IBM

Install and Usage Information for

MULTISRV

Multiple Protocol Server

Version 2.3

for Use with
TCP/IP for z/VM® Version 3 Release 1, and Later

Document Date: 30 April, 2012

0000-0000-00

> **Note!**

Before using this information and the product it supports, be sure to read the general information under "Notices" on page v.

This document, dated 30 April, 2012, applies to MULTISRV — Multiple Protocol Server for Use with TCP/IP for z/VM Version 3 Release 1, and later.

Change bars are used to highlight major changes in this document from previous versions.

| Version 2.0

- Added support for Active User Protocol.
- Added support for Identification Protocol.
- Improved overall documentation.
- Added selectivity to the TRACE subcommand and command line option. The selectivity controls what is traced and where the trace is sent (console or virtual printer).
- Removed the use of RFC numbers in commands and subcommands.
- Renamed the RFC865 SAMPLE and RFC865 DATA files to QOTD SAMPLE and QOTD DATA, respectively.

> Version 2.1

- Added Audit support.
- Corrected several errors that caused the server to stop processing
- Corrected Identification Protocol and Active User Protocol errors.

< Version 2.2

- Add character generator protocol ports to the list of ports that should be reserved in the TCP/IP server configuration file (PROFILE TCPIP).

Version 2.3

- Removed obsolete NETSTAT binaries from package.
- Updated documentation to require TCP/IP for z/VM Version 3 Release 1 or later.

+ General Documentation Changes

- Updated NETSTAT MODULE information.
- Updated SOCKET documentation references for various MULTISRV messages. *VM/ESA Application Development Reference* references changed to *VM/ESA REXX/VM Reference*.

Contents

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1.0 Introduction

This document is intended for the system programmer responsible for TCP/IP for VM/ESA® program installation and maintenance. It contains information concerning the material and procedures associated with the installation of MULTISRV — the Multiple Protocol Server.

You should read all of this document before installing this program and then keep it for future reference.

This document contains the following sections:

- 2.0, "Program Description" on page 2 describes this support.

- 3.0, "Program Materials" on page 3 identifies the basic and optional program materials and documentation for MULTISRV.

- 4.0, "Program Support" on page 5 describes the IBM support available for MULTISRV.

- 5.0, "Program Installation" on page 6 provides detailed installation instructions for MULTISRV.

- Appendix A, "MULTISRV Command and Subcommands" on page 10 details the command syntax for MULTISRV and its subcommands.

- Appendix B, "DAYQUOTE Command" on page 26 details the command syntax for the CMS Quote of the Day client.

- Appendix C, "Formats of MULTISRV Trace Records" on page 28 describes the trace records produced by the MULTISRV daemon.

- Appendix D, "MULTISRV Logging" on page 29 describes the conditions under which log records are produced, as well as the format of these records.

- Appendix E, "Configuring the QOTD DATA File" on page 32 details how to configure the Quote of the Day data file.

- Appendix F, "MULTISRV Messages" on page 34 details the MULTISRV messages in a format similar to a Messages and Codes manual.

2.0 Program Description

MULTISRV is a single daemon (server) that supports multiple simple Internet protocols. You may run MULTISRV in a single virtual machine or separate machines. If you choose to run MULTISRV in separate machines (this is *strongly* discouraged), you should not start the same protocol in two machines because MULTISRV listens on all interface addresses (it binds to INADDR_ANY).

The main benefit of the MULTISRV implementation is that a single virtual machine can handle several protocols at one time. This reduces the number of machines you need to define and configure to support these protocols.

MULTISRV supports the following Internet protocols:

| **Active User Protocol** | as documented in RFC 866. This protocol returns ASCII string(s) that contain a list of active users on the VM/ESA system (returned user IDs are separated by carriage return, line feed and blank characters).

Character Generator Protocol as documented in RFC 864. This protocol returns a random length ASCII string (1 to 512 characters) in response to a packet from a client.

Daytime Protocol as documented in RFC 867. This protocol returns an ASCII string that represents the current date and time of the system on which the server is running. The time zone is the current time zone for the system.

Discard Protocol as documented in RFC 863. This protocol discards any data it receives, and may be useful for debugging problems associated with network connectivity.

Echo Protocol as documented in RFC 862. This protocol sends back any data it is sent.

| **Identification Protocol** as documented in RFC 1413. This protocol returns information that identifies the owner of a connection on the server's system.

Quote of the Day Protocol as documented in RFC 865. This protocol returns an ASCII string of up to 512 characters. The returned string is obtained from a file that allows the server to be configured to respond with a different message for each day.

Time Protocol as documented in RFC 868. This protocol returns the time in seconds
< since Midnight on January 1st, 1900 GMT (the returned value is a 32 bit binary number).

In addition to the MULTISRV daemon, a simple CMS "Quote of the Day" client — DAYQUOTE — is provided. DAYQUOTE allows VM/ESA user IDs to access the *Quote of the Day* daemon.

3.0 Program Materials

The following sections identify:

- basic and optional program materials available with this program.

- publications useful during installation.

3.1 Basic Machine-Readable Material

MULTISRV is distributed using the World Wide Web. All information is downloaded from the VM/ESA
Web Page. The following material is required to run MULTISRV on TCP/IP for z/VM Version 3 Release 1,
or later:

    MULTISRV EXEC
    MULTISRV HELP
    MLTUME TEXT
    MLTUMEB TEXT
| QOTD SAMPLE
    DAYQUOTE EXEC

See section 5.0, "Program Installation" on page 6 for more information about how to install the program.

3.2 Program Publications

The following sections identify the basic and optional publications for MULTISRV.

3.3 Microfiche Support

There is no microfiche for MULTISRV.

3.4 Publications Useful During Installation

The publications listed in Figure 1 may be useful during the installation of MULTISRV. To order copies, contact your IBM representative.

Figure 1. Publications Useful During Installation / Service on VM/ESA Version 2

Publication Title	Form Number
VM/ESA TCP/IP Function Level 310 Planning and Customization	SC24-5847
VM/ESA CP Planning and Administration	SC24-5750
VM/ESA Performance	SC24-5782
VM/ESA CMS Command Reference	SC24-5776
VM/ESA CP Command and Utility Reference	SC24-5773
VM/ESA CMS Application Development Reference	SC24-5762
VM/ESA CMS Application Multitasking	SC24-5766
VM/ESA System Messages and Codes	SC24-5784
IBM TCP/IP for VM: Planning and Customization	SC31-6082
+ VM/ESA REXX/VM Reference	SC24-5770
VM/ESA REXX/VM User's Guide	SC24-5465

4.0 Program Support

This section describes the IBM support available for MULTISRV.

There is no *official* support for this program. Problems encountered with its use will be addressed on an *as-available* basis. Any program updates and fixes that are completed will be integrated into a newer version of the download package. To obtain these changes, the program package must again be downloaded.

> MULTISRV was developed for use with currently supported levels of TCP/IP for VM and VM/ESA.
> Consideration has been given to the MULTISRV implementation to allow its use with earlier (and now
> unsupported) levels of TCP/IP for VM and VM/ESA; however, extensive testing on these earlier releases
> has *not* been performed. If you find a problem using this support with an earlier release of TCP/IP for VM
> or VM/ESA, please still report that problem, as directed below.

Questions, problems or comments you have regarding this program should be sent using electronic mail to:

| `vmtcpip@vnet.ibm.com`

| with a subject of **MULTISRV**.

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5.0 Program Installation

5.1 Configuring the MULTISRV Daemon

This section describes the steps necessary to install and configure the MULTISRV daemon.

1 Create a CP directory entry for the MULTISRV server machine and make it active. A sample CP directory entry for this server follows:

```
USER MULTISRV password 32M  32M  G
  INCLUDE TCPCMSU
  OPTION QUICKDSP SVMSTAT
  SHARE RELATIVE nnnnn
  LINK TCPMAINT 591 591 RR
  LINK TCPMAINT 592 592 RR
  LINK TCPMAINT 198 198 RR
  MDISK 0191 3390 cyl 5 volid MR xxxxxxxx xxxxxxxx
```

where the TCPCMSU directory profile entry is that defined by the TCP/IP for VM/ESA product for other TCP/IP for VM servers:

```
PROFILE TCPCMSU
  IPL CMS
  MACHINE XA
  SPOOL 00C 2540 READER *
  SPOOL 00D 2540 PUNCH  A
  SPOOL 00E 1403 A
  CONSOLE 009 3215 T
  LINK MAINT 190 190 RR
  LINK MAINT 19D 19D RR
  LINK MAINT 19E 19E RR
```

With regard to the previous samples, keep in mind the following considerations:

- For the MULTISRV daemon, a virtual machine storage size of 32M is recommended. However, you may find that a smaller virtual machine size will suffice or is possible.

- The MULTISRV daemon requires either a 191 minidisk or a Shared File System (SFS) directory to be accessed as file mode A for operation. For minidisks, 5 cylinders of 3390 DASD space is recommended. If an SFS directory is used, 750 SFS 4K blocks should be allocated for this server.

- The performance of the MULTISRV daemon will depend upon the SHARE CPU power that is allocated to the MULTISRV virtual machine. The `SHARE RELATIVE` and `OPTION QUICKDSP` statements (if included in your MULTISRV directory entry), should conform to local guidelines established for defining server and guest virtual machine share settings. If appropriate, consult your local performance expert prior to using these statements.

2 Copy the MULTISRV server files from the download package to the 191 minidisk of the MULTISRV virtual machine. This includes:

> MULTISRV EXEC
> MULTISRV HELP
> QOTD SAMPLE
> MLTUME TEXT
> MLTUMEB TEXT

3 Create a PROFILE EXEC for the MULTISRV daemon, which invokes the the MULTISRV EXEC in the correct manner when the server is autologged.

Copy the TCP/IP server profile exec (TCPROFILE EXEC) to the 191 minidisk of the MULTISRV as the file, PROFILE EXEC.

4 Update the SYSTEM DTCPARMS file to include appropriate entries for the MULTISRV server:

```
:nick.MULTISRV  :type.server  :class.multprot

...

.* TCP/IP MultiServ Server
:nick.multprot  :type.class
                :name.MultiServ
                :command.MULTISRV
                :parms.(STAYUP
```

where the name of the MULTISRV service machine (**MULTISRV**) is specified with the **:nick.** tag entry.

The DTCPARMS file entries define the characteristics of the MULTISRV server, as well as MULTISRV command parameters to be used when this server is started. For more information about the DTCPARMS file, see the appropriate chapter of *IBM TCP/IP for VM: Planning and Customization* that discusses customization of the DTCPARMS file.

5 The MULTISRV server uses message repositories to contain messages that it will display. At present, two language repository text files are shipped with the code, **MLTUME** for American English (mixed case) and **MLTUMEB** for Upper Case English. If your VM/ESA system does not include these languages or includes others, then you must copy either the American English (mixed case) repository text file or the Upper case English repository text file to a name that is recognized by VM/ESA for the language you are using. For example, if your system runs with only German language support, you would need to create a MLTUMEE file.

Figure 2 lists the file name that should be used for the MULTISRV message repository file for the various languages supported by VM/ESA.

Figure 2. VM/ESA Repository File Name Table	
Language	**VM/ESA File Name**
English	*xxx*UME
Uppercase English	*xxx*UMEB
German	*xxx*UMEE
Spanish	*xxx*UMEF
Japanese	*xxx*UMEA
Brazilian (Portuguese)	*xxx*UMEC
Chinese (Simplified)	*xxx*UMEG
Canadian French	*xxx*UMEJ

6 If you intend to configure the MULTISRV server to support Quote of the Day Protocol (RFC865), you need to define the various quotations that will be used in the QOTD DATA file (supplied in sample form as the file, QOTD SAMPLE). Use the commands that follow to create and modify this file:

copy qotd sample *fm* **qotd data** *fm*
xedit qotd data *fm*

where *fm* is the file mode of the minidisk where the MULTISRV server files are being maintained.

The QOTD DATA file must reside an a minidisk or SFS directory accessed by the MULTISRV server. In this file, one line is present for each day of the year. Each line is composed of a 4-digit *date string* and the quote to be issued for that date.

For more information about customizing this file, see Appendix E, "Configuring the QOTD DATA File" on page 32, or the comments within the QOTD SAMPLE file.

5.2 Updating PROFILE TCPIP

There are several minor changes required that affect the TCP/IP stack server
(TCPIP by default). You need to update the TCP/IP configuration file (PROFILE
TCPIP, or its equivalent) so that:

1. all MULTISRV user IDs are included in the AUTOLOG statement. This will
   cause all MULTISRV server machines to be automatically started when TCPIP
   is initialized.

   ```
   AUTOLOG
      MULTISRV
   ```

2. the ports on which MULTISRV servers will listen are reserved with the PORT
   statement, using both UDP and TCP Protocol. Ports that should be reserved
   for the protocols supported by the MULTISRV follow:

   ```
   PORT
        7 UDP MULTISRV        ; Echo Protocol Server
        7 TCP MULTISRV        ; Echo Protocol Server
        9 UDP MULTISRV        ; Discard Protocol Server
        9 TCP MULTISRV        ; Discard Protocol Server
       11 UDP MULTISRV        ; Active User Server
       11 TCP MULTISRV        ; Active User Server
       13 UDP MULTISRV        ; Daytime Protocol Server
       13 TCP MULTISRV        ; Daytime Protocol Server
       17 UDP MULTISRV        ; Quote of the Day Protocol Server
       17 TCP MULTISRV        ; Quote of the Day Protocol Server
       19 UDP MULTISRV        ; Character Generator Protocol Server
       19 TCP MULTISRV        ; Character Generator Protocol Server
       37 UDP MULTISRV        ; Time Protocol Server
       37 TCP MULTISRV        ; Time Protocol Server
      113 UDP MULTISRV        ; Identification Protocol Server
      113 TCP MULTISRV        ; Identification Protocol Server
   ```

   where **MULTISRV** is the name of the virtual machine(s) used to run the Multiple
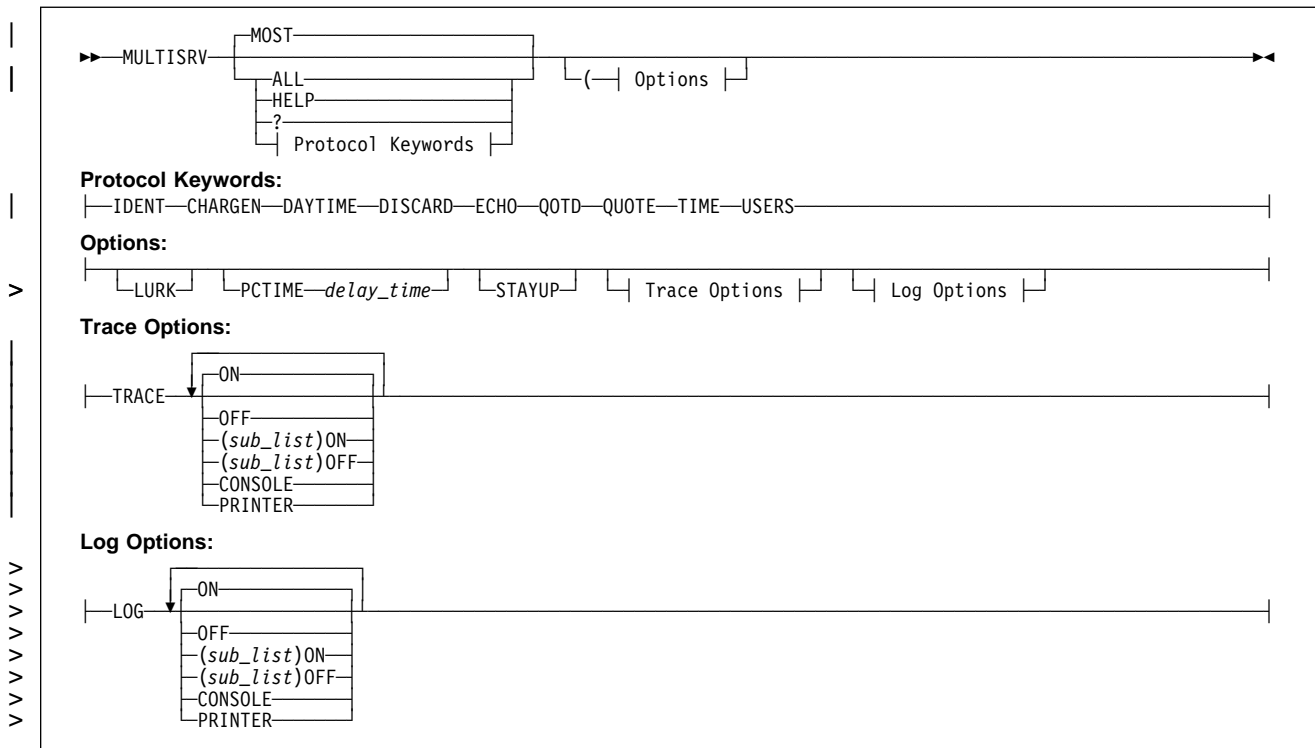   Protocol Server.

   If you choose to run several MULTISRV virtual machines to handle distinct
   protocols, adjust the PORT and AUTOLOG statements accordingly. Also, do not
   reserve any ports that correspond to a protocol that your MULTISRV sever(s) will
   not support. For more information about the PORT and AUTOLOG statements,
   see *IBM TCP/IP for VM: Planning and Customization*.

Appendix A. MULTISRV Command and Subcommands

```
┌─ Note! ──────────────────────────────────────────────────────────────────────┐
│                                                                              │
│ The command syntax, responses and messages presented in this section are **very likely to change** │
│ over time, due to ongoing improvements made based on feedback received from customers using this │
│ program.                                                                     │
│                                                                              │
└──────────────────────────────────────────────────────────────────────────────┘
```

A.1 MULTISRV Command

```
|           ┌─MOST──────────────────┐
|  ►►──MULTISRV─┼───────────────────────┼──┬──────────────────────┬──►◄
|           ├─ALL───────────────────┤    └─(──┤ Options ├─────┘
            ├─HELP──────────────────┤
            ├─?─────────────────────┤
            └─┤ Protocol Keywords ├─┘

   Protocol Keywords:
|  ├─IDENT──CHARGEN──DAYTIME──DISCARD──ECHO──QOTD──QUOTE──TIME──USERS──────────┤

   Options:
>  ├──┬──────┬──┬────────────────────────┬──┬────────┬──┬────────────────┬──┬──────────────┬──┤
      └─LURK─┘  └─PCTIME──delay_time──────┘  └─STAYUP─┘  └─┤ Trace Options ├─┘  └─┤ Log Options ├─┘

   Trace Options:
|           ┌─ON──────────────┐
|  ├─TRACE──┼─────────────────┼──────────────────────────────────────────────┤
            ├─OFF─────────────┤
            ├─(sub_list)ON────┤
            ├─(sub_list)OFF───┤
            ├─CONSOLE─────────┤
            └─PRINTER─────────┘

   Log Options:
>           ┌─ON──────────────┐
>> >  ├─LOG──┼─────────────────┼──────────────────────────────────────────────┤
>> > >      ├─OFF─────────────┤
>> > >      ├─(sub_list)ON────┤
>> >        ├─(sub_list)OFF───┤
>          ├─CONSOLE─────────┤
           └─PRINTER─────────┘
```

A.1.1 Purpose

The MULTISRV daemon (server) responds to client requests that are associated
with various protocols. The protocols that may be supported are:

| Active User Protocol
| Character Generator Protocol
Daytime Protocol
Discard Protocol
Echo Protocol
| Identify Protocol
Quote of the Day Protocol
Time Protocol

A.1.2 Operands

| **MOST**
| Indicates the MULTISRV server should support only those protocols that do not
| provide the client with any information about the server platform. **MOST** is the
| default. The protocols supported in this mode are:

| Character Generator Protocol
| Daytime Protocol
| Discard Protocol
| Echo Protocol
| Quote of the Day Protocol
| Time Protocol

| The Active User and Identify protocols are not supported in this mode.

| **ALL**
| Indicates the server should handle client requests for all protocols that it
| supports. See A.1.3, "Protocol Keywords" on page 12 for a list of keywords
| that correspond to these protocols.

HELP
Displays help information concerning invocation of the MULTISRV command.

? Displays help information concerning invocation of the MULTISRV command.

LURK
Indicates the MULTISRV daemon should never respond to a client request. but
should only listen for such requests.

PCTIME *delay_time*
Specifies an amount of time the MULTISRV daemon should wait prior to
closing a socket after it has sent data on the socket. This delay time ensures
the TCP/IP stack has sent the requested data to the client before a socket is
destroyed. When a close is performed as the result of a client action (the client
closed the socket), the socket is closed immediately and a delay is not used.

| The *delay_time* should be specified as a whole number between 1 and 180
| seconds, inclusive.

STAYUP
Indicates the MULTISRV daemon should stay up across VM TCP/IP failures.

Trace Options
Specifies tracing options. See A.1.4, "Trace Options" on page 13 for more
information about specific options that can be used to obtain MULTISRV trace
information.

> **Log Options**
> Specifies logging options. See A.1.5, "Log Options" on page 14 for more
> information about specific options that can be used to obtain MULTISRV log
> information.

A.1.3 Protocol Keywords

| **CHARGEN**
| The server should support Character Generator protocol as documented in
| RFC 864. This protocol returns a random length ASCII string (1 to 512
| characters) in response to a packet from a client.

| **DAYTIME**
| The server should support Daytime protocol as documented in RFC 867. This
| protocol returns an ASCII string that represents the current date and time of the
| system on which the server is running. The time zone is the current time zone
| for the system.

| **DISCARD**
| The server should support Discard Protocol as documented in RFC 863. This
| protocol discards any data it receives. This protocol may be useful for
| debugging problems associated with network connectivity.

| **ECHO**
| The server should support Echo Protocol as documented in RFC 862. This
| protocol sends back any data it is sent.

| **IDENT**
| The server should support Identification protocol as documented in RFC 1413.
| This protocol returns information that identifies the owner of a connection on
| the server's system. See the *Usage Notes* on page 15 for more information
| about this protocol.

| **QUOTE**
| The server should support Quote of the Day Protocol as documented in RFC
| 865. This protocol returns an ASCII string of up to 512 characters. The
| returned string is obtained from a file that allows the server to be configured to
| respond with a different message for each day.

| **QOTD**

| The server should support Quote of the Day Protocol as documented in RFC
| 865. The **QOTD** keyword is synonymous with the previously described **QUOTE**
| keyword.

| **TIME**

| The server should support Time protocol as documented in RFC 868. This
| protocol returns the time in seconds since Midnight on January 1st, 1900 GMT
< (the returned value is a 32 bit binary number). The timezone adjustment value
< is determined by the server when it starts. The server should be recycled if the
< timezone offset is changed.

| **USERS**

| The server should support Active Users protocol as documented in RFC 866.
| This protocol returns ASCII string(s) that contain a list of active users on the
| VM/ESA system (returned user IDs are separated by carriage return, line feed
| and blank characters).

A.1.4 Trace Options

| **ON**

| Indicates that all tracing should be turned on. This operand is the default if no
| other trace operand is specified with the **TRACE** operand.

| **OFF**

| Indicates that all tracing should be turned off.

| **(** *sub_list* **) ON**

| Indicates that tracing related to the specified subset list of protocols or trace
| codes should be turned on. The subset list can be any of the following items:

| • Supported protocol keywords:

| CHARGEN DAYTIME DISCARD ECHO IDENT QUOTE QOTD TIME
| USERS

> • **ALLProtocols** (keyword for *all protocols*)

| • Trace codes:

> 1000 1100 1200 2000 2500 2900 2950 3000 3010 4000 40*xx* 5000 6000
> 9000

> • **ALLCodes** (keyword for *all trace codes*)

| Trace codes are discussed in Appendix C, "Formats of MULTISRV Trace
| Records" on page 28. If multiple items are specified, they must be separated
| by blanks. **ON** is the default if neither **ON** nor **OFF** is specified after the right
| parenthesis (')') that signifies the end of the subset list.

| **(** *sub_list* **) OFF**
| Indicates that tracing related to the specified subset list protocols or trace
>   codes should be turned off. The subset list can be any of the supported
>   protocol IDs or trace codes previously listed. If multiple items are specified,
| they must be separated by blanks.

| **CONSOLE**
| Indicates that trace output should be directed to the console.

| **PRINTER**
| Indicates that trace output should be directed to the virtual printer.

> ## A.1.5 Log Options

> **ON**
>   Indicates that all logging should be turned on. This operand is the default if no
>   other log operand is specified with the **LOG** operand.

> **OFF**
>   Indicates that all logging should be turned off.

> **(** *sub_list* **) ON**
>   Indicates that logging related to the specified subset list of protocols should be
>   turned on. The subset list can be any of the following items:

>   • Supported protocol keywords:

>   CHARGEN DAYTIME DISCARD ECHO IDENT QUOTE QOTD TIME
>   USERS

>   • **ALLProtocols** (keyword for *all protocols*)

>   If multiple items are specified, they must be separated by blanks. **ON** is the
>   default if neither **ON** nor **OFF** is specified after the right parenthesis, ')', that
>   signifies the end of the subset list.

> **(** *sub_list* **) OFF**
>   Indicates that tracing related to the specified subset list protocols should be
>   turned off. The subset list can be any of the supported protocol IDs or trace
>   codes previously listed. If multiple items are specified, they must be separated
>   by blanks.

> **CONSOLE**
>   Indicates that log output should be directed to the console.

> **PRINTER**
>   Indicates that log output should be directed to the virtual printer.

A.1.6 Usage Notes

<   1. The timezone adjustment value used by TIME protocol is determined by the
<   server when it starts. The server should be recycled if the timezone offset is
<   changed.

| 2. The "quote for a day" is obtained from the QOTD DATA file the first time a
| quote is requested for that day. Thereafter, the quote is remembered until the
| next day or when the server is restarted. Additional information on the QOTD
| DATA is provided in Appendix E, "Configuring the QOTD DATA File" on
| page 32.

| 3. The character string returned by the Daytime protocol is an ASCII string that
| contains the following sequence: Weekday, Month Day, Year Time-Zone. For
| example:

```
   Tuesday, June 15, 1999 13:28:23-EDT
```

| 4. The character string returned by the Character Generator protocol is an ASCII
| string that contains the following sequence of characters:

```
   !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
   ^_`abcdefghijklmnopqrstuvwxyz{|}~
```

| For UDP, a random length string (1 to 512 characters) is sent. The server
| remembers the position of the last character sent with a packet, in order to
| continue this sequence with the next packet that is sent.

| For TCP connections, a string that contains repetitions of the indicated ASCII
| character string is sent. The returned repetition string is approximately 8096
| characters long.

| 5. The Character Generator response is paced in one of two ways. For UDP, one
| packet is sent when a packet is received. This allows the client to pace the
| output from the server. For TCP, the server attempts to send a stream of 8K
| data packets every quarter of a second. The VM TCP/IP stack limits the
| amount of data sent per stream by returning an EWOULDBLOCK indication when
| the buffer space used for the current burst of packets is full.

| 6. The data returned as the response for an Active User List request consists of
| VM/ESA user IDs, each separated by a carriage return, line feed, and blank
| characters (that is, the ASCII character sequence X'0D0A20'). For UDP, the
| packet size is less than or equal to 512 characters. For TCP, the data size for
| a specific *send* is less than or equal to 8000 characters.

| 7. The Active User List response is paced by the server in an attempt to not
| overrun the client. For UDP, the server attempts to send a series of datagrams
| every quarter of a second. The server pauses between series of datagrams
| when it detects that it would block on its side. For TCP, the server attempts to
| send a stream of 8K data packets every quarter of a second until the socket
| indicates that the *send* would be blocked or the data is exhausted.

8. The Identification Protocol response contains the user ID of the owner of the specified connection. However, MULTISRV is not able to determine an owning user ID for *all* connections. For example, if the connection in question is between a TCP/IP server machine and a client (such as the FTP server — commonly named FTPSERVE — and an FTP client), MULTISRV returns the user ID of the server machine (FTPSERVE in this case). In other cases, it is possible to determine the user ID and that client user ID is returned.

A.1.7 Messages

Possible error messages include:

MLTMUL0004E Unrecognized option *option* - continuing

MLTMUL0013I Output destination for Tracing was modified but all tracing is turned off. Trace data will not be produced.

MLTMUL0015I Output destination for Logging was modified but all logging is turned off. Log data will not be produced.

MLTMUL0016I Trace selectivity was modified, but left in a state where no trace records will be selected. At least one protocol and one trace code should be selected.

MLTMUL0102E RC=*return_code* trying to start communications

MLTMUL0200E Incorrect CMS level. CMS 11 or later is required

MLTMUL0205E Error encountered while running RXSOCK13, rc=*return_code*

MLTMUL0210E Necessary function is not available: rc=*missing_function*

MLTMUL0200E Incorrect CMS level. CMS 12 or later is required

Possible information messages include:

MLTMUL6500I Socket(SendTo) to *port* at *ipaddr* returned: *returned_values*

MLTMUL6501I Socket(Initialize) returned: *returned_values*

MLTMUL6502I Socket(Socket) returned: *returned_values*

MLTMUL6503I Socket(SetSockOpt) returned: *returned_values*

MLTMUL6504I Socket(Ioctl) returned: *returned_values*

MLTMUL6505I Socket(Bind) returned: *returned_values*

MLTMUL6506I Socket(IoCtl,SiocGifConf) returned: *returned_values*

MLTMUL6507I Socket(GetHostId) returned: *returned_values*

MLTMUL6508I Socket(Close) on socket *socket* returned: *returned_values*

MLTMUL6509I Socket(IoCtl,SiocGifNetMask) for *interface name* returned: *returned_values*

MLTMUL6510I Socket(Select) returned: *returned_values*

MLTMUL6511I Socket(RecvFrom) returned: *returned_values*

MLTMUL6513I Socket(Send) on *socket* for *port* at *address* returned: *returned_values*

MLTMUL6514I Socket(Listen) on *socket* for *port* at *address* returned: *returned_values*

MLTMUL6515I Socket(Accept) on *socket* for *port* at *address* returned: *returned_values*

A.1.8 Subcommands

A.1.8.1 CMS Subcommand

```
►►─┬──────┬──cms_command─────────────────────────────►◄
    └─CMS──┘
```
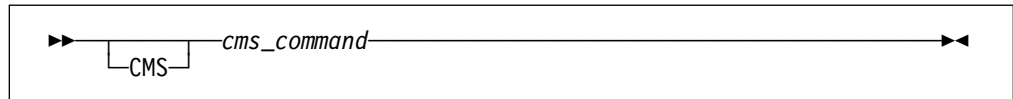
A.1.9 Purpose

Use the CMS subcommand to issue a command to CMS.

A.1.10 Operands

cms_command
    is the CMS command to be issued.

A.1.11 Usage Notes

1. Do not issue any CMS command that would take a long time to execute (for example, XEDIT). While the CMS command executes, the server does not respond to requests.

2. The "CMS" keyword is usually not required because the daemon will pass any command string that is not recognized as a MULTISRV subcommand to CMS. The "CMS" keyword is used to identify CMS commands which would normally be interpreted as a MULTISRV subcommand, for example, TRACE.

A.1.12 Responses

> 1. After completion of any command, the following ready prompt is displayed:

```
MULTISRV Ready;
```

A.1.12.1 CONFIG Subcommand

>
```
         ┌─GENERAL─┐
►►─CONFIG─┴─────────┴──────────────►◄
         ├─SOCKETS─┤
         └─ALL─────┘
```
>
>
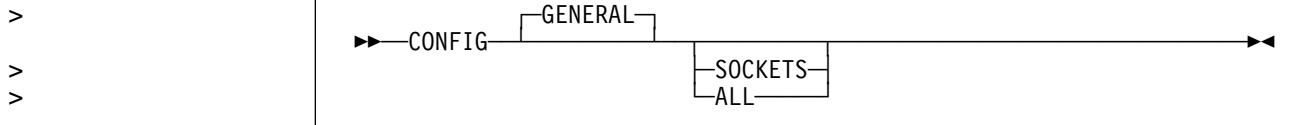
A.1.13 Purpose

Use the CONFIG subcommand to display configuration information. This
information includes:

> • Current LOG, LURK, STAYUP, and TRACE mode settings
> • Pending Close Wait Time
> • Information on active protocols, and their corresponding sockets.

> A.1.14 Operands

> **GENERAL**
> Indicates only general configuration information should be displayed in
> response to the CONFIG subcommand; information concerning individual active
> sockets is omitted when this operand is specified.

> **SOCKETS**
> Indicates that only information concerning individual active sockets should be
> displayed in response to the CONFIG subcommand.

> **ALL**
> Indicates that all available information should be displayed in response to the
> CONFIG subcommand.

A.1.15 Responses

> 1. The CONFIG and CONFIG GENERAL subcommands produce output similar to
> the following:

```
                          Lurk=0 Stayup=0 Pending Close Wait Time=0.5

                          Selective tracing is being performed
                            Selected protocols:
                               TIME
                            Trace output destination: PRINTER

>                         Selective logging is being performed
>                           Selected protocols:
>                              TIME
>                           Log output destination: PRINTER

                          The following protocols are actively supported:
                            TIME
                          MULTISRV Ready;
```

> 2. The CONFIG SOCKETS subcommand produces output similar to the following:

```
>                         The following sockets are active:
>                           Socket 2: TIME UDP ready
>                           Socket 3: TIME TCP ready
>                         MULTISRV Ready;
```

> 3. The CONFIG ALL subcommand produces output similar to that produced by
> the CONFIG GENERAL subcommand, followed by output similar to CONFIG
> SOCKETS subcommand output.

A.1.16 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

A.1.16.1 EXIT Subcommand

```
►►──EXIT────────────────────────────────────────────────►◄
```

A.1.17 Purpose

Use EXIT to stop the daemon. This subcommand is equivalent to the QUIT and STOP subcommands.

A.1.18 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

> MLTMUL0006E Unrecognized operand - *operand*

A.1.18.1 HELP Subcommand

```
►►──HELP────────────────────────────────────────────────►◄
```

A.1.19 Purpose

Use the HELP subcommand to display brief descriptions of available subcommands.
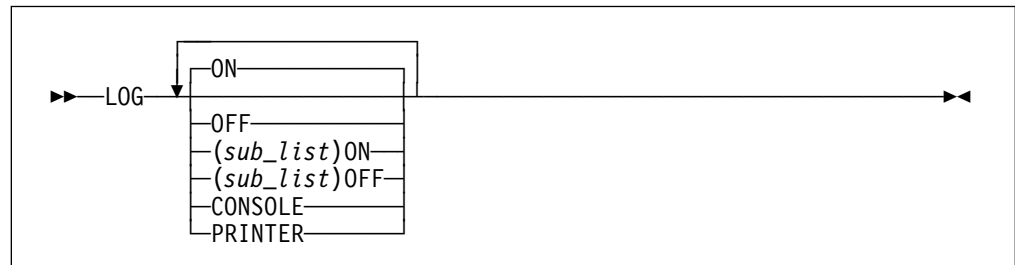
A.1.20 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

MLTMUL0300 Could not find my help file: *filename* HELP *

> A.1.20.1 LOG Subcommand

```
                            ┌─ON─────────────┐
>                           ↓    ┌─ON──────┐  │
>                           │    │         │  │
►►──LOG──┬─────────────────┼────────────────┼──►◄
>                           ├─OFF────────────┤
>                           ├─(sub_list)ON───┤
>                           ├─(sub_list)OFF──┤
>                           ├─CONSOLE────────┤
>                           └─PRINTER────────┘
```

> A.1.21 Purpose

> Use the LOG subcommand to control logging in the MULTISRV daemon.

> A.1.22 Operands

> **ON**

> Indicates that all logging should be turned on. This operand is the default if no
> other log operand is specified with the **LOG** subcommand.

> **OFF**

> Indicates that all logging should be turned off.

> **(** *sub_list* **) ON**

> Indicates that logging related to the specified subset list of protocols should be
> turned on. The subset list can be any of the following items:

> • Supported protocol keywords:

> CHARGEN DAYTIME DISCARD ECHO IDENT QUOTE QOTD TIME
> USERS

> • **ALLProtocols** (keyword for *all protocols*)

> If multiple items are specified, they must be separated by blanks. **ON** is the
> default if neither **ON** nor **OFF** is specified after the right parenthesis, ')', that
> signifies the end of the subset list.

> **(** *sub_list* **) OFF**

> Indicates that logging related to the specified subset list protocols should be
> turned off. The subset list can be any of the supported protocol IDs or trace
> codes previously listed. If multiple items are specified, they must be separated
> by blanks.

> **CONSOLE**

> Indicates that log output should be directed to the console.

>   Indicates that log output should be directed to the virtual printer.

> ## A.1.23 Responses

>   1. When log output is directed to the console, the MULTISRV daemon may be
> stopped by a `MORE` or `HOLD` condition until the output is displayed. Thus, when
> **CONSOLE** is specified, you should ensure the console does not enter `MORE` or
> `HOLD` status.

>   2. See Appendix D, "MULTISRV Logging" on page 29 for a description of log
> output.

> ## A.1.24 Messages

> Possible error and information messages include:

> MLTMUL0006E Unrecognized operand - *operand*

> MLTMUL0014E Log list is missing

> MLTMUL0015I Output destination for Logging was modified but all logging is
> turned off. Log data will not be produced.

> MLTMUL0016I Trace selectivity was modified, but left in a state where no trace
> records will be selected. At least one protocol and one trace code should be
> selected.

A.1.24.1 LURK Subcommand

```
►►──LURK──────────────────────────────────────────────────────►◄
```

A.1.25 Purpose

Use the LURK subcommand to toggle the LURK mode in the MULTISRV daemon.
If the daemon is already operating in LURK mode, it will resume answering
requests. If the daemon is not operating in LURK mode, it will begin listening for,
but will not respond to, client requests.

A.1.26 Responses

    1. The following is displayed upon completion of the subcommand:

       `LURK is now l`

    where *l* is 0 if LURK mode is off; 1 if LURK mode is on.

A.1.27 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

A.1.27.1 QUIT Subcommand

```
►►──QUIT────────────────────────────────────────────────────►◄
```

A.1.28 Purpose

Use QUIT to stop the MULTISRV daemon. This subcommand is equivalent to the EXIT and STOP subcommands.

A.1.29 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

A.1.29.1 STAYUP Subcommand

```
►►──STAYUP──────────────────────────────────────────────────►◄
```

A.1.30 Purpose

Use the STAYUP subcommand to toggle the STAYUP mode in the MULTISRV daemon. If the daemon is already operating in STAYUP mode, it will cease operating in that mode and will end processing if a subsequent TCP/IP failure occurs. If the daemon is not operating in STAYUP mode, it will begin to ensure processing will not end if a subsequent TCP/IP failure occurs.

A.1.31 Responses

1. The following is displayed upon completion of the subcommand:
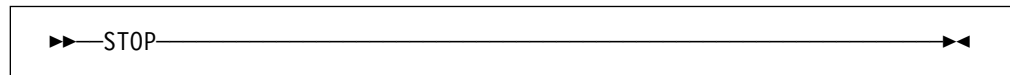
    STAYUP is now *s*

    where *s* is 0 if STAYUP mode is off or 1 if STAYUP mode is on.

A.1.32 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

A.1.32.1 STOP Subcommand

```
►►──STOP──────────────────────────────────────────►◄
```
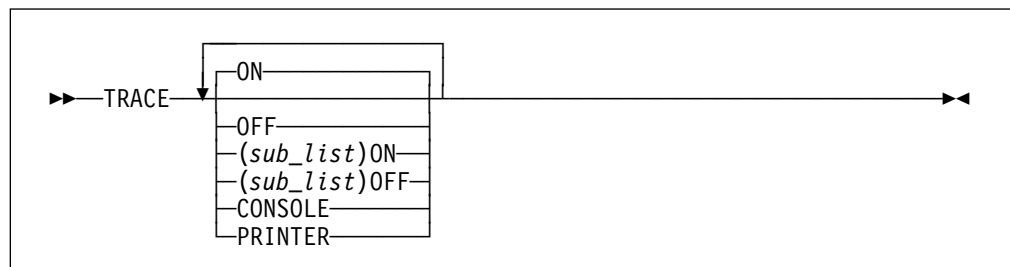
A.1.33 Purpose

Use STOP to stop the daemon. This subcommand is equivalent to the EXIT and QUIT subcommands.

A.1.34 Messages

Possible error messages include:

MLTMUL0003E Too many operands on the subcommand line

A.1.34.1 TRACE Subcommand

```
                      ┌──ON──────────┐
►►──TRACE──┬──────────┴─────────────►◄
           ├──OFF─────────┤
           ├──(sub_list)ON─┤
           ├──(sub_list)OFF┤
           ├──CONSOLE─────┤
           └──PRINTER─────┘
```

A.1.35 Purpose

Use the TRACE subcommand to control tracing in the MULTISRV daemon.

ON

Indicates that all tracing should be turned on. This operand is the default if no other trace operand is specified with the **TRACE** subcommand.

OFF

Indicates that all tracing should be turned off.

(*sub_list* **) ON**

Indicates that tracing related to the specified subset list of protocols or trace codes should be turned on. The subset list can be any of the following items:

* Supported protocol keywords:

  CHARGEN DAYTIME DISCARD ECHO IDENT QUOTE QOTD TIME USERS

> * **ALLProtocols** (keyword for *all protocols*)

* Trace codes:

>   • **ALLCodes** (keyword for *all trace codes*)

Trace codes are discussed in Appendix C, "Formats of MULTISRV Trace
Records" on page 28. If multiple items are specified, they must be separated
by blanks. **ON** is the default if neither **ON** nor **OFF** is specified after the right
parenthesis (')') that signifies the end of the subset list.

(*sub_list* **) OFF**
    Indicates that tracing related to the specified subset list protocols or trace
>   codes should be turned off. The subset list can be any of the supported
>   protocol IDs or trace codes previously listed. If multiple items are specified,
    they must be separated by blanks.

CONSOLE
    Indicates that trace output should be directed to the console.

PRINTER
    Indicates that trace output should be directed to the virtual printer.

A.1.36 Responses

1. When trace output is directed to the console, the MULTISRV daemon may be
   stopped by a `MORE` or `HOLD` condition until the output is displayed. Thus, when
   CONSOLE is specified, you should ensure the console does not enter `MORE` or
   `HOLD` status.

2. See Appendix C, "Formats of MULTISRV Trace Records" on page 28 for a
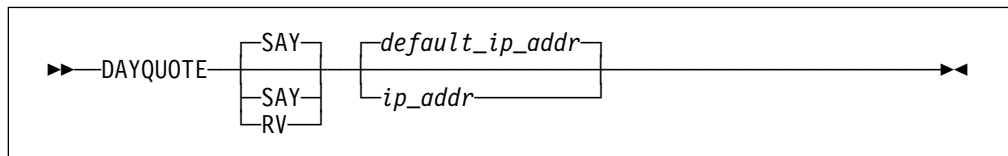   description of trace entry output.

A.1.37 Messages

Possible error and information messages include:

MLTMUL0006E Unrecognized operand - *operand*

MLTMUL0012E Trace list is missing

MLTMUL0013I Output destination for Tracing was modified but all tracing is
turned off. Trace data will not be produced.

Appendix B. DAYQUOTE Command

```
►►──DAYQUOTE─┬──────┬─┬─default_ip_addr─┬──────────────►◄
             ├─SAY──┤ └─ip_addr─────────┘
             │─SAY──│
             └─RV───┘
```

B.1.1 Purpose

The DAYQUOTE command accesses a Quote of the Day server. It will either
display the received quote on the screen or return it in a variable.

B.1.2 Operands

SAY

Indicates that the quote should be displayed on the screen using the VM/REXX
SAY instruction.

RV

Indicates that the quote should be returned as an exec *RESULT* variable.

ip_addr

The IP address of the Quote of the Day server.

default_ip_addr

The default IP address of the Quote of the Day server. If an IP address is not
specified, DAYQUOTE will first attempt to locate a DAYQUOTE HOST file that
identifies the IP address of the default Quote of the Day server. If this file does
not exist or does not contain a valid IP address, the IP address of the local
VM/ESA host system is used.

B.1.3 Usage Notes

1. The DAYQUOTE HOST file specifies the IP address of the default Quote of the
   Day server. This file contains one or more comment lines, and a single data
   line. Any line beginning with an asterisk (*) is considered a comment line and
   ignored. The data line should contain a single-word string, which is the IP
   address of the Quote of the Day server. Following is a sample file:

```
* ----------------------------------------------------------------------
* This file is used by DAYQUOTE EXEC (which is part of the MULTISRV
* package); it identifies the IP address of the host where the
* Quote of the Day server for this system resides.
*
* The IP address below is a contrived example; it will not work in
* a production network environment.
* ----------------------------------------------------------------------
8.230.57.40
```

2. Following is a sample invocation of the DAYQUOTE code by an exec.

```
/*!****************************************************************/
/*! Get the quote of the day.                                   */
/*!****************************************************************/
Address CMS 'VMLINK TCPIP (QUIET PUSH'
Say '-------------------------------------'
Say 'Today's thought is:'
Say ''
Say Dayquote('RV')
Say '-------------------------------------'
Address CMS 'VMLINK TCPIP (QUIET POP'
```

B.1.4 Messages

Possible error and information messages include:

UNABLE TO START UDP SERVICES, RC = *n*

CAN NOT DETERMINE THE IP ADDRESS FOR THIS SYSTEM.

ABENDING. SIOCGIFCONF RC=*src*

QUOTE OF DAY SERVER IS NOT RESPONDING

Appendix C. Formats of MULTISRV Trace Records

The MULTISRV daemon trace entries consist of the following:

> **1000** Socket reset starts

> **1100** Socket reset completes

> **1200** Socket started

2000 Connection request accepted on a socket

2500 Connection severed on a socket

2900 Close pending on a socket

2950 Socket closed

3000 Data received on a socket

3010 Data received on a socket

4000 Data sent on a socket

40_xx_ Declining to respond to a packet request

> **01** Unexpected error

> **02** Close is pending on the socket

> **04** Accept failed, all sockets are in use

> _xx_ Unknown reason for declining

5000 Data discarded

> **6000** Error message generated. Error messages in the 6000-6999 range will cause
> this trace code to be generated.

> **8000** Reserved for log records. See Appendix D, "MULTISRV Logging" on
> page 29 for further information about the format of these records.

> **Note:** Selectivity of log records is _not_ controlled by the TRACE subcommand
> or command option; instead, it is controlled by the LOG subcommand or
> command option.

9000 Timestamp that indicates the beginning of a processing unit

> Appendix D. MULTISRV Logging

> The MULTISRV daemon can be configured to log events related to its
> communication with clients. The protocols for which event logging is performed
> (such as the Time or Ident protocols), as well as the destination for log output are
> determined by using either the LOG option on the MULTISRV command
> (described on page 10) or the LOG subcommand (described on page 21.

> The type of log record generated when logging is active varies based on the type of
> socket protocol used (UDP or TCP) for a connection to a service protocol (such as
> the Time protocol). This variation exists because in general, each UDP datagram
> is considered to be unique, where as for TCP communication, a session is used for
> communication with a client. More information about log record variation follows:

> For connections that use **UDP** as the transport mechanism:

> - one log record is created for each datagram received.

> For connections that use **TCP** as the transport mechanism:

> - one log record is created when a session is accepted for these protocols:

> Active Users
> Daytime
> Quote of the Day
> Time

> This is because the socket connection to the client is closed after the response
> is transmitted for these protocols.

> - one log record is created when a session is accepted *or* closed for these
> protocols:

> Character Generator
> Discard
> Echo
> Identification

> In addition, a log record will be created for these protocols when a predefined
> threshold is reached. Threshold defaults for each protocol are:

> **Character Generator**
> 10,000 characters generated

> **Discard**　　10,000 bytes discarded

> **Echo**　　10,000 bytes echoed

> **Identification**　　100 requests handled

D.1 MULTISRV Log Record Format

The log records generated by the MULTISRV server contain the following information:

- Log Record Identifier (**8000**)

- Service protocol used (TIME, DAYTIME, IDENT, USERS)

- Transportation protocol used (UDP or TCP)

- Record type

  ...   for UDP or *single frequency* TCP protocols

  CONN ACCEPTED
  when a connection is accepted for protocols that produce more than one log record per TCP session

  CONN CLOSED
  when a connection is closed for protocols that produce more than one log record per TCP session

  PERIODIC INFO
  when a threshold is reached for a protocol that produce more than one log record per TCP session.

- Client IP address (nn.nn.nn.nn)

- Port used by the client (nnnn)

- Timestamp

For certain service protocols, additional unique information is logged; This information is produced using one or more records that follow the log record identifier (**8000**) record:

Character Generator
Number of characters returned to the client. This additional data is provided for only TCP sessions; data is not provided for UDP connections.

Discard   Number of characters sent by the client. This additional data is provided for only TCP sessions; data is not provided for UDP connections.

Echo   Number of characters returned to the client. This additional data is provided for only TCP sessions; data is not provided for UDP connections.

Identification   Response transmitted to the client. If more than one response is present, these responses are separated by a slash (/).

> D.2 Sample MULTISRV Log Records

> Some example MULTISRV log entries follow:

```
> 8000 QOTD     UDP ...           9.117.32.29  2580 08:11:52.301309 ON 19991103
> 8000 ECHO     TCP CONN ACCEPTED 9.130.48.75  1081 08:27:58.860291 ON 19991103
> 8000 ECHO     TCP CONN CLOSED   9.130.48.75  1081 08:27:58.869834 ON 19991103
>      AMOUNT SENT: 14
> 8000 ECHO     UDP ...           9.130.48.75  1058 08:27:58.891681 ON 19991103
> 8000 DISCARD  TCP CONN ACCEPTED 9.130.48.75  1082 08:28:02.958809 ON 19991103
> 8000 DISCARD  TCP CONN CLOSED   9.130.48.75  1082 08:28:02.968729 ON 19991103
>      AMOUNT RECEIVED: 14
> 8000 CHARGEN  TCP CONN ACCEPTED 9.130.48.75  1083 08:28:02.990989 ON 19991103
> 8000 CHARGEN  TCP PERIODIC INFO 9.130.48.75  1083 08:28:03.000891 ON 19991103
>      AMOUNT SENT: 165440
> 8000 CHARGEN  TCP CONN CLOSED   9.130.48.75  1083 08:28:03.000891 ON 19991103
>      AMOUNT SENT: 0
> 8000 QOTD     TCP ...           9.130.48.75  1084 08:28:07.246595 ON 19991103
> 8000 USERS    TCP ...           9.130.48.75  1085 08:28:07.350129 ON 19991103
> 8000 DAYTIME  TCP ...           9.130.48.75  1086 08:28:08.750677 ON 19991103
> 8000 TIME     TCP ...           9.130.48.75  1087 08:28:09.317601 ON 19991103
> 8000 IDENT    TCP CONN ACCEPTED 9.130.48.75  1089 08:28:11.978305 ON 19991103
> 8000 IDENT    TCP CONN CLOSED   9.130.48.75  1089 08:28:12.242328 ON 19991103
>      RESPONSE: 1088, 1999 : USERID : VM : BOOTPD
```

Appendix E. Configuring the QOTD DATA File

MULTISRV obtains the quotes for the Quote of the Day protocol from a simple data file, named QOTD DATA. This section describes the format of this data file, as well as the rules that govern the use of information defined within it.

The QOTD DATA file consists of comment lines, data lines and blank lines.

- Comment lines begin with an asterisk (*) in column one.

- All other lines are considered data (*quote*) lines; data lines are composed of:

    – a four-digit, integer *date string* that represents a month and day.

      For the *date string*, the first two digits represent a month of the year; the second two digits indicate (numerically) a day of that month. Each *date string* should be padded with zeroes when necessary. For example, the representation for the first of January should be specified as: 0101.

    – the quote for a given day.

      The quote text must be separated from the *date string* by at least one blank character, and should not exceed 512 characters.

Notes:

1. The QOTD DATA file must contain EBCDIC (single byte character set) data. MULTISRV converts this data to ASCII before it is sent to a client.

2. Limited validation is performed against data lines. Lines with dates that are not valid are ignored; those that are too long are truncated.

3. If a data line for a particular date is not present in the QOTD DATA file, MULTISRV will use the closest data line that precedes the missing date entry to satisfy client requests.

   For example, assume that a data line for the first of January exists but one does not exist for the second of January. When a client request is received for a quote for the second of January, MULTISRV will return the quote defined for the first of January.

4. When handling client requests, MULTISRV will "wrap" its responses around to the end of the year, when necessary.

   For example, if the QOTD DATA file does not contain data lines for the first and second of January, and a client requests a quote for the second of January, MULTISRV will locate and use the closest data line that *logically* precedes the missing entry for the current date. In this case, it will locate the quote for the 31st of December, regardless of where this entry resides in the data file.

|
|

5. If the QOTD DATA file exists but does not contain any data lines, a blank character is returned to the client as the quote for the day.

Appendix F. MULTISRV Messages

This section contains messages issued by the MULTISRV daemon. Follow the User Response, as appropriate, within each message area to resolve the reported problem.

MLT0003E   Too many operands on the subcommand line

Explanation: Too many operands were specified on the subcommand line.

User Response: Reissue the subcommand with the correct number of operands.

System Action: Execution of the subcommand is terminated.

Module: MULTISRV EXEC

MLT0004E   Unrecognized option *option* **- continuing**

Explanation: An unrecognized option was encountered on the command line. Processing of the command continued.

User Response: If necessary, reissue the command with the correct option specified.

System Action: Execution of the command completed with the unrecognized option having been ignored.

Module: MULTISRV EXEC

MLT0005E   Unrecognized subcommand or statement
            name **- continuing**

Explanation: The specified subcommand or statement was not recognized.

User Response: If the error was caused by a statement in a machine or configuration file, correct the statement in the file and reissue the command or subcommand that caused this file to be read. If the error was caused by a subcommand, reissue the subcommand with the subcommand name correctly specified.

System Action: The statement or subcommand was not processed.

Module: MULTISRV EXEC

MLT0006E   Unrecognized operand - *operand*

Explanation: An unrecognized operand was detected on the command or subcommand.

User Response: Reissue the command or subcommand with the operand correctly specified.

System Action: Execution of the command or subcommand terminated.

Module: MULTISRV EXEC

MLT0010E   Pending Close Time value is missing

Explanation: The PCTIME option was specified without a corresponding pending close wait time.

User Response: Correct the error on the MULTISRV command line.

System Action: The MULTISRV daemon was not started.

Module: MULTISRV EXEC

MLT0011E   Pending Close Time value is not valid: *time*

Explanation: The PCTIME option was specified with a pending close time that is not valid.

User Response: Correct the error on the MULTISRV command line.

System Action: The MULTISRV daemon was not started.

Module: MULTISRV EXEC

MLT0012E   Trace list is missing

Explanation: The TRACE subcommand or TRACE option was specified with a left parenthesis ('('), which indicates that a subset list of trace codes or protocols will follow. However, the trace codes or protocols were not specified.

User Response: Correct the error on the MULTISRV command line or TRACE subcommand.

System Action: If the error was on the MULTISRV command line, the MULTISRV daemon was not started. If the error was on the TRACE subcommand, the TRACE subcommand was ignored.

Module: MULTISRV EXEC

| **MLT0013E** **Output destination for Tracing was modified but all tracing is turned off. Trace data will not be produced.**

Explanation: The TRACE subcommand or TRACE option modified the trace output destination, but all tracing is turned off.

User Response: If tracing is desired, specify one or more trace codes or protocols to be traced using the TRACE subcommand. Otherwise, ignore the message.

System Action: Trace output will not be produced.

Module: MULTISRV EXEC

> **MLT0014E** **Log list is missing**

> **Explanation:** The LOG subcommand or LOG option was specified with a left parenthesis ('('), which indicates that a subset list of log protocols will follow. However, the log protocols were not specified.

> **User Response:** Correct the error on the MULTISRV command line or LOG subcommand.

> **System Action:** If the error was on the MULTISRV command line, the MULTISRV daemon was not started. If the error was on the LOG subcommand, the LOG subcommand was ignored.

> **Module:** MULTISRV EXEC

> **MLT0015E** **Output destination for Logging was modified but all logging is turned off. Log data will not be produced.**

> **Explanation:** The LOG subcommand or LOG option modified the log output destination, but all logging is turned off.

> **User Response:** If logging is desired, specify one or more protocols to be logged using the LOG subcommand. Otherwise, ignore the message.

> **System Action:** Log output will not be produced.

> **Module:** MULTISRV EXEC

> **MLT0016E** **Trace selectivity was modified, but left in a state where no trace records will be selected. At least one protocol and one trace code should be selected.**

> **Explanation:** Trace selectivity was modified such that:

> • selectivity for *all* trace codes has been turned OFF, while tracing for one or more protocols remains active, or conversely,

> • selectivity for *all* protocols has been turned OFF, while tracing for one or more trace codes remains active.

> Thus, tracing has been left in a state that prevents any trace data from being produced.

> **User Response:** If tracing is desired, specify trace selectivity
> so that at least one code and one protocol is selected.
> Otherwise, ignore the message.

> **System Action:** Trace output will not be produced.

> **Module:** MULTISRV EXEC

| **MLT0102E** **RC=***return_code* **trying to start communications**

Explanation: An error prevented the activation or reactivation of the TCP/IP environment.

User Response: If STAYUP is not active, then IPL CMS and restart the server after you correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the UDP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

| **MLT0103E** **Unable to establish the Event Monitor Environment**

Explanation: An error prevented the enablement of the event monitor environment.

User Response: IPL CMS and restart the server.

System Action: The server shuts down.

Module: MULTISRV EXEC

| **MLT0107E** **Unable to start timer:** *timer token*, **RC=***return_code*, **RE=***reason_code*

Explanation: An error occurred while attempting to start a timer used by the server.

User Response: Correct the problem that prevented the timer from being started and restart the server. See *VM/ESA CMS Application Multitasking* for more information on the TimerStartInt function, its return code, and reason codes.

System Action: The server shuts down.

Module: MULTISRV EXEC

> **MLT0108E** **Unexpected** *function* **error RC=***return_code*, **RE=***reason_code*

>   **Unexpected** *function* **error RC=***return_code*

> **Explanation:** An error was returned from the indicated
> function.

> **User Response:** Record the error information provided by
> this message. If this problem persists, contact IBM and
> provide tracing information that includes this error message.
> See *VM/ESA CMS Application Multitasking* for more
> information about the Event functions, and their possible return
> codes and reason codes.

> **System Action:** If the STAYUP mode is active, the server
> attempts to recover. Otherwise, the server shuts down.

> **Module:** MULTISRV EXEC

| **MLT0200E Incorrect CMS level. CMS 11 or later is required**

Explanation: An attempt was made to run the server on a level of CMS that does not support all of the required functions used by the server.

User Response: Run the server on the correct level of CMS.

System Action: The server shuts down.

Module: MULTISRV EXEC

| **MLT0205E Error encountered while attempting to NUCXLOAD RXSOCK13, rc=***return_code*

Explanation: An error was encountered when the NUCXLOAD command was issued to load RXSOCK13.

User Response: See the *VM/ESA CMS Command Reference* for more information on the CMS NUCXLOAD command and how to correct the problem.

System Action: The server shuts down.

Module: MULTISRV EXEC

| **MLT0210E Necessary function is not available:** *missing function*

Explanation: A required function was not available. If the missing function is NETSTAT IDENTIFY, the appropriate level of the TCP/IP NETSTAT command is not on an accessed minidisk.

User Response: Access the minidisk where the TCP/IP NETSTAT command resides.

System Action: The server shuts down.

Module: MULTISRV EXEC

| **MLT0300E Could not find my help file:** *fname* **HELP ***

Explanation: The file that contains the help information for the server was not found on an accessed minidisk or directory.

User Response: Contact the system administrator to locate the missing file.

System Action: The requested help information is not displayed.

Module: MULTISRV EXEC

| **MLT6500I Socket(SendTo) to** *port* **at** *ipaddr* **returned:** *returned_values*

Explanation: An error occurred on a SOCKET SENDTO function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

| **MLT6501I Socket(Initialize) returned:** *returned_values*

Explanation: An error occurred on a SOCKET INITIALIZE function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

| **MLT6502I Socket(Socket) returned:** *returned_values*

Explanation: An error occurred on a SOCKET SOCKET function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

| **MLT6503I Socket(SetSockOpt) on socket** *socket* **returned:** *returned_values*

Explanation: An error occurred on a SOCKET SETSOCKOPT function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6504I   Socket(Ioctl) on socket *socket* **returned:** *returned_values*

Explanation: An error occurred on a SOCKET IOCTL function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6505I   Socket(Bind) on *socket***, port** *port***, address** *address* **returned:** *returned_values*

Explanation: An error occurred on a SOCKET BIND function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6506I   Socket(IoCtl,SiocGifConf) returned: *returned_values*

Explanation: An error occurred on a SOCKET IOCTL SIOCGIFCONF function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6507I   Socket(GetHostId) returned: *returned_values*

Explanation: An error occurred on a SOCKET GETHOSTID function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6508I   Socket(Close) on socket *socket* **returned:** *returned_values*

Explanation: An error occurred on a SOCKET CLOSE function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6509I   Socket(IoCtl,SiocGifNetMask) for *interface name* **returned:** *returned_values*

Explanation: An error occurred on a SOCKET IOCTL SIOCGIFNETMASK function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6510I   Socket(Select) returned: *returned_values*

Explanation: An error occurred on a SOCKET SELECT function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6511I   Socket(RecvFrom) returned: *returned_values*

Explanation: An error occurred on a SOCKET RECVFROM function.

User Response: See the *VM/ESA REXX/VM Reference* for information on the SOCKET returned values. Correct the problem.

System Action: If STAYUP mode is active, the server will wait a period of time and attempt to activate the TCP/IP environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6513I   Socket(Send) on *socket* **for** *port* **at** *address*
                returned: *returned_values*

Explanation: An error occurred on a SOCKET SEND
function.

User Response: See the *VM/ESA REXX/VM Reference* for
information on the SOCKET returned values. Correct the
problem.

System Action: If STAYUP mode is active, the server will
wait a period of time and attempt to activate the TCP/IP
environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6514I   Socket(Listen) on *socket* **for** *port* **at** *address*
                returned: *returned_values*

Explanation: An error occurred on a SOCKET LISTEN
function.

User Response: See the *VM/ESA REXX/VM Reference* for
information on the SOCKET returned values. Correct the
problem.

System Action: If STAYUP mode is active, the server will

wait a period of time and attempt to activate the TCP/IP
environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

MLT6515I   Socket(Accept) on *socket* **for** *port* **at** *address*
                returned: *returned_values*

Explanation: An error occurred on a SOCKET ACCEPT
function.

User Response: See the *VM/ESA REXX/VM Reference* for
information on the SOCKET returned values. Correct the
problem.

System Action: If STAYUP mode is active, the server will
wait a period of time and attempt to activate the TCP/IP
environment. Otherwise, the server shuts down.

Module: MULTISRV EXEC

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