bridge ports> Bind> Logical Port(---)

1. Logical Port 14 – 'Logic'
2. Logical Port 15 – 'Logic'

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-30. Bind Menu, Choose Logical Port

4. Choose the logical port to which you want to bind the bridge port.

   The selected logical port appears in the bind menu.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                (E1)
2. E1 Port[1 – 8]                  ...(7)
3. Logical Port                    >  (Logical Port 14 – 'Logic')
4. Save

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-31. Bind Menu with Logical Port

5. Save your changes.
6. Click ‹**ESC**› to return to the bridge port menu.

   The bridge port menu shows that the bridge port is bound to the E1/T1 port (see *Figure 4-27*).

Table 4-5. Bridge Port Parameters

Parameter	Possible Values	Remarks
Bridge Port Number	2–253/197	Bridge port number. Bridge port number 1 is reserved for the host bridge port.
Bind	For Ethernet port: 1–4 For Logical port: 1–248/192	Specifies the physical or logical port to which this bridge port is bound.
Activation	Enable Disable	Specifies if this port is part of the bridge or not. **Default:** Enable
Ingress Filtering	Enable Disable	When Enabled, the device discards incoming frames for VLANs which do not include this Port in its Member set. When Disabled, the port accepts all incoming frames. **Default:** Disable
Accept Frame Type	All Tag Only	Tag Only specifies that the device discards untagged frames. All specifies that untagged frames received on this port are accepted and assigned to the PVID for this port. **Default:** All
Port VID / Stacking VID	1–4094	This is the PVID, the VLAN ID assigned to untagged frames or priority-tagged frames received on this port. If Stacking is enabled, this is the tag to be added. **Default:** 2
Default Priority Tag	0–7	Default VLAN frame priority. Applies to untagged frames and when per-port priority is used. **Default:** 0
Egress Tag Handling	Stacking Stripping None	Stacking: adds the PVID to every frame transmitted from the port (push). Stripping: removes the first VLAN tag from every transmitted frame, on the egress of the port (pop). **Default:** None
Ingress Tag Handling	Stacking Stripping None	Stacking: adds the PVID to every frame received on the ingress of the port (push). Stripping: removes the first VLAN tag from every received frame, on the ingress of the port (pop). **Default:** None

Configuring VLAN Membership

Each VLAN can be associated to egress tagged ports and to egress untagged ports, as required by your application.

➤ **To configure the VLAN membership:**

1. Follow the path: Main Menu › Configuration › Applications › Bridge › **VLAN Membership**.

   The VLAN Membership menu is displayed (see *Figure 4-32*).

2. Select **VLAN ID**, and type the VLAN ID that you want to configure.
3. Save the VLAN.
4. Select **Egress Tagged Ports**. Define the set of ports which should transmit packets for this VLAN as tagged
5. Select **Egress UnTagged Ports**. Define the set of ports which should transmit packets for this VLAN as untagged.
6. Select **Save** to finish the VLAN Membership configuration.

```
                              Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]         ...(1)
2. Egress Tagged Ports        >  (1-10,12)
3. Egress Untagged Ports      >  (6,9,120)
4. Save                       >

f – Forward;  b – Backward;  g – Go To;  d – Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-32. VLAN Membership Menu

Configuring Quality of Service (QoS)

Egate-20 supports four methods of traffic classification:

- 802.1 priority mapping
- IP Precedence
- DSCP priority mapping, using tag values
- Priority mapping per bridge port.

The classification method is chosen using the Priority Classification menu.

Egate-20 supports four traffic queues, which can be assigned priorities using the Priority Mapping menu.

➤ **To select a traffic classification method:**

1. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Classification.**

   The Priority Classification menu is displayed (see *Figure 4-33*).

2. From the Priority Classification menu, select the desired traffic classification method: **802.1p**, **IP Precedence, DSCP**, or **Per Port**.

3. Select **Save** to save the changes.

```
                                Egate-20
Main Menu> Configuration> Applications> QoS> Priority Classification
 1. 802.1p
 2. IP Precedence
 3. DSCP
 4. Per Port

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-33. QoS Priority Classification Menu

➤ **To assign priorities to traffic queues for 802.1p:**

1. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Classification**. Following the above procedure, select **802.1p** as the desired traffic classification method.

2. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Mapping**.

   The Priority Mapping (802.1p) menu appears (see *Figure 4-34*).

3. From the Priority Mapping menu, select the desired priority (0–7) and enter the assigned traffic queue number (0–3). Each traffic queue can be assigned to more than one priority.

4. Repeat for all priorities.

5. Select **Save** to save the changes.

```
                                Egate-20
Configuration> Applications> QoS> Priority Mapping(802.1p)
1. User Priority 0  >  (Traffic Class 0)
2. User Priority 1  >  (Traffic Class 0)
3. User Priority 2  >  (Traffic Class 1)
4. User Priority 3  >  (Traffic Class 1)
5. User Priority 4  >  (Traffic Class 2)
6. User Priority 5  >  (Traffic Class 2)
7. User Priority 6  >  (Traffic Class 2)
8. User Priority 7  >  (Traffic Class 2)

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-34. Priority Mapping Menu (802.1p)

➤ **To assign priorities to traffic queues for DSCP:**

1. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Classification**. Following the above procedure, select **DSCP** as the desired traffic classification method.
2. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Mapping**.

   The Priority Mapping (DSCP) menu is displayed (see *Figure 4-35*). The menu lists only those values that have been changed from their default values.
3. From the Priority Mapping menu, select the desired tag value (0–63) and enter the assigned traffic queue number (0–3). Each traffic queue can be assigned to more than one tag. To add a new entry, select **a** (add) and enter the tag value and traffic queue number.
4. Repeat for all tag values you wish to change.
5. Select **Save** to save the changes.

```
                              Egate-20
Configuration> Applications> QoS> Priority Mapping(DSCP)

1. Tag Value  0  >                        (Traffic Class 2)
2. Tag Value 63  >                        (Traffic Class 2)


a – add
ESC-prev menu; !-main menu; &-exit;
```

Figure 4-35. Priority Mapping Menu (DSCP)

➤ **To assign priorities to traffic queues per bridge port:**

1. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Classification**. Following the above procedure, select **Per Port** as the desired traffic classification method.
2. Follow the path: Main Menu › Configuration › Applications › QoS › **Priority Mapping**.

   The Priority Mapping (Per Port) menu is displayed (see *Figure 4-36*).
3. From the Priority Mapping menu, select the desired bridge port.
4. Select **Traffic Class** and enter the traffic queue number (0–3) to be assigned to the bridge port. Each traffic queue can be assigned to more than one port.
5. Repeat for all active bridge ports.
6. Select **Save** to save the changes.

```
                              Egate-20
Configuration> Applications> QoS> Priority Mapping(Per Port)

   Bridge Port (1-253)*  ...(1)              * (1-197) for T1
1. Traffic Class         > (Traffic Class 0)

>
f – Forward; b – Backward; g – Go To
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-36. Priority Mapping Menu (Per Port)

4.3 Additional Tasks

This section describes additional operations available supported by the Egate-20 management software, including the following:

- Setting access permissions for Management (Telnet/SNMP/Web)
- Changing User name and Password
- Displaying inventory
- Displaying Egate-20 status at the system, physical, and application levels
- Displaying device information and clock source settings
- Transferring software and configuration files
- Resetting the unit.

Changing User Name and Password

From the User Access menu you can change current user name and password. Egate-20 supports two user names and passwords. The unit is supplied with the following default user settings:

- Superuser: User name – **su**, Password – **1234**.
- User: User name – **user**, Password – **1234**.

➤ **To change the current user name and password:**

1. Follow the path: Main Menu › Configuration › System › Management › Management Access › User Access › **Change Password**.

   The Change Password menu is displayed (see *Figure 4-37*).

2. From the Change Password menu, select **User Name**, and enter a new user name, up to eight characters.
3. Select **Old Password**, and enter the current password (default is 1234).
4. Select **New password** and assign a new password of up to eight characters to the new or existing user name.

   The password is case sensitive.

5. Select **Confirm New Password** to confirm the new password.

If the password confirmation does not match, an **Illegal confirm password** error message is displayed, and you should reassign the new password.

6. Select **Save**.

```
                                Egate-20
Main Menu> Configuration> System> Management> Management
Access> User Access
  User Level:                              (User)
1.      User Name                          ... (user)
2.      Old Password                       ... (********)
3.      New Password                       ... (********)
4.      Confirm New Password               ... (********)
5.      Save

Please select item <1 to 5>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-37. User Access Menu

Displaying the Inventory

The Egate-20 inventory displays a description of the unit, its hardware revision and power supply type.

➤ **To display the Egate-20 inventory table:**

1. From the Main menu, select **Inventory**.

   The Inventory table appears (see *Figure 4-38*).

2. Use the arrow keys to move right, left, up or down in the Inventory table.

```
                                Egate-20
Main Menu> Inventory


  ID    Description              Vendor type Class         Entity name     HWRev
  1001  Egate Device: Channelized            Chassis       E-gate          3.00
  4001  Power Supply                         Power Supply  PS
| 7001  Fast Eth Port 1                      Port          FAST 1
v 7002  Fast Eth Port 2                      Port          FAST 2
  7003  Fast Eth Port 3                      Port          FAST 3
  7004  Fast Eth Port 4                      Port          FAST 4
  7005  E1 Port 1                            Port          E 1
  7006  E1 Port 2                            Port          E 2
  7007  E1 Port 3                            Port          E 3
  7008  E1 Port 4                            Port          E 4
      ->>

>

ESC-Previous menu; !-Main menu; &-Exit;
```

Figure 4-38. Inventory Table Screen

Displaying Unit Status

The Egate-20 software provides access to the following status information:

- System level – MAC address, connection status, log file and clock source
- Physical level – Ethernet and E1 status
- Application level – MAC table.

The status information is available via the Monitoring menu.

Displaying System Status Information

The System menu shows the log file of the Egate-20 unit, and shows interface connection status. For a description of Egate-20 system messages that are displayed via the Log File screen, refer to *Chapter 6*.

➤ **To display interface connection information:**

- Follow the path: Main Menu > Monitoring > System > **Interface Status**.

  The Interface Status screen is displayed (see *Figure 4-39*).

  The Interface Status screen includes the following information:

  - **Interface description** – Fast Ethernet, E1, and bridge ports.
  - **Type** – type of the interface according to the INF TYPE MIB
  - **Activation** – whether the interface is enabled or disabled, as set via the Ethernet (*Figure 4-13*) and E1 or T1 (*Figure 4-10* or *Figure 4-12*) menus.
  - **Operation** – actual operational status of the link (Up or Down)
  - **Speed** – connection speed.

```
                              Egate-20
Main Menu> Monitoring> System> Interface Status (FE1)
 Description       Type              Activation  Operation
        Speed
 ETHERNET PORT 1   Eth Csmacd (6)     Up          Up
100000000
 E1 PORT 1 UNBL    E1                 Up          Down
        2048000
 E1 PORT 2 BL      ds1 (18)           Up          Down
        2048000
 Bridge Port 1     telink (200)       Up          Down
        2048000
 Logical Port 120  DS0 Bundle         Up          Up


ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-39. Interface Status Screen

Displaying Physical Port Status

You can view the status of the Egate-20 physical port. For a description of the Egate-20 Ethernet and E1 or T1 ports statistics, refer to *Chapter 6*.

➤ **To display the Ethernet port status:**

- Follow the path: Main Menu › Monitoring › Physical Port › Fast Ethernet › **Status**.

  The Fast Ethernet Status screen is displayed (see *Figure 4-40*).

  The Ethernet Status screen includes the following information:

  - Activation – whether the interface is enabled or disabled, as set via the Ethernet (*Figure 4-13*) and E1 or T1 (*Figure 4-10* or *Figure 4-12*) menus.
  - Status – actual operational status of the link (Up or Down)
  - Speed & Duplex – current data rate and duplex mode of the link
  - Flow Control – whether flow control is enabled or disabled, as set in the Ethernet menu (*Figure 4-13*)

```
                              Egate-20
Main Menu> Monitoring> Physical Ports> Fast Ethernet> Status
    Port (1)
    Activation                      Enable
    Status                          Up
    Speed & Duplex                  100Mbps - Full Duplex
    Flow Control                    Enable

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 4-40. Ethernet Status Screen

Displaying Application-Level Status

At the application level, Egate-20 provides information of the MAC addresses (static and learned) and their bridge port assignments as well as VLAN IDs and their bridge port assignments.

➤ **To display the MAC table:**

- Follow the path: Main Menu › Monitoring › Bridge › **MAC table**.

  The MAC Table screen appears (see *Figure 4-41*).

The MAC Table screen includes the following information:

- VLAN ID – the VLAN ID corresponding to the MAC address (VLAN-aware mode only)
- MAC Address – existing MAC address
- Receive Bridge Port – bridge port number.

```
                              Egate-20
Main Menu> Monitoring> Bridge> MAC Table

       VLAN ID    MAC Address        Receive Bridge Port
    1   1          111111111111        1
|   2   2          222222222222        2
v   3   3          333333333333        3
    4   4          444444444444        4

ESC-prev menu; !-main menu; &-exit; ?-help
```

Figure 4-41. Static MAC Table

Viewing Additional System Information

The System Monitoring screen displays the system MAC address, system up time, and internal system data and time, as well as the current setting for Master clock source and Fallback clock source.

➤ **To display additional system information:**

- Follow the path: Main Menu› Monitoring› **System**.

  The System Monitoring screen appears.

Transferring Software and Configuration Files

This section presents procedures for installing new software releases on the Egate-20 units, and transferring configuration files.

Egate-20 stores two software versions, each of them in one of the two partitions of its flash memory, which also contains a boot program. The software is stored in compressed format. The active version is decompressed and loaded into the unit's RAM upon power-up. The passive software is kept for backup purposes. If the active software becomes corrupted, you can swap it with the backup. Egate-20 is delivered with both active and passive software.

New software releases are distributed as ***.img** files, which are downloaded to Egate-20. When starting a download, the current backup is erased and the new software placed in the backup partition. When downloading is complete, the unit checks the integrity of the new software file. If it is correct, the backup and active files are swapped. The new software release becomes active and the former active software becomes the backup. If a failure occurs while downloading, the new version is erased. In this case, only one version is left stored in the flash memory.

Configuration files can be uploaded for storage and backup.

➤ **To transfer files via TFTP:**

1. Follow the path: Main menu › Utilities › **File Transfer**.

   The File Transfer menu appears:

```
                              Egate-20
Main Menu> Utilities> File Transfer

1. Server IP Address                    … (0.0.0.0)
2. Remote File Name                     … ()
3. File Type                              (Configuration)
4. Command                                >

Please select item from 1 to 4
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 4-42. TFTP Menu

2. In the File Transfer menu, select **Server IP Address,** and enter the IP address of the TFTP server.
3. Select **Remote File Name**, and enter a file name: source file name for download or target file name for upload.
4. Select **File Type**, and choose whether you intend to transfer a software program (IMG) or configuration file.
5. Select **Save** to save the changes.
6. Select **Command** to start the desired procedure:
   - **Upload** – saving a software or configuration file on a remote server.
   - **Download** – transferring a software or configuration file to Egate-20.

   Egate-20 starts the file transfer.

The TFTP file transfer process is logged by the following system messages, which are stored in the log file (see *Chapter 6*):

- TFTP – Starting Upload
- TFTP – Starting Download
- TFTP – Upload Failed
- TFTP – Download Failed.

Resetting Egate-20

This section describes two types of reset functions:

- Resetting all configuration parameters to factory default settings
- Restarting the unit.

Resetting to Factory Defaults

You can reset Egate-20 to its factory default settings. This operation resets all configuration settings to their initial factory settings.

Note

Once the unit is reset to its factory defaults, the previous configuration settings ***cannot be restored*** *unless the configuration settings are saved beforehand in a downloadable file.*

➤ **To reset Egate-20 to the default settings:**

1. Follow the path: Main Menu›Configuration›System›**Factory Defaults**.

   Egate-20 displays the following message:

```
Returning to default configuration; the device will restart. Do
you want to proceed? (Y/N)
```

2. Type **Y** to confirm the reset.

   All Egate-20 parameters are reset to their default settings, and the unit then restarts.

Restarting the Unit

When necessary, you can restart the Egate-20 unit. This operation does not affect the configuration settings.

➤ **To reset Egate-20:**

1. Follow the path: Main Menu›Configuration›System›**Reset Device**.

   The following confirmation message appears:

```
The device will restart. Do you want to proceed? (Y/N).
```

2. Type **Y** to confirm the restart operation.

Chapter 5

Configuring Egate-20 for a Typical Application

This chapter provides detailed instructions for configuring Egate-20 for a typical application in which an Egate-20 unit is used for four Customer Premises, with inband management and a bridge in VLAN-Aware mode.

5.1 Application Description

Egate-20 is typically deployed at a central location at which it aggregates user traffic received from remote devices, such as RAD's RICi and FCD (or other devices), thus enabling a full access solution over channelized E1 or T1 and SDH/SONET, from the central office to the customer premises.

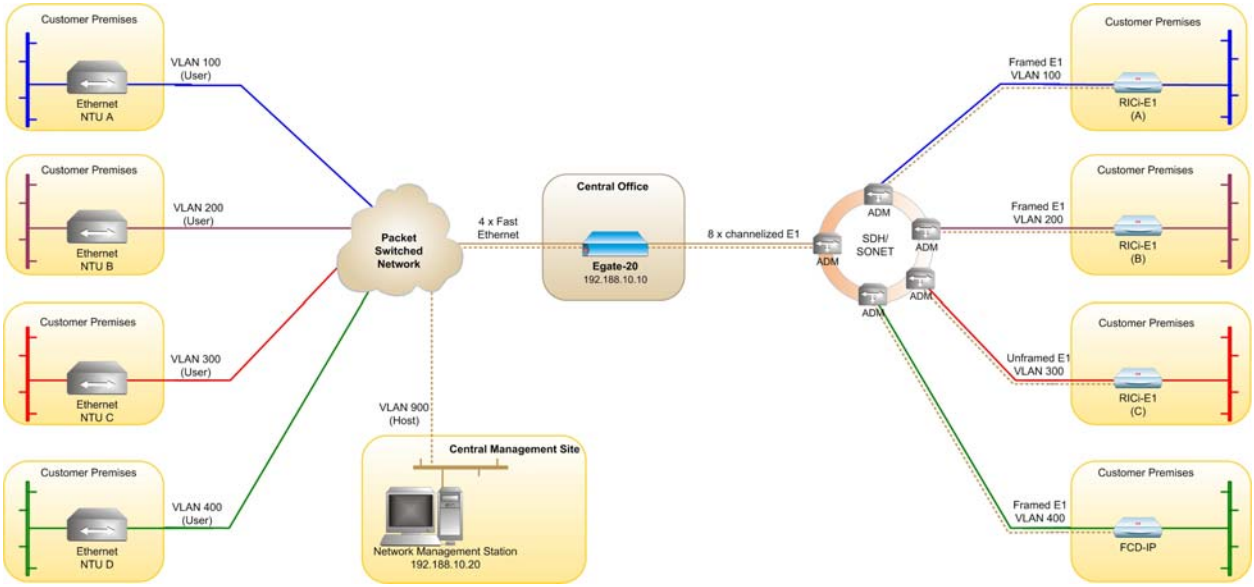


Figure 5-1. Typical Egate-20 Application

The application has the following requirements:

- The Ethernet NTUs and RICi-E1 units send and receive VLAN-tagged packets
- The FCD-IP unit sends and receives VLAN-tagged packets, although the VLAN tagging is transparent to FCD-IP, which uses the E1 timeslots to separate management and user traffic
- RICi-E1 (A), RICi-E1 (B), and FCD-IP work with framed E1 traffic

- RICi-E1 (C) works with unframed E1 traffic
- The clock source for the E1 link is internal in Egate-20, and recovered from the E1 link in the FCD-IP and RICi-E1 units
- VLAN 900 carries management traffic
- VLANs 100, 200, 300, and 400 carry user traffic.

The configuration procedure consists of the following stages:

1. *Configuring the Management Parameters*
2. *Configuring the E1 Physical Layer*
3. *Configuring the Logical Layer*
4. *Configuring the Application Layer*.

The following tables show the required configuration of the ports and VLAN memberships.

Table 5-1. Port Configuration

Remote unit	E1 port	Frame type	Timeslots	Logical port	Bridge port
RICi-E1 (A)	1	Framed – No CRC4	1–15	11	11
RICi-E1 (B)	2	Framed – No CRC4	1–15	12	12
RICi-E1 (C)	3	Unframed	–	13	13
FCD-IP	4	Framed – No CRC4	1-30	14	14
			31	15	15

Note

Timeslots 1-30 of the E1 link to FCD-IP carry user traffic, and timeslot 31 carries management traffic.

Table 5-2. Bridge Port Specifications

Bridge port number	Bind to
1	Host (automatic)
11	E1 port 1 (time slots 1–15), logical port 11
12	E1 port 2 (time slots 1–15), logical port 12
13	E1 port 3, Logical port 13
14	E1 port 4 (time slots 1–30), logical port 14
15	E1 port 4 (time slot 31), logical port 15
21	FE-1
22	FE-2
23	FE-3
24	FE-4

Table 5-3. VLAN Memberships

VLAN	Bridge port members (egress tagged)
900 (management)	1, 11–15, 21–24
100 (RICi-E1 (A) user data)	11, 21
200 (RICi-E1 (B) user data)	12, 22
300 (RICi-E1 (C) user data)	13, 23
400 (FCD-IP user data)	14, 24

5.2 Configuring Egate-20

Configuring the Management Parameters

This part of the application configuration procedure has the following stages:

1. Defining the host parameters
2. Defining host VLAN tagging
3. Defining network managers.

Defining the Host Parameters

Defines the host parameters such as IP address, default gateway, subnet mask, and the read/write communities.

➤ To define the host parameters:

1. From the Management menu (Main›Configuration›System›**Management**), select **Host IP**.

   The Host IP menu appears.

2. Configure the host IP parameters as illustrated in the following figure.

```
                              Egate-20
Main Menu> Configuration> System> Management> Host IP

1. IP Address           ... (192.188.10.10)
2. IP Mask              ... (255.255.255.0)
3. Default gateway      ... (192.188.10.1)
4. Read community       ... (public)
5. Write community      ... (private)
6. Trap community       ... (public)
7. Encapsulation        >
8. Save
>
Please select item <1 to 8>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-2. Host IP Menu

➤ To define the host VLAN tagging:

1. From the Host IP menu select **Encapsulation**.

   The Encapsulation menu appears.

2. Configure the host encapsulation parameters as illustrated in the following figure.

```
                                Egate-20
Main Menu> Configuration> System> Management> Host IP> Encapsulation

1. Host tagging                        (Tagged)
2. Host VLAN ID [1-4094]          ... (900)
3. Host Priority Tag [0-7]        ... (0)
4. Save

Please select item <1 to 4>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-3. Encapsulation Menu

Defining Managers

In this step you define the managers and specify which manager(s) receive SNMP traps.

➤ To define new managers:

1. In the Management menu, select **Manager List** to open the Manager List menu.
2. Type **a** to add a new network manager.
3. Specify the IP address **192.188.10.20** for the new manager.
4. In the Trap field, specify **Unmask** to unmask traps for the new management station.

5. Select **Save**.

```
                                Egate-20
Main Menu> Configuration> System>Management> Manager List

Manager ID    Manager IP      Manager IP Mask    Manager Trap Mask
    1.        192.188.10.20   255.255.255.0      Unmask


ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-4. Manager List Menu

Configuring the E1 Physical Layer

You must configure E1 ports 1, 2, and 4 as framed, and E1 port 3 as unframed. The transmit clock source is set to internal, as the FCD-IP and RICi-E1 units recover the clock from the E1 links.

➤ **To configure the E1 physical layer for the framed E1 ports:**

1. Open the E1 Physical Layer menu (Main›Configuration›Physical layer›**E1**).

   The E1 Physical Layer menu is displayed.

2. Define the parameters for E1 physical port 1 as illustrated below.

```
                                Egate-20
Main menu> Configuration> Physical ports> E1

   Port                              (1)
1. Activation                        (Up)
2. Transmit clock source             (Internal Clock)
3. Frame type                  >     (Framed – No CRC4)
4. Idle code [00 – ff]         ...   (7C)
5. Line type                   >     (Balance)
6. Sync                              (FAST)
7. Rx Sensitivity                    (-43 db)
8. Save

f – forward
Please select item <1 to 6>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-5. E1 Menu, Framed

3. Save your changes.
4. Perform the same procedure for E1 physical ports 2 and 4.

➤ **To configure the E1 physical layer for the unframed E1 port:**

1. In the E1 Physical Layer menu, define the parameters for E1 physical port 3 as unframed, as illustrated below.

```
                              Egate-20
Main menu> Configuration> Physical ports> E1

   Port                                (3)
1. Activation                          (Up)
2. Transmit clock source               (Internal Clock)
3. Frame type                       > (Unframed)
4. Line type                        > (Balance)
5. Rx Sensitivity
6. Save

f – forward
Please select item <1 to 6>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-6. E1 Menu, Unframed

2. Save your changes.

Configuring the Logical Layer

You must define the logical ports as specified in *Table 5-1*.

➤ **To configure the logical port for RICi-E1 (A):**

1. Navigate to the Logical Layer menu (Main›Configuration›**Logical Layer**).

   The Logical Layer menu appears.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1–248]  ... (-)

 2. Port name                 ... (Logic)
    Protocol                  >   (HDLC)
 3. E1/T1 Port [1-8]          ... (0)

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-7. Logical Layer Menu

2. Specify logical port number **11** and E1 port **1**.

   The **Active timeslots** parameter appears in the Logical Layer menu.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1–248]  ... (11)

 2. Port name                 ... (Logic)
    Protocol                  >   (HDLC)
 3. E1/T1 Port [1-8]          ... (1)
 4. Active timeslots          ... (-)

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-8. Configuring the Logical Layer for RICi-E1 (A)

3. Select **Active Timeslots**.

   The Active Timeslots menu appears.

```
                              Egate-20
Configuration> Logical Layer> Active Timeslots (-)


>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-9. Active Timeslots Screen

4. Type **a** to add timeslots.

   The range of timeslots appears.

```
                              Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (-)

>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-10. Active Timeslots Screen, Range Displayed

5. Select the range and specify **1–15**.

```
                                    Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (1-15)
2. Delete Range...


S-Save
ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-11. Active Timeslots Screen, Range Displayed

6. Type **s** to save the timeslot range.
7. Click <**ESC**> to return to the logical layer menu.
8. The Logical Layer menu appears showing logical port 11 corresponds to E1 port 1, timeslots 1–15.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1-248]  ... (11)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (1)
 4. Active timeslots         ... (1-15)
 5. Save

>

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-12. Logical Layer Configured for RICi-E1 (A)

9. Save your changes.

➤ **To configure the logical port for RICi-E1 (B):**

1. In the Logical Layer menu, specify logical port number **12** and E1 port **2**.

   The **Active timeslots** parameter appears in the Logical Layer menu.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1–248]  ... (12)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (2)
 4. Active timeslots         ... (-)

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-13. Configuring the Logical Layer for RICi-E1 (B)

2. Select **Active Timeslots**.

   The Active Timeslots menu appears.

```
                                    Egate-20
Configuration> Logical Layer> Active Timeslots (-)


>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-14. Active Timeslots Screen

3. Type **a** to add timeslots.

   The range of timeslots appears.

```
                                    Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (-)

>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-15. Active Timeslots Screen, Range Displayed

4. Select the range and specify **1–15**.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (1-15)
2. Delete Range...


S-Save
ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-16. Active Timeslots Screen, Range Displayed

5. Type **s** to save the timeslot range.
6. Click ‹**ESC**› to return to the logical layer menu.
7. The Logical Layer menu appears showing logical port 12 corresponds to E1 port 2, timeslots 1–15.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1-248]  ... (12)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (2)
 4. Active timeslots         ... (1-15)
 5. Save

>

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-17. Configuring the Logical Layer for RICi-E1 (B)

8. Save your changes.

➤ To configure the logical port for RICi-E1 (C):

1. In the Logical Layer menu, specify logical port number **13** and E1 port **3**.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1–248]  ... (13)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (3)
 4. Save

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-18. Configuring the Logical Layer for RICi-E1 (C)

2. Save your changes.

➤ **To configure the logical port for FCD-IP data traffic:**

1. In the Logical Layer menu, specify logical port number **14** and E1 port **4**.

   The **Active timeslots** parameter appears in the Logical Layer menu.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1–248]  ... (14)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (4)
 4. Active timeslots         ... (-)

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-19. Configuring the Logical Layer for FCD-IP Data Traffic

2. Select **Active Timeslots**.

   The Active Timeslots menu appears.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)


>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-20. Active Timeslots Screen

3. Type **a** to add timeslots.

   The range of timeslots appears.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (-)

>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-21. Active Timeslots Screen, Range Displayed

4. Select the range and specify **1–30**.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (1–30)
2. Delete Range...


S-Save
ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-22. Active Timeslots Screen, Range Displayed

5. Type **s** to save the timeslot range.
6. Click ‹**ESC**› to return to the logical layer menu.
7. The Logical Layer menu appears showing logical port 14 corresponds to E1 port 4, timeslots 1–30.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1-248]  ... (14)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (4)
 4. Active timeslots         ... (1-30)
 5. Save

>

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-23. Configuring the Logical Layer for FCD-IP Data Traffic

8. Save your changes.

➤ **To configure the logical port for FCD-IP management traffic:**

1. In the Logical Layer menu, specify logical port number **15** and E1 port **4**.

   The **Active timeslots** parameter appears in the Logical Layer menu.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1-248]  ... (15)

 2. Port name                ... (Logic)
    Protocol                 >   (HDLC)
 3. E1/T1 Port [1-8]         ... (4)
 4. Active timeslots         ... (-)

>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-24. Configuring the Logical Layer for FCD-IP Management Traffic

2. Select **Active Timeslots**.

   The Active Timeslots menu appears.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)


>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-25. Active Timeslots Screen

3. Type **a** to add timeslots.

   The range of timeslots appears.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (-)

>

ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-26. Active Timeslots Screen, Range Displayed

4. Select the range and specify **31**.

```
                                        Egate-20
Configuration> Logical Layer> Active Timeslots (-)

1. [1-31]... (31)
2. Delete Range...


S-Save
ESC-prev.menu; !-main menu; &-exit; A-add
```

Figure 5-27. Active Timeslots Screen, Range Displayed

5. Type **s** to save the timeslot range.
6. Click ‹**ESC**› to return to the logical layer menu.
7. The Logical Layer menu appears showing logical port 15 corresponds to E1 port 4, timeslot 31.

```
                              Egate-20
Configuration> Logical Layer

 1. Logical Port [1-248]  ... (15)

 2. Port name                 ... (Logic)
    Protocol                  >   (HDLC)
 3. E1/T1 Port [1-8]          ... (4)
 4. Active timeslots          ... (31)
 5. Save

>

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-28. Configuring the Logical Layer for FCD-IP Management Traffic

8. Save your changes.

Configuring the Application Layer

The bridge must be configured to forward frames according to their VLAN tags in order to maintain priority of the data flows.

1. Follow the path: Main Menu › Configuration › Applications › **Bridge**.

   The Bridge menu is displayed.

2. In the Bridge menu, configure the bridge to VLAN-Aware and set **Forwarding Mode** to **Filter**.

```
                              Egate-20
Main Menu> Configuration> Applications> Bridge

1. VLAN Mode                     (Aware)
2. Forwarding Mode               (Filter)
3. Aging Time (sec)[300-4080]    ...(300)
4. Static MAC Table              > []
5. Bridge port                   >
6. VLAN membership               >
7. Save                          >

ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-29. Bridge Menu

3. Save your changes.

Defining Bridge Ports

You must define and bind the bridge ports to the Fast Ethernet and E1 ports.

Defining Bridge Ports for the Fast Ethernet Ports

You must define the bridge ports and bind them as specified in *Table 5-2*.

➤ **To define the bridge ports for the Fast Ethernet ports:**

1. In the Bridge menu, select **Bridge Ports** to open the Bridge Port menu.
2. Select **Bridge port** and specify bridge port number **21**.
3. Save the bridge port.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]            ... (21)
 2. Bind                           >
 3. Activation                     >   (Enable)
 4. Ingress Filtering                  (Disable)
 5. Accept Frame Type                  (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority               (Disable)
 8. Default Priority Tag [0-7]     ... (0)
 9. Egress Tag Handling            >   (None)
10. Ingress Tag Handling           >   (None)
>

f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-30. Bridge Port Menu

4. Select **Bind** to open the Bind menu.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                              > (----)

ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-31. Bridge Ports Bind Menu

5. Select Type and specify **Fast Ethernet**.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                             >  (Fast Ethernet)
2. Fast Ethernet Port[1 - 4]        ...(0)
3. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-32. Bridge Ports Bind Menu, Bind to Fast Ethernet Port

6. Select **Fast Ethernet Port[1 - 4]** and specify Fast Ethernet port **1**.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                              >   (Fast Ethernet)
2. Fast Ethernet Port[1 - 4]          ...(1)
3. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-33. Bridge Ports Bind Menu, Bind to Fast Ethernet Port 1

7. Save your changes.
8. Click <**ESC**> to return to the bridge port menu.

   The bridge port menu shows that bridge port 21 is bound to Fast Ethernet port 1.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

    Binded To                            (Eth Port 1)
 1. Bridge Port [1-253]              ... (21)
 2. Bind                             >
 3. Activation                       >   (Enable)
 4. Ingress Filtering                    (Disable)
 5. Accept Frame Type                    (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority                 (Disable)
 8. Default Priority Tag [0-7]       ... (0)
 9. Egress Tag Handling              >   (None)
10. Ingress Tag Handling             >   (None)
>

f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-34. Bridge Port Menu, Bound to Fast Ethernet Port

9. Perform the same procedure to bind bridge port 22 to Fast Ethernet port 2, bridge port 23 to Fast Ethernet port 3, and bridge port 24 to Fast Ethernet port 4.

Defining Bridge Ports for the E1 Ports

You must define the bridge ports and bind them as specified in *Table 5-2*.

➤ **To define the bridge ports for the framed E1 ports for the RICi-E1 units:**

1. In the Bridge menu, select **Bridge Ports** to open the Bridge Port menu.
2. Select **Bridge port** and specify bridge port 11.
3. Save the bridge port.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]            ... (11)
 2. Bind                           >
 3. Activation                     >   (Enable)
 4. Ingress Filtering                  (Disable)
 5. Accept Frame Type                  (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority               (Disable)
 8. Default Priority Tag [0-7]     ... (0)
 9. Egress Tag Handling            >   (None)
10. Ingress Tag Handling           >   (None)
>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-35. Bridge Port Menu

4. Select **Bind** to open the Bind menu.
5. Specify **E1** for the Type and specify E1 port 1.

   The **Logical Port** parameter appears in the Bind menu.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                              (E1)
2. E1 Port[1 – 8]                  ...(1)
3. Logical Port                    >  (---)
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-36. Bind Menu, Empty Logical Port

6. Select **Logical Port** and choose logical port 11.

```
                              Egate-20
...Application> Bridge> Bridge ports> Bind> Logical Port(---)

1. Logical Port 11 – 'Logic'

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-37. Bind Menu, Choose Logical Port

```
                                Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                  (E1)
2. E1 Port[1 – 8]                    ...(1)
3. Logical Port                      >  (Logical Port 11 – 'Logic')
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-38. Bind Menu, Logical Port Selected

7. Save your changes.
8. Click <**ESC**> to return to the bridge port menu.

   The bridge port menu shows that bridge port 11 is bound to E1 port 1 (logical port 11).

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

   Binded To                            (E1 Port 1, Logical Port 11 – 'Logic')
 1. Bridge Port [1-253]              ... (11)
 2. Bind                             >
 3. Activation                       >   (Enable)
 4. Ingress Filtering                    (Disable)
 5. Accept Frame Type                    (All)
 6. Port VID/Stacking VID [1-4094]   ... (2)
 7. Copy Origin Priority                 (Disable)
 8. Default Priority Tag [0-7]       ... (0)
 9. Egress Tag Handling              >   (None)
10. Ingress Tag Handling             >   (None)
>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-39. Bridge Port Menu, Bound to E1 Port

9. Perform the same procedure to bind bridge port 12 to E1 port 2, logical port 2.

➤ **To define the bridge port for the unframed E1 port:**

1. In the Bridge Port menu, select **Bridge port** and specify bridge port 13.
2. Save the bridge port.

```
                              Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]            ... (13)
 2. Bind                           >
 3. Activation                     >   (Enable)
 4. Ingress Filtering                  (Disable)
 5. Accept Frame Type                  (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority               (Disable)
 8. Default Priority Tag [0-7]     ... (0)
 9. Egress Tag Handling            >   (None)
10. Ingress Tag Handling           >   (None)
>
Please select item <1 to 10>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-40. Bridge Ports Menu

3. Select **Bind** to open the Bind menu.
4. Specify **E1** for the **Type** and specify E1 port 3.

   The **Logical Port** parameter appears in the Bind menu, containing logical port 13.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                              (E1)
2. E1 Port[1 – 8]                  ...(3)
3. Logical Port                    >  (Logical Port 13 – 'Logic')
4. Save

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-41. Bind Menu with Logical Port

5. Save your changes.
6. Click ‹**ESC**› to return to the bridge port menu.

   The bridge port menu shows that bridge port 13 is bound to E1 port 3 (logical port 13).

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

   Binded To                          (E1 Port 3, Logical Port 13 – 'Logic')
 1. Bridge Port [1-253]           ... (13)
 2. Bind                          >
 3. Activation                    >   (Enable)
 4. Ingress Filtering                 (Disable)
 5. Accept Frame Type                 (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority              (Disable)
 8. Default Priority Tag [0-7]    ... (0)
 9. Egress Tag Handling           >   (None)
10. Ingress Tag Handling          >   (None)
>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-42. Bridge Port Menu, Bound to E1 Port

➤ **To define the bridge ports for the framed E1 port for FCD-IP:**

1. In the Bridge menu, select **Bridge Ports** to open the Bridge Port menu.
2. Select **Bridge port** and specify bridge port 14.
3. Save the bridge port.

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]           ... (14)
 2. Bind                          >
 3. Activation                    >   (Enable)
 4. Ingress Filtering                 (Disable)
 5. Accept Frame Type                 (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority              (Disable)
 8. Default Priority Tag [0-7]    ... (0)
 9. Egress Tag Handling           >   (None)
10. Ingress Tag Handling          >   (None)
>
Please select item <1 to 10>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-43. Bridge Ports Menu

4. Select **Bind** to open the Bind menu.

5. Specify **E1** for the Type and specify E1 port 4.

   The **Logical Port** parameter appears in the Bind menu.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                  (E1)
2. E1 Port[1 – 8]                     ...(4)
3. Logical Port                       >  (---)
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-44. Bind Menu, Empty Logical Port

6. Select **Logical Port** and choose logical port 14 from the list of logical port 14 and logical port 15.

```
                              Egate-20
...Application> Bridge> Bridge ports> Bind> Logical Port(---)

1. Logical Port 14 – 'Logic'
2. Logical Port 15 – 'Logic'

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-45. Bind Menu, Choose Logical Port

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                  (E1)
2. E1 Port[1 – 8]                     ...(4)
3. Logical Port                       >  (Logical Port 14 – 'Logic')
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-46. Bind Menu, Logical Port Selected

7. Save your changes.
8. Click ‹**ESC**› to return to the bridge port menu.

   The bridge port menu shows that bridge port 14 is bound to E1 port 4 (logical port 14).

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

   Binded To                          (E1 Port 4, Logical Port 14 – 'Logic')
 1. Bridge Port [1-253]           ... (14)
 2. Bind                          >
 3. Activation                    >   (Enable)
 4. Ingress Filtering                 (Disable)
 5. Accept Frame Type                 (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority              (Disable)
 8. Default Priority Tag [0-7]    ... (0)
 9. Egress Tag Handling           >   (None)
10. Ingress Tag Handling          >   (None)
>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-47. Bridge Port Menu, Bound to E1 Port

9. Select **Bridge port** and specify bridge port 15.

10. Save the bridge port.

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

 1. Bridge Port [1-253]           ... (15)
 2. Bind                          >
 3. Activation                    >   (Enable)
 4. Ingress Filtering                 (Disable)
 5. Accept Frame Type                 (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority              (Disable)
 8. Default Priority Tag [0-7]    ... (0)
 9. Egress Tag Handling           >   (None)
10. Ingress Tag Handling          >   (None)
>
Please select item <1 to 10>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-48. Bridge Ports Menu

11. Select **Bind** to open the Bind menu.

12. Specify **E1** for the Type and specify E1 port 4.

    The **Logical Port** parameter appears in the Bind menu.

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                  (E1)
2. E1 Port[1 – 8]                    ...(4)
3. Logical Port                      >  (---)
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-49. Bind Menu, Empty Logical Port

13. Select **Logical Port** and select logical port 15 from the choice of logical port 14 or 15.

```
                              Egate-20
...Application> Bridge> Bridge ports> Bind> Logical Port(---)

1. Logical Port 14 – 'Logic'
2. Logical Port 15 – 'Logic'

>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-50. Bind Menu, Choose Logical Port

```
                              Egate-20
Configuration> Application> Bridge> Bridge ports> Bind
1. Type                                  (E1)
2. E1 Port[1 – 8]                    ...(4)
3. Logical Port                      >  (Logical Port 15 – 'Logic')
4. Save

Please select item from 1 to 3
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 5-51. Bind Menu, Logical Port Selected

14. Save your changes.

15. Click ‹**ESC**› to return to the bridge port menu.

    The bridge port menu shows that bridge port 15 is bound to E1 port 4 (logical port 15).

```
                                Egate-20
Configuration> Applications> Bridge> Bridge Port

   Binded To                          (E1 Port 4, Logical Port 15 – 'Logic')
 1. Bridge Port [1-253]           ... (15)
 2. Bind                          >
 3. Activation                    >   (Enable)
 4. Ingress Filtering                 (Disable)
 5. Accept Frame Type                 (All)
 6. Port VID/Stacking VID [1-4094] ... (2)
 7. Copy Origin Priority              (Disable)
 8. Default Priority Tag [0-7]    ... (0)
 9. Egress Tag Handling           >   (None)
10. Ingress Tag Handling          >   (None)
>
f - Forward; b - Backward; g - Go To; d - Delete
ESC-prev.menu; !-main menu; &-exit
```

Figure 5-52. Bridge Port Menu, Bound to E1 Port

Defining VLAN Memberships

You must define the VLAN memberships as specified in *Table 5-3*.

➤ **To define the host VLAN memberships:**

1. Navigate to the VLAN membership configuration menu (Main Menu › Configuration › Applications › Bridge › **VLAN Membership**).

   The VLAN Membership menu appears.

```
                              Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]         ... (-)
2. Egress Tagged Ports        >   ()
3. Egress Untagged Ports      >   ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-53. VLAN Membership Menu

2. Select **VLAN ID**, and type **900**.
3. Save your changes.
4. Select **Egress Tagged Ports**.

   The Egress Tagged Ports menu appears.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

>

For Delete Range: Enter single bridge port or range by using ‘-‘

ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-54. VLAN Membership Egress Tagged Ports Menu

5. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-55. VLAN Membership Egress Tagged Ports Menu

6. Select **[1 – 253]** and type **1** to add bridge port 1.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (1)
2. Delete Range...
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-56. VLAN Membership Egress Tagged Ports Menu

7. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (1)
2. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-57. VLAN Membership Egress Tagged Ports Menu

8. Select the second **[1 – 253]** and type **11-15** to add bridge ports 11–15.
9. Repeat the same procedure to add bridge ports 21–24.
10. Save your changes.
11. Click ‹**ESC**› to return to the VLAN Membership menu.
12. Save your changes.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (900)
2. Egress Tagged Ports         >    (1, 11-15, 21-24)
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-58. VLAN Membership Menu

➤ **To define the VLAN memberships for VLAN 100:**

1. Navigate to the VLAN membership configuration menu (Main Menu › Configuration › Applications › Bridge › **VLAN Membership**).

   The VLAN Membership menu appears.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (-)
2. Egress Tagged Ports         >    ()
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-59. VLAN Membership Menu

2. Select **VLAN ID**, and type **100**.
3. Save your changes.
4. Select **Egress Tagged Ports**.

   The Egress Tagged Ports menu appears.

```
                                Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

>

For Delete Range: Enter single bridge port or range by using ‘-‘

ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-60. VLAN Membership Egress Tagged Ports Menu

5. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-61. VLAN Membership Egress Tagged Ports Menu

6. Select **[1 – 253]** and type **11** to add bridge port 11.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (11)
2. Delete Range...
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-62. VLAN Membership Egress Tagged Ports Menu

7. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (11)
2. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-63. VLAN Membership Egress Tagged Ports Menu

8. Select the second **[1 – 253]** and type **21** to add bridge port 21.
9. Save your changes.
10. Click ‹**ESC**› to return to the VLAN Membership menu.
11. Save your changes.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (100)
2. Egress Tagged Ports         >    (11, 21)
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-64. VLAN Membership Menu for VLAN 100

➤ **To define the VLAN memberships for VLAN 200:**

1. Navigate to the VLAN membership configuration menu (Main Menu › Configuration › Applications › Bridge › **VLAN Membership**).

   The VLAN Membership menu appears.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (-)
2. Egress Tagged Ports         >    ()
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-65. VLAN Membership Menu

2. Select **VLAN ID**, and type **200**.
3. Save your changes.
4. Select **Egress Tagged Ports**.

   The Egress Tagged Ports menu appears.

```
                                Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

>

For Delete Range: Enter single bridge port or range by using ‘-‘

ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-66. VLAN Membership Egress Tagged Ports Menu

5. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using '-'
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-67. VLAN Membership Egress Tagged Ports Menu

6. Select **[1 – 253]** and type **12** to add bridge port 12.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (12)
2. Delete Range...
>

For Delete Range: Enter single bridge port or range by using '-'
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-68. VLAN Membership Egress Tagged Ports Menu

7. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (12)
2. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using '-'
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-69. VLAN Membership Egress Tagged Ports Menu

8. Select the second **[1 – 253]** and type **22** to add bridge port 22.
9. Save your changes.
10. Click ‹**ESC**› to return to the VLAN Membership menu.
11. Save your changes.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (200)
2. Egress Tagged Ports         >    (12, 22)
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-70. VLAN Membership Menu for VLAN 200

➤ **To define the VLAN memberships for VLAN 300:**

1. Navigate to the VLAN membership configuration menu (Main Menu › Configuration › Applications › Bridge › **VLAN Membership**).

   The VLAN Membership menu appears.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (-)
2. Egress Tagged Ports         >    ()
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-71. VLAN Membership Menu

2. Select **VLAN ID**, and type **300**.
3. Save your changes.
4. Select **Egress Tagged Ports**.

   The Egress Tagged Ports menu appears.

```
                                Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

>

For Delete Range: Enter single bridge port or range by using ‘-‘

ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-72. VLAN Membership Egress Tagged Ports Menu

5. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-73. VLAN Membership Egress Tagged Ports Menu

6. Select **[1 – 253]** and type **13** to add bridge port 13.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (13)
2. Delete Range...
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-74. VLAN Membership Egress Tagged Ports Menu

7. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (13)
2. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using ‘-‘
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-75. VLAN Membership Egress Tagged Ports Menu

8. Select the second **[1 – 253]** and type **23** to add bridge port 23.
9. Save your changes.
10. Click ‹**ESC**› to return to the VLAN Membership menu.
11. Save your changes.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (300)
2. Egress Tagged Ports         >    (13, 23)
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-76. VLAN Membership Menu for VLAN 300

➤ **To define the VLAN memberships for VLAN 400:**

1. Navigate to the VLAN membership configuration menu (Main Menu › Configuration › Applications › Bridge › **VLAN Membership**).

   The VLAN Membership menu appears.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (-)
2. Egress Tagged Ports         >    ()
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-77. VLAN Membership Menu

2. Select **VLAN ID**, and type **400**.
3. Save your changes.
4. Select **Egress Tagged Ports**.

   The Egress Tagged Ports menu appears.

```
                                Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

>

For Delete Range: Enter single bridge port or range by using ‘-‘

ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-78. VLAN Membership Egress Tagged Ports Menu

5. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using '-'
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-79. VLAN Membership Egress Tagged Ports Menu

6. Select **[1 – 253]** and type **14** to add bridge port 14.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (14)
2. Delete Range...
>

For Delete Range: Enter single bridge port or range by using '-'
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-80. VLAN Membership Egress Tagged Ports Menu

7. Type **a** to add a bridge port.

```
                                    Egate-20
...Configuration>Applications>Bridge>VLAN Membership>Egress Tagged Ports(-)

1. [1 – 253]... (14)
2. [1 – 253]... (-)
>

For Delete Range: Enter single bridge port or range by using '-'
S - Save
ESC-Previous menu; !-Main menu; &-Exit; A-add
```

Figure 5-81. VLAN Membership Egress Tagged Ports Menu

8. Select the second **[1 – 253]** and type **24** to add bridge port 24.
9. Save your changes.
10. Click ‹**ESC**› to return to the VLAN Membership menu.
11. Save your changes.

```
                                Egate-20
Main Menu> Configuration> Applications> Bridge> VLAN Membership

1. VLAN ID [1 – 4094]          ...  (400)
2. Egress Tagged Ports         >    (14, 24)
3. Egress Untagged Ports       >    ()

>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 5-82. VLAN Membership Menu for VLAN 400

5.3 Configuring RICi-E1

The application illustrates RICi-E1 units working opposite Egate-20 over E1 links. This section lists required settings for the RICi-E1 units. Refer to the RICi-E1 user manual for instructions on configuring the relevant parameters.

Configuring Host Tagging

Configure the host tagging parameters as follows:

- Set **Host VLAN ID** to **900**
- Set **Host VLAN Priority** to **7**.

Configuring the E1 Port

Configure the E1 link as follows:

- Verify that the administrative status is set to **Up**
- Set **Clock Source** to **LBT**
- For RICi-E1 (A) and RICi-E1 (B):
  - Set **Frame Type** to **G.732N**
  - Assign Time Slots 1–15 to **DATA** mode.
- For RICi-E1 (C):
  - Set **Frame Type** to **Unframed**.

5.4 Configuring FCD-IP

The application illustrates an FCD-IP unit working opposite Egate-20 over an E1 link. This section lists required settings for the FCD-IP unit. Refer to the FCD-IP user manual for instructions on configuring the relevant parameters.

Configuring the Routing:

Configure the following parameters in FCD-IP:

- Set the Interface Routing **Link protocol** to **NATIVE** for HDLC protocol
- Set the WAN Interface **Routing** to **Bridge** so that VLAN-tagged frames are not discarded.

Configuring the E1 Port

Configure the E1 link as follows:

- Configure the timing to recover the clock from the E1 link
- Configure time slot 31 for management traffic, and the rest of the time slots for user traffic.

Chapter 6

Troubleshooting and Diagnostics

This chapter describes how to:

- Display the Egate-20 performance statistics (see *Section 6.1*)
- View the event log (see *Section 6.2*)
- Solve problems that may arise (see *Section 6.3*)
- Perform connectivity tests (see *Section 6.4*).

6.1 Monitoring Performance

To monitor the performance of Egate-20, you can display statistical data for the Ethernet and E1 or T1 physical ports, as well as for the logical layer. For the E1/T1 ports, Egate-20 provides current, interval and total interval statistics.

Monitoring Physical Ports

Monitoring the Ethernet Port

➤ To view Ethernet statistics:

1. Follow the path: Main Menu› Monitoring› Physical Ports› Fast Ethernet› **Statistics.**

   The Fast Ethernet Statistics screen appears (see *Figure 6-1*).

2. Select **Clear Port Statistics** to reset port statistics.

```
                                Egate-20
Main Menu> Monitoring> Physical Ports> Fast Ethernet> Statistics (FE1)

   Port                                                    (1)
   Rx Correct Frames                                  ... (0)
   Rx Correct Octets                                  ... (0)
   Rx Alignment Errors                                ... (0)
   Rx FCS Errors                                      ... (0)
   Rx Congestion Dropped Frames                       ... (0)
   Tx Correct Frames                                  ... (0)
   Tx Correct Octets                                  ... (0)
   Tx Single Collision                               ... (0)
   Tx Collision                                      ... (0)
   Tx Multiple Collision                             ... (0)
   Tx Deferred Transmissions                         ... (0)
   Tx Late Collisions                                ... (0)
   Tx Congestion Dropped Frames                      ... (0)

 1. Clear Port Statistics
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-1. Fast Ethernet Statistics

Table 6-1. Ethernet Statistics Parameters

Parameter	Description
Rx Correct Frames	The total number of correct frames received
Rx Correct Octets	The total number of octets (bytes) received
Rx Alignment Errors	Total frames received with a valid length that have an invalid FCS and a non-integral number of octets.
Rx FCS Errors	Total number of frames received with a valid length, but with invalid FCS and an integral number of octets
Rx Congestion Dropped Frames	Total number of valid frames received that are discarded due to a lack of buffer space
Tx Correct Frames	The number of frames successfully transmitted
Tx Correct Octets	The number of octets successfully transmitted
Tx Single Collision	Total number of successfully transmitted frames that experienced exactly one collision
Tx Collision	Total number of successfully transmitted frames that experienced one or more collisions
Tx Multiple Collision	Total number of successfully transmitted frames that experienced two or more collisions
Tx Deferred Transmissions	Total number of successfully transmitted frames that are delayed because the medium is busy during the first attempt.

Parameter	Description
Tx Late Collisions	Total number of times a collision is detected later than 512 bit-times into the transmission of a frame.
Tx Congestion Dropped Frames	Total number of valid frames that are discarded and not transmitted due to a lack of buffer space

Viewing the E1/T1 Performance Monitoring (PM) Data

The performance monitor report screens display the performance of each of the E1/T1 interfaces . There are several performance data that are collected for each of the interface (ES, SES, and UAS).

➤ **To view E1/T1 performance monitoring (PM) statistics:**

1. Follow the path: Main Menu› Monitoring› Physical Ports and select E1/T1 port.
2. Follow the path: Main Menu› Monitoring› Physical Ports› E1/T1 PM› **Statistics**.

   The E1/T1 Statistics screen appears (see *Figure 6-2*).

```
                          Egate-20
Main Menu> Monitoring> Physical Ports> E1/T1 PM> Statistics

Current Port                                (2)
1. Current Statistics                        >
2. Interval Statistics                       >
3. Total Interval Statistics                >
4. Clear Statistics                          >

f\F – forward ; b\B - backward
Please select item from 1 to 4
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-2. E1/T1 Statistics

3. In the Statistics menu, do one of the following:
   - Select **Current Statistics** to view current statistics for the E1/T1 port you selected; the Current Statistics screen appears (see *Figure 6-3*).
   - Select **Interval Statistics** to view interval statistics for the T1 port you selected; the Interval Statistics screen appears (see *Figure 6-4*).
   - Select **Total Interval Statistics** to view interval statistics for the T1 port you selected; the Total Interval Statistics screen appears (see *Figure 6-5*).
   - Select **Clear Statistics** to clear all E1/T1 statistics.

   E1/T1 statistics are described in *Table 6-2*.

```
                                Egate-20
Main Menu> Monitoring> Physical Ports> E1/T1 PM> Current Statistics

    Current Port                    ...(2)
    Time Elapsed  (sec)                (6)

    ES (Errored Seconds)           ... (0)
    SES (Severely Errored Seconds)... (0)
    UAS (Unavailable Seconds)      ... (0)
    CSS (Controlled Slip Seconds) ... (0)
    BES (Bursty Errored Seconds)  ... (0)
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-3. E1/T1 Current Statistics

```
                                Egate-20
Main Menu> Monitoring> Physical Ports> T1 PM> Interval Statistics


  Port   Interval      ES       SES         UAS        CSS       BES
   1        0          0         0           0          0         0


ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-4. T1 Interval Statistics

```
                                Egate-20
Main Menu> Monitoring> Physical Ports> E1/T1 PM> Total Int. Statistics

    Current Port                   ... (1)
    Number Of Intervals            ... (96)
    Total ES                       ... (0)
    Total SES                      ... (0)
    Total UAS                      ... (960)
    Total CSS                      ... (0)
    Total BES                      ... (0)


> Total Interval Statistics Table
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-5. Total Interval Statistics

Table 6-2. E1/T1 Statistics Parameters

Parameter	Description
Start time	Displays the time of the last “clear statistics” operation.
Time elapsed	For current interval, displays the number of seconds that have passed from the interval’s start time.

Parameter	Description
ES (Errored Seconds)	Number Errored Seconds (ES) detected. • For ESF links, an Errored Second is a second with one or more Path Code Violation, OR one or more Out of Frame defects, OR one or more Controlled Slip events, OR a detected AIS defect. • For D4 links, the presence of Bipolar Violations also triggers an Errored Second, in addition to the criteria above. Not incremented during an Unavailable Second (UAS).
SES (Severely Errored Seconds)	Number of Severely Errored Seconds (SES) detected. • For ESF signals, a Severely Errored Second is a second with 320 or more Path Code Violation Error Events, OR one or more Out of Frame defects, OR a detected AIS defect. • For D4 signals, a Severely Errored Second is a count of one-second intervals with Framing Error events, OR an OOF defect, OR at least 1544 LCVs. Controlled slips (CSS) are not included in this parameter, and it is not incremented during Unavailable Seconds (UAS).
UAS (Unavailable Seconds)	Number of Unavailable Seconds (UAS) detected. Unavailable Seconds are calculated by counting the number of seconds during which the interface is unavailable. The DS1 interface is said to be unavailable from the onset of 10 contiguous SESs, or from the onset of the condition leading to a failure.
CSS (Controlled Slip Seconds)	Number of Controlled Slip Seconds (CSS) detected. A Controlled Slip Second is a one-second interval containing one or more controlled slips. Not incremented during an Unavailable Second (UAS).
BES (Bursty Error Seconds)	Number of seconds where BES is detected. A Bursty Errored Second is a second with fewer than 320, AND more than 1 Path Coding Violation error events, AND no Severely Errored Frame defects, AND no detected incoming AIS defects. This parameter applies to ESF signals only, and is valid only for E1-CRCon and T1-ESF. Controlled slips (CSS) are not included in this parameter, and it is not incremented during Unavailable Seconds (UAS).

➤ **To clear the E1/T1 performance monitoring (PM) data:**

1. Follow the path: Main Menu› Monitoring› E1/T1 and select **Clear PM.**

   The Clear PM screen appears (see *Figure 6-6*).

2. Enter **First Port** and **Last Port** numbers to select a range of ports to clear.
3. Select **Clear PM** to clear the monitoring data for the specified range of ports.

```
                              Egate-20
Monitoring> Physical Ports> E1> Clear PM

 1. Enter First Port[1 - 8]       ... (1)
 2. Enter Last Port[1 - 8]        ... (1)
 3. Clear PM

>
ESC-prev.menu; !-main menu; &-exit
```

Figure 6-6. Clear PM (E1)

Monitoring Logical Ports

➤ **To view the table of logical ports:**

1. Follow the path: Main Menu› Monitoring› **Logical Layer.**

   The Logical Layer Monitoring screen appears.

```
                              Egate-20
Monitoring> Logical Layer

 1. Logical Ports Table          []
 2. Statistics                   >
 3. Clear Statistics (All Ports)
```

Figure 6-7. Logical Layer Monitoring

2. Select **Logical Ports Table**.

   The Logical Ports Table appears:

```
                                    Egate-20
Monitoring> Logical Layer> Logical Ports Table

  Logical Port number  Type   Lower Layer  Lwr Layer Status
Log. Port Status
           1           HDLC        1              Down
Down
           2           HDLC        2              Down
Down
           3           HDLC        2              Down
Down

>
ESC-prev.menu; !-main menu; &-exit; ?-help
```

Figure 6-8. Logical Ports Table

➤ **To view logical-layer statistics:**

1. Follow the path: Main Menu› Monitoring› Logical Layer› **Statistics**.

   The Logical Layer Statistics screen appears (see *Figure 6-9*).

2. Select **Clear Port Statistics** to clear statistics for the port.

```
                              Egate-20
Monitoring> Logical Layer> Statistics

 1. Port                           ... (1)

    Rx Total Frames                    ()
    Rx Total Octets                    ()
    Rx Total Errors                    ()
    Tx Total Frames                    ()
    Tx Total Octets                    ()
    Tx Total Errors                    ()
    Tx Congestion Dropped Frames       ()

 2. Clear Port Statistics

>
f - Forward; b - Backward
ESC-prev.menu; !-main menu; &-exit
```

Figure 6-9. Logical Layer Statistics

➤ **To clear all logical-layer statistics:**

1. Follow the path: Main Menu› Monitoring› **Logical Layer**.
2. Select **Clear Statistics (All Ports)** to clear all port statistics.

6.2 Handling Alarms and Traps

Viewing the Event Log

Egate-20 maintains a log file, which can hold up to 1000 log events. All events are time-stamped.

➤ **To access the event log:**

1. Follow the path: Main Menu› Monitoring› System› **Event Log**.

   The Event Log screen appears (see *Figure 6-10*).

2. In the Event Log screen, use the **Up** and **Down** keys to scroll the event list up and down.

```
                                Egate-20

Main Menu> Monitoring> System> Event Log

    Source         Description     Information     Severity     Time
1   E1 Port 2      LINK_DOWN       E1 port         Major        13:12:45
2   E1 Port 6      LINK_UP         E1 port         Major        10:23:45
3   Eth Port 1     LINK_DOWN       Eth port        Minor        10:15:00

x - Clear Table

ESC-Previous menu; !-Main menu; &-Exit;  ?-Help
```

Figure 6-10. Event Log

Table 6-3 lists the event types that may appear in the event log.

Table 6-3. Possible Events List

Code	Event	Description
10	LINK_UP	Network Ethernet port has been connected
20	LINK_DOWN	Network Ethernet port has been disconnected
30	HW_FAILURE	Hardware failure has been detected
32	PS_FAILED_ON	(Dual power supply only) One of the power supplies has failed
33	PS_FAILED_OFF	(Dual power supply only) The power supply has been turned back on after a failure
40	SNMP_AUTH_FAIL	SNMP Authentication Failure trap has been received
50	WEB_START	ConfiguRAD session has been initiated
51	WEB_FINISH	ConfiguRAD session has been finished
52	WEB_FAILURE	ConfiguRAD session has failed

Code	Event	Description
60	TELNET_START	Telnet session has been initiated
61	TELNET_FINISH	Telnet session has been finished
62	TELNET_FAILURE	Telnet session has failed
70	TFTP_START	TFTP session has been initiated
71	TFTP_FINISH	TFTP session has been finished
72	TFTP_FAILURE	TFTP session has failed
90	TELNET_ACCESS_DENIED	Access via Telnet was denied, either because the current IP address does not appear in the manager list, or because Telnet access was disabled via user configuration.
91	WEB_ACCESS_DENIED	Access via Web was denied, either because the current IP address does not appear in the manager list, or because web access was disabled via user configuration.
92	SNMP_ACCESS_DENIED	Access via SNMP was denied, either because the current IP address does not appear in the manager list, or because SNMP access was disabled via user configuration.
106	T1_FDL_PLB	FDL ESF payload loop has started
107	T1_FDL_REMOVE_PLB	FDL ESF payload loop has been removed
108	T1_FDL_LLB	FDL ESF line loop has started
105	T1_FDL_REMOVE_LLB	FDL ESF line loop has been removed

Clearing the Event Log

Whenever necessary, you can clear all 1000 log events.

➤ **To clear the event log:**

- From the Event Log screen, type **x**.

6.3 Troubleshooting

The following troubleshooting chart is based on LED indications or other inputs.

Use this chart to identify the cause of a problem that may arise during operation. For detailed description of the LED indicators functions refer to *Chapter 3*.

To correct the reported problem, perform the suggested remedy actions. If a problem cannot be resolved by performing the suggested action, please contact RAD technical support (see *Section 6.6*).

Table 6-4. Troubleshooting Chart

Fault/Problem	Probable Cause	Remedy Action
Egate-20 unit is "dead" (POWER LED is off)	No power	Check that both ends of the power cable are properly connected.
Egate-20 unit is "dead" (POWER LED is off)	Blown fuse	Disconnect the power cable from both ends and replace the fuse with another fuse of proper rating.
Ethernet LINK LED is off	Ethernet cableproblem	• Check the Ethernet cable to see whether a cross or straight cable is needed • Check/replace Ethernet cable • Check range to be within limits • Check the port by connecting to a different port switch at the remote end • Send the device for repair
E1/T1 LED is off	E1/T1 Rx path failure	• Check the E1/T1statistics. • Upon AIS, check remote unit status. • Check the cable and Rx levels, as well as the remote unit Tx level.
E1/T1 LED blinks	E1/T1 Tx path failure	• Check the E1/T1to verify RDI received. • Check the Tx optical power to see whether it is in range. If out of range, send it for repair. • Check the cable connections.
The E1/T1 equipment connected to the Egate-20 unit is not properly synchronized with it at the E1/T1 level.	Configuration problems	• Check the E1/T1 physical layer configuration • Check the E1/T1 physical connection (use loopbacks).
Slips and errors in E1/T1 equipment	Problems in the E1/T1 physical layer (see E1/T1 statistics)	• Check the E1/T1 physical connection (use loopbacks). • Check the timing settings

6.4 Testing the Unit

Egate-20 checks network integrity by running ping, trace route, or loopback tests.

Running a Ping Test

You can ping the remote IP host to check the Egate-20 IP connectivity.

➤ **To ping an IP host:**

1. Follow the path: Main menu› Diagnostics› **Ping**.

   The Ping menu appears (see *Figure 6-11*).

2. From the Ping menu, configure the following:
   - **Destination IP address** (IP address of the host that you intend to ping, 0.0.0.0 to 255.255.255.255).
   - **Number of frames to send**: Select 0 to send a continuous stream of frames, or 1-50 to send a specified number of frames.
3. Select **Send Ping** to start sending pings.
4. Select **Stop Ping** to stop the ping test.

```
                          Egate-20
Main Menu> Diagnostics> Ping

1. Destination IP Address              ... (0.0.0.0)
2. Number of Frames to Send [0 - 50]   ... (10)
3. Send Ping
4. Stop Ping

Please select item <1 to 4>
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-11. Ping Menu

Tracing the Route

This diagnostic utility traces the route through the network from Egate-20 to the destination host.

➤ **To trace a route:**

1. Follow the path: Main menu› Diagnostics› **Trace Route**.

   The Trace Route menu is displayed (see *Figure 6-12*).

2. From the Trace Route menu, select **Destination IP Address** and enter the IP address of the host to which you intend to trace the route.
3. Select **Display Trace Route** to start tracing.

   Egate-20 starts tracing the route, displaying the IP addresses of all hop nodes.

4. Select **Stop Trace Route** to stop the tracing.

5. Select **Stop Trace Route** to stop the tracing.

```
                              Egate-20
Diagnostics> Trace Route

 1. Destination IP Address  ... (0.0.0.0)
 2. Display Trace Route
 3. Stop Trace Route
>
ESC-Previous menu; !-Main menu; &-Exit
```

Figure 6-12. Trace Route Menu

Performing a Loopback Test on E1/T1 Links

This diagnostic utility executes a remote loopback test on the E1/T1 links. The purpose of these loopback tests is to determine the source of a break in the data flow.

➤ **To execute a loopback test on the E1/T1 links:**

1. Follow the path: Main menu› Diagnostics› **E1/T1 Loopback**.

   The E1/T1 Loopback menu is displayed (see *Figure 6-13*).

2. Use the arrow keys to select (highlight) the desired E1/T1 link in the table.
3. Select the Loopback state for the highlighted link:
   - Remote: perform remote loopback
   - Disable: disable loopback testing.

```
                              Egate-20
Main Menu> Diagnostics> E1 Loopback
               Number     Loop
               E1 1       Disable
               E1 2        Remote
               E1 3       Disable
               E1 4       Disable
               E1 5       Disable
               E1 6       Disable
               E1 7       Disable
               E1 8       Disable
1. Remote
2. Disable
ESC-Previous menu; !-Main menu; &-Exit; ?-Help
```

Figure 6-13. E1/T1 Loopback Menu

6.5 Frequently Asked Questions

Q Is it possible to map a VLAN to multiple E1 ports on Egate-20? We would like to aggregate two E1 ports to one client (4Mb Service), and then assign those two E1 ports to a VLAN, which would then be trunked to a switch via one of the Ethernet ports in Egate-20.

A This requires the MLPPP feature, which is currently supported only by Egate-100 (not by Egate-20).

Q How can I ping the host?

A In order to ping the host, you should bind the relevant FE port (to which you are connected) to the bridge.

Q Can Egate-20 work in a point-to-point application, opposite another Egate-20 unit? If so, is it possible to define a connection between two LANs using a bundle of several E1s?

A In general, Egate-20 can work opposite another Egate-20. Currently, however, a bundle of several E1s is not supported (for such an application you can use RICi-4E1 or RICi-8E1).

Q Can I download the Egate-20 Ver. 1.1 software to an earlier unchannelized version to make it work as channelized?

A You have to upgrade to the channelized version of Egate-20 to have full channelized functionality. If you download the channelized software to an unchannelized Egate-20 unit, the software will work but you will not be able to create more than one logical port for the same E1 port.

6.6 Technical Support

Technical support for Egate-20 can be obtained from the local distributor from whom it was purchased.

For further information, please contact the RAD distributor nearest you or one of RAD's offices worldwide. This information can be found at RAD's Web site: http://www.rad.com/ (for offices location: click **About RAD > Worldwide Offices** ; for distributors location: click **Where to Buy > End Users**).

Appendix A
Connector Pinouts

A.1 Ethernet Connector

The 10/100BaseT Ethernet electrical interface is an 8-pin RJ-45 connector, wired in accordance with *Table A-1*.

Table A-1. 10/100BaseT Ethernet Connector Pinouts

Pin	Function
1	Tx+
2	Tx–
3	Rx+
4, 5	–
6	Rx–
7, 8	–

A.2 E1/T1 Connector

The E1 or T1 electrical interface is an 8-pin RJ-45 connector, wired in accordance with *Table A-2*.

Table A-2. E1 or T1 Connector Pinouts

Pin	Function
1	Rx+
2	Rx–
3	–
4	Tx+
5	Tx–
6	–
7	–
8	–

A.3 CONTROL Connector

The control terminal interface terminates in a V.24/RS-232 9-pin D-type female DCE connector. *Table A-3* lists the control connector pin assignments.

Table A-3. CONTROL Connector Pinout

Pin	Function
1	Data Carrier Detect (DCD)
2	Receive Data (RD)
3	Transmit Data (TD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indication (RI)

Appendix B

Boot Manager

This appendix provides a description of the Egate-20 boot procedure via an ASCII terminal for downloading software.

The Egate-20 software is stored in flash memory in two sections, in the boot sector and in the file system. The boot sector holds a boot program that calls up the rest of the program from the file system.

The file system can hold two compressed copies of the Egate-20 code. One copy is called the operating file, and the other is called the backup file. The operating file is the default-executable Egate-20 code. The backup file is used whenever the operating file is absent or corrupted.

B.1 Booting Egate-20

Egate-20 boots up automatically. After powering up, no user intervention is required, except when the user wants to access the file system to modify or update the software or the Egate-20 configuration.

Accessing the Boot Manager

The Boot Manager menu is an option that allows the user to perform basic file transfer operations. These operations are all optional.

➤ **To access the Boot Manager menu:**

- Press **<Enter>** several times immediately after powering up Egate-20.

  The Boot Manager menu is displayed (see *Figure B-1*).

```
Egate-20 Boot Version 1.00 (Jan 20 2005)
Boot manager version 7.02 (Jan 20 2005)

0 - Exit Boot-Manager
1 - Dir
2 - Set Active Software Copy
3 - Delete Software Copy
4 - Download an Application by XMODEM
5 - Format flash
6 - Show basic hardware information
7 - Reset board
8 - System Configuration.
9 - Download an Application by TFTP
Press the ESC key to return to the Main Menu.
Select:
```

Figure B-1. Typical Boot Manager Menu

From the Boot Manager menu, you can:

- List all files stored in the flash memory
- Exchange the operating and backup files
- Delete the operating file; the backup file becomes the operating file
- Download a new operating file via XMODEM; the previous operating file is saved as the backup file
- Delete all software and configuration files
- Display the basic hardware information (RAM, ROM size etc)
- Reset the Egate-20 board
- Configure the Egate-20 IP address, IP mask and default gateway for the consecutive file download via TFTP.

If you choose to exchange or delete a file, you are prompted for confirmation.

B.2 Transferring the Software and Configuration Files

New software releases are distributed as separate files, which are downloaded to Egate-20 using the XMODEM protocol or TFTP from the Boot Manager menu. Alternatively, you can download a new software release via TFTP, when the Egate-20 management software is already running (Main menu > Utilities > **File Transfer**).

The TFTP protocol can also be used for uploading configuration files that contain the Egate-20 database to the management station. When Egate-20 is running, administrators can use this capability to distribute verified configuration files to all other units that use a similar configuration.

Downloading Application Files via XMODEM

Downloading application files using the XMODEM protocol is performed from the Boot Manager menu.

➤ **To download application file via XMODEM:**

1. Configure your ASCII terminal or terminal emulation utility running on your PC to the 115.2 kbps data rate.
2. Access the Boot Manager menu.

   The Boot Manager menu appears (see *Figure B-1*).
3. From the Boot Manager menu, select **Download Files or an Application by XMODEM**.

   Egate-20 displays the following message:
   `Select Copy number for download (0)`
4. Select the backup partition by typing its number, **0** or **1**.

   Egate-20 responds with the following string:
   `Please start the XMODEM download.`
5. Send the software release file to Egate-20 using the XMODEM utility of you terminal application.

   Once the downloading is completed, Egate-20 saves the new release as an active partition, the former active partition turns into backup, and the boot sequence continues normally.

   If a failure occurs during the download, the partially downloaded software is erased. In this case, only active software is left in the flash memory.

Downloading Application Files via TFTP

➤ To download application file via TFTP

1. From the Boot Manager menu, select **System Configuration**.
2. Configure the IP parameters of Egate-20 (IP address, IP mask and default gateway). These parameters are valid only for the TFTP file transfer via the Boot Manager.
3. Start a TFTP application.
4. Configure the TFTP communication parameters as follows:
   - Connection timeout – more than 30 seconds to prevent an automatic disconnection during the backup partition deletion (about 25 seconds).
   - Block size – 512 bytes.
   - UDP port – 69.
5. Select a local software release file to download.
6. Enter the TFTP server IP address.
7. Start downloading.

   Egate-20 automatically erases the backup partition (it takes about 25 seconds). Once the downloading is completed, Egate-20 saves the new release as an active partition; the former active partition becomes a backup.

Index

–8–

802.1
  QoS priority queues, 21
802.1p
  QoS priority queues, 1-10

–A–

AC power
  connections, 2-5
Active timeslots, 13
Aging process
  VLAN-aware bridge, 1-7
  VLAN-unaware bridge, 1-9
Application, 1-1, 5-1

–B–

Boot
  manager, B-1
  sequence, B-1
Bridge, 1-2, 1-5
  configuring, 14
  default settings, 3-3
  specifications, 1-13
  VLAN-aware, 1-5
  VLAN-unaware, 1-8
Bridge port, 17, 20
  default settings, 3-3
  port binding, 17
  QoS priority queues, 21

–C–

Cables, 2-2
Clock source, 6
  monitoring, 28
coaxial connector, 2-3
ConfiguRAD, 3-8
Configuration
  parameter defaults, 3-2
Configuring
  active timeslots, 13
  ASCII terminal, 3-5
  bridge, 14
  bridge port, 17, 20
  device information, 3
  E1 port, 7
  Ethernet port, 11
  IP host parameters, 2
  logical port, 12
  network managers, 4
  ports, 7
  QoS priorities, 21
  system parameters, 1
  T1 port, 9
  terminal parameters, 5
  typical application, 5-1
  user priorities, 21
Connecting
  AC power, 2-5
  DC power, 2-5
  E1/T1 port, 2-3
  Fast Ethernet port, 2-3
  terminal, 2-4
Connectivity tests, 6-12
Connectors, 2-2
Control interface, 3-5
  pinouts, A-2
Control port
  specifications, 1-13
Control Port. See Terminal
Control session, 3-5

–D–

DC power
  connections, 2-5
Default settings, 3-3
Default values
  configuration parameters, 3-2
Device information, 3
Diagnostics, 6-9
  connectivity tests, 6-12
  loopback, 6-13
  ping, 6-12
  trace route, 6-12
Downloading
  software/configuration file, B-3
DSCP
  QoS priority queues, 1-10
DSCP
  QoS priority queues, 21

–E–

E1 intereface
  port configuration, 7
E1 interface
  connecting the port, 2-3
  default settings, 3-3
  pinouts, A-1
  statistics, 6-3
Environment specifications, 1-15
Equipment
  cables, 2-2
  connectors, 2-2

hand tools, 2-2
power cable, 2-2
Ethernet
port, 11
status, 26
Ethernet interface
default settings, 3-3
pinouts, A-1
port, 2-3
statistics, 6-1, 6-5, 6-7, 6-8
Ethernet Port
MDIXAutoCrossOver, 11
Event list, 6-9

–F–

Factory defaults, 30
Fast Ethernet. See Ethernet
File transfer, 28, B-3
Forwarding process
VLAN-aware bridge, 1-7
VLAN-unaware bridge, 1-9
Front panel, 3-1
LEDs, 3-2

–H–

Help
screen example, 3-7
Host IP, 2
Host IP encapsulation
VLAN ID, 3
VLAN priority, 3
Host tagging
tagged, 3
untagged, 3

–I–

Indicators
specifications, 1-13
Ingress process
summary, 1-6
VLAN-aware bridge, 1-5
VLAN-unaware bridge, 1-8
Installation, 2-1
Interface Status, 26
Interfaces, 1-4
pinouts
control, A-2
E1, A-1
Ethernet, A-1
statistics, 6-1
Inventory, 24
IP precedence
QoS priority queues, 21

–L–

Learning process
VLAN-aware bridge, 1-7
VLAN-unaware bridge, 1-8
LEDs, 3-2
Log file, 6-9
Logical layer
port configuration, 12
Login
terminal, 3-5
Web browser, 3-8
Loopback test, 6-13

–M–

MAC table, 15
Main menu, 3-10
Management, 1-3
functions, 1-3
terminal control session, 3-5
via RADview-Lite, 3-9
via terminal port, 3-5
via Web browser, 3-8
Manager List, 4
Menus
menu tree, 3-10
navigating, 3-8
reference, 3-10
Monitoring, 26, 6-9
E1/T1 statistics, 6-3
Ethernet statistics, 6-1, 6-5, 6-7, 6-8
ethernet status, 26
log file, 6-9
MAC table, 27
specifications, 1-13
statistics, 6-1
Status, 26
system information, 28
system messages, 6-9
system status, 26
Mounting the Unit, 2-3

–N–

Network Managers, 4

–O–

Operation, 3-1
Options, choosing
ConfiguRAD, 3-9

–P–

Package contents, 2-2
Password, 24
default, 3-5, 3-8
Physical Ports, 7
Physical specifications, 1-15
Ping, 6-12
Pinouts, A-1
PM data, 6-5
Ports
E1/T1 port, 2-3
Fast Ethernet port, 2-3
Power
AC, 2-5
cable, 2-2
DC, 2-5
specifications, 1-14
Powering down, 3-12
Powering up, 3-1
PVID, 1-6

–Q–

Quality of service, 1-10
  802.1p priority, 1-10
  configuring, 21
  DSCP priority, 1-10
  port-based priority queues, 1-10
  priority queues, 1-10
  user priority, 21

–R–

RADview-Lite, 3-9
Resetting
  device, 30
  to factory defaults, 30
RS-232 port, 3-5

–S–

Screens
  sample table, 3-7
  typical configuration screen, 3-6
Setup, 2-1
Site requirements, 2-1
Software
  downloading, B-1
  files, B-1
  in flash memory, B-1
  new releases, 28
  updates, 28, B-3
  versions, 28
Specifications, 2-1
Statistics, 6-1
  E1/T1, 6-3
  Ethernet, 6-1, 6-5, 6-7, 6-8
System
  default settings, 3-3
  messages, 6-9
  parameter configuration, 1
  reset device, 30

–T–

T1
  port configuration, 9
T1 interface
  connecting the port, 2-3
  default settings, 3-3
  pinouts, A-1
  statistics, 6-3
Tables
  navigating, 3-6
Technical specifications, 2-1
Terminal, 3-5
  baud rate, 5
  configuring, 3-5
  connecting, 2-4
  control session, 3-5
  login, 3-5
  parameters, 5
TFTP, B-3
  system messages, 29
Trace route, 6-12
Transmission process
  VLAN-aware bridge, 1-8
  VLAN-unaware bridge, 1-9
Troubleshooting, 6-9, 6-11
Typical application, 5-1

–U–

User name, 24
Utilities
  file transfer, 28

–V–

VLAN Stacking, 1-9
VLAN-Aware mode, 1-5
VLAN-Unaware mode, 1-8

–W–

Web browser
  ConfiguRAD, 3-8
  login, 3-8
  requirements, 3-8

–X–

XMODEM, B-3

Supplement

AC/DC Adapter (AD) Plug

for DC Power Supply Connection

Note *Ignore this supplement if the unit is AC-powered.*

Certain units are equipped with a wide-range AC/DC power supply. These units are equipped with a standard AC-type 3-prong power input connector located on the unit rear panel. This power input connector can be used for both AC and DC voltage inputs.

For DC operation, a compatible straight or 90-degree AC/DC Adapter (AD) plug for attaching to your DC power supply cable is supplied with your RAD product (see *Figure 1* and *Figure 2*).

Connect the wires of your DC power supply cable to the AD plug, according to the voltage polarity and assembly instructions provided on *page 2*.

Figure 1. Straight AD Plug

Figure 2. 90-Degree AD Plug

Caution

Prepare all connections to the AD plug **before** inserting it into the unit's power connector.

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➤ **To prepare the AD plug and connect it to the DC power supply cable:**

1. Loosen the cover screw on the bottom of the AD plug to open it (see *Figure 3*).
2. Run your DC power supply cable through the removable cable guard and through the open cable clamp.
3. Place each DC wire lead into the appropriate AD plug wire terminal according to the voltage polarity mapping shown. Afterwards, tighten the terminal screws closely.
4. Fit the cable guard in its slot and then close the clamp over the cable. Tighten the clamp screws to secure the cable.
5. Reassemble the two halves of the AD plug and tighten the cover screw.
6. Connect the assembled power supply cable to the unit.

***Note**: You have to flip over the non-90-degree AD plug type by 180 degrees to insert it into the unit. After inserting it, verify that the blue (negative) wire is connected to the POWER and the brown (positive) wire is connected to the RETURN.*

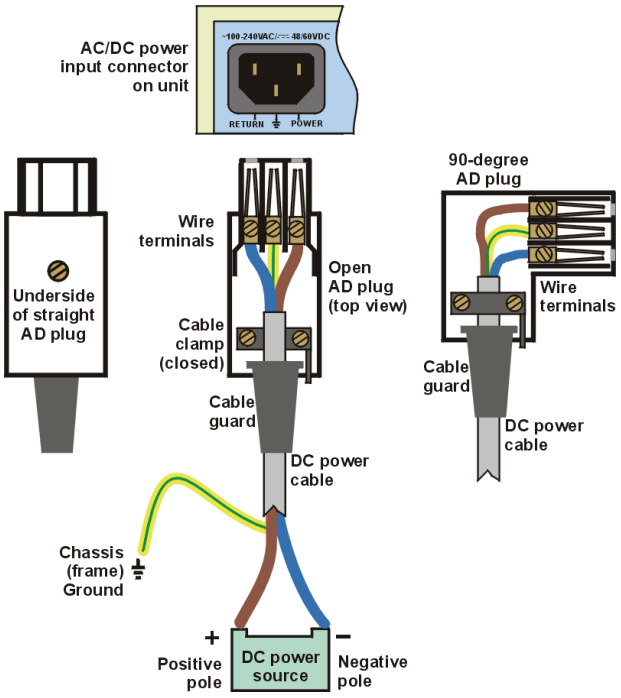

Figure 3. AD Plug Details

Warning

- **Reversing the wire voltage polarity will not cause damage to the unit, but the internal protection fuse will not function.**
- **Always connect a ground wire to the AD plug's chassis (frame) ground terminal. Connecting the unit without a protective ground, or interrupting the grounding (for example, by using an extension power cord without a grounding conductor) can damage the unit or the equipment connected to it!**
- **The AD adapter is not intended for field wiring.**

Supplement

Terminal Block Connector

for DC Power Supply Connection

Note *Ignore this supplement if the unit is AC-powered.*

Certain DC-powered units are equipped with a plastic 3-pin VDC-IN power input connector, located on the unit rear panel. Different variations of the connector are shown in *Figure 1*. All are functionally identical.

Supplied with such units is a kit including a mating Terminal Block (TB) type connector plug for attaching to your power supply cable.

Connect the wires of your power supply cable to the TB plug, according to the voltage polarity and assembly instructions provided on the following pages.

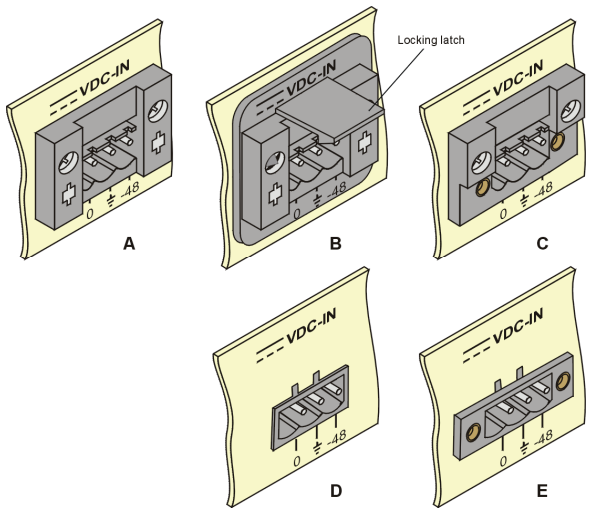

Figure 1. TB DC Input Connector Types Appearing on Unit Panels

Caution

Prepare all connections to the TB plug **before** inserting it into the unit's VDC-IN connector.

Publication No. SUP-220-06/08

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➤ **To prepare and connect the power supply cable with the TB Plug:**

***Note**: Refer to Figure 2 for assistance.*

1. Strip the insulation of your power supply wires according to the dimensions shown.
2. Place each wire lead into the appropriate TB plug terminal according to the voltage polarity mapping shown in *Figure 3*. (If a terminal is not already open, loosen its screw.) Afterwards, tighten the three terminal screws to close them.
3. Pull a nylon cable tie (supplied) around the power supply cable to secure it firmly to the TB plug grip, passing the tie through the holes on the grip.
4. Isolate the exposed terminal screws/wire leads using a plastic sleeve or insulating tape to avoid a short-circuit.
5. Connect the assembled power supply cable to the unit by inserting the TB plug into the unit's VDC-IN connector until it snaps into place.

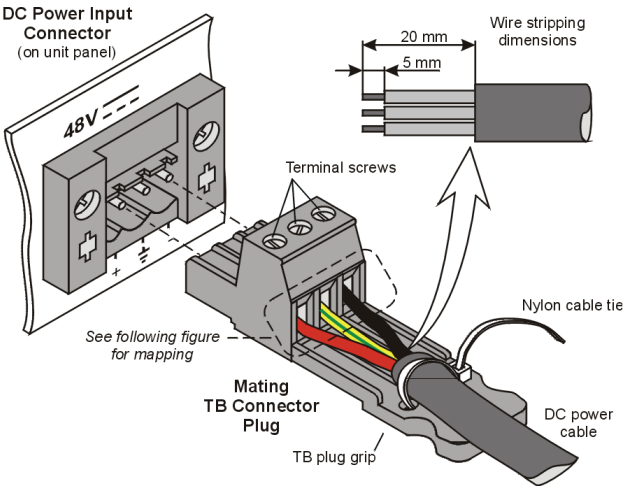

Figure 2. TB Plug Assembly

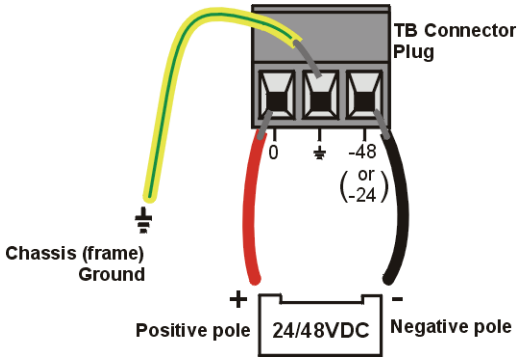

Figure 3. Mapping of the Power Supply Wire Leads to the TB Plug Terminals

Warning

- **Reversing the wire voltage polarity can cause damage to the unit!**
- **Always connect a ground wire to the TB plug's chassis (frame) ground terminal. Connecting the unit without a protective ground, or interruption of the grounding (for example, by using an extension power cord without a grounding conductor) can cause harm to the unit or to the equipment connected to it!**

RAD
data communications
The Access Company

24 Raoul Wallenberg Street, Tel Aviv 69719, Israel
Tel: +972-3-6458181, Fax +972-3-6483331, +972-3-6498250
E-mail: erika_y@rad.com, Web site: http://www.rad.com

Customer Response Form

RAD Data Communications would like your help in improving its product documentation. Please complete and return this form by mail or by fax or send us an e-mail with your comments.

Thank you for your assistance!

Manual Name: Egate-20 Ver. 1.1

Publication Number: 406-200-07/08

Please grade the manual according to the following factors:

	Excellent	*Good*	*Fair*	*Poor*	*Very Poor*
Installation instructions	❒	❒	❒	❒	❒
Operating instructions	❒	❒	❒	❒	❒
Manual organization	❒	❒	❒	❒	❒
Illustrations	❒	❒	❒	❒	❒
The manual as a whole	❒	❒	❒	❒	❒

What did you like about the manual?

_____

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Error Report

Type of error(s) or problem(s):

- ❒ Incompatibility with product
- ❒ Difficulty in understanding text
- ❒ Regulatory information (Safety, Compliance, Warnings, etc.)
- ❒ Difficulty in finding needed information
- ❒ Missing information
- ❒ Illogical flow of information
- ❒ Style (spelling, grammar, references, etc.)
- ❒ Appearance
- ❒ Other _____

Please list the exact page numbers with the error(s), detail the errors you found (information missing, unclear or inadequately explained, etc.) and attach the page to your fax, if necessary.

_____

_____

_____

_____

Please add any comments or suggestions you may have.

_____

_____

_____

You are:

- ❒ Distributor
- ❒ End user
- ❒ VAR
- ❒ Other

Who is your distributor? _____

Your name and company: _____

Job title: _____

Address: _____

Direct telephone number and extension: _____

Fax number: _____

E-mail: _____

Publication No. 406-200-07/08

International Headquarters

24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel. 972-3-6458181
Fax 972-3-6498250, 6474436
E-mail market@rad.com

North America Headquarters

900 Corporate Drive
Mahwah, NJ 07430, USA
Tel. 201-5291100
Toll free 1-800-4447234
Fax 201-5295777
E-mail market@radusa.com

www.rad.com

RAD
data communications
The Access Company