DEFINE GPSD

This command is used to define and initiate processing by a General Print Server (GPS) Daemon. The full syntax follows. See the individual parameter definitions for their application in specific situations.

Syntax:

```
DEFine GPSd ID=id ,IPaddr=host ,TERMname=lu [,ALTlength=132]
        [,BRACKet_eject={Yes|No}] [,CMDn=string] [,CONTrol_order=NFU]
        [,DEBug={Yes|No}] [,EMULate={3287|Transparent}]
        [,INSerts=member] [,INSESsion={No|Yes}] [,LINELength=132]
        [,LOG={No|Yes}] [,LOGMode=mode] [,MAXChars=1m] [,MAXIdle=10s]
        [,MAXLines=10k] [,MAXPages=1k] [,NRT=60s] [,NRC=3]
        [,NOEJect={No|Yes}] [,OUTput={Lpr|Direct} [,PORT=515]]
        [,PRinter=name] [,Queuing={Disk|Memory}] [,STORage=pubname]
        [,TARGet=appl] [,TRANslate=name16] [,TYPE=VTAM] [,VRC=10]
        [,VRT=60s]
```

Arguments:

ALTLength= — Specifies the line length to be used if an application uses the ERASE WRITE ALTERNATE command. If an application issues an ERASE WRITE ALTERNATE command, the 3270 printer is set to its alternate characteristics. See the LINELEN parameter description for more information about GPS and line lengths. Not used with EMULATE=TRANSPARENT.

BRACKET_EJECT= — GPS normally interprets a VTAM "begin bracket" as causing a form feed. If this behavior is not appropriate in your environment, code NO. Not used with EMULATE=TRANSPARENT.

Yes - GPS will perform a page eject whenever a VTAM "begin bracket" is received

No - GPS will ignore VTAM "begin bracket".

CMDn= — Three commands, CMD1=, CMD2=, and CMD3= are provided to support intermediate releases of GPS. Parameter values and actions will vary with each release. This argument should be used ONLY when directed by Connectivity Systems.

CONTrol_order= — A string of 1 to three characters: U, F, and N

During LPR/LPD processing, a control file is constructed and transmitted. This file contains commands such as "print" and "delete". Although the RFC's are not clear as to a required order, the default value of "NFU" works with the vast majority of LPD Daemons. If required, you may modify the order or omit one of the commands. This parameter is used only with OUTPUT=LPR.

N - The name of the print file in question.

F - The "print" command

U - The "delete" command

DEBug= — GPS provides a debugging mode that will capture and save additional data. When debugging is active, raw VTAM transmissions are saved in the storage file. You can review the data to see precisely what GPS has to work with. When you are finished, you must manually delete these files. Note that debug mode may require considerable library space, depending on the amount of data being printed.

	Yes - Run this GPS Daemon in "debug mode". You must also include the STORAGE= parameter. Also note that coding YES will cause each Daemon to require an additional 100k (approx.) of 24-bit storage.
	No - Run this Daemon in normal mode. Default

EMULate= - This parameter controls the type of printer emulation performed.

> 3287 - GPS will emulate a 3287 printer, to the extent practical. Default
>
> Transparent - GPS will transmit the data exactly as received from the VTAM connection. The command character and the Write Control Character (WCC) are removed. The remainder of the stream is treated as a "page". No translation to ASCII is performed.

ID= - This is a unique identifier assigned to the GPS Daemon. This identifier will appear in messages and displays pertaining to this Daemon.

INSERts= - If specified, this phase will be loaded and its contents will be included in the data sent to the printer. INSERTS data includes control information that can precede a report, follow a report, and follow each embedded form feed.

INSESsion= - Determines if the Daemon will attempt an immediate connection with the TARGET= application or if it will wait for an external connection request.

> Note that if the application releases the bind, the Daemon makes no additional bind attempts, regardless of this setting.
>
> Yes - Direct the GPS Daemon to attempt to bind with the application specified in the TARGET= parameter immediately at startup.
>
> No - The GPS Daemon will wait for the application to initiate the bind request. Default

IPaddr= - This is the IP address of the remote host to which the data is to be transmitted. If a host name is specified, it may be up to 64 characters.

LINELength= - Specifies the maximum printer line length. The 3287 emulation provides for a maximum line length of 132. When the line is filled, the printer forces a newline operation. If your application needs to print longer lines, you can increase the printer's maximum line length to as many as 255 characters. Not used with EMULATE=TRANSPARENT.

LOGMode= - Specifies the VTAM LOGMODE that is to be used to negotiate a bind with the VTAM application. The default (and recommended) value is DSC2K. This is an IBM-supplied non-SNA LOGMODE for printers. This parameter is effective only if you also specify the INSESSION=YES and TARGET= parameters.

LOG= - This option controls the use of a logging file.

> Yes - Causes the GPS Daemon to create a log file. The log file name is the value specified for TERMNAME with an extension of LOG. This file is overwritten each time the Daemon restarts. The file is a simple text file and you can use standard VSE facilities to view or print it. You must also include the STORAGE= parameter. Also note that coding YES will cause each Daemon to require an additional 100k (approx.) of 24-bit storage.
>
> No - No log file will be opened or used. Default

MAXChars=	- The maximum characters that can accumulate before an LPR operation is forced. Since LPR is a spooled protocol and GPS is emulating a serial device, GPS uses the MAXCHARS parameter as one way of determining when to segment the report and transmit it using LPR. The disadvantage of triggering by character count is that extraneous page breaks are introduced. The default is 1,000,000 characters, the maximum is 999,999,999. This parameter has effect only if OUTPUT=LPR is also specified.
MAXIdle=	- When the LPR/LPD protocol is being used, this parameter specifies how much "idle time" can elapse before an LPR operation is forced. Since LPR is a spooled protocol and GPS is emulating a serial device, GPS uses the MAXIDLE parameter as one way of determining when to segment the report and transmit it using LPR. "Idle time" is defined to be the time between VTAM transmissions to GPS. The value should be set high enough that normal processing delays do not cause premature transmission of the report and extraneous page breaks. If the direct socket interface is being used, this parameter indicates the elapsed idle time before the printer connection is closed. Note that the printer itself may drop the connection after a predetermined idle interval. If this happens, error-recovery procedures will occur. Typically, a printer's time-out is between 45 and 90 seconds, so selecting a reasonable MAXIDLE value will avoid this. The default is 3,000 (10 seconds). The maximum value is 99,999.
MAXLines=	- Specifies the maximum text lines that can accumulate before an LPR operation if forced. Since LPR is a spooled protocol and GPS is emulating a serial device, GPS uses the MAXLINES parameter as one way of determining when to segment the report and transmit it using LPR. The disadvantage of triggering by line count is that extraneous page breaks are introduced. The default is 10,000 lines. The maximum permitted is 9,999,999 This parameter has effect only if OUTPUT=LPR is also specified.
MAXPages=	- Specifies the maximum pages that can accumulate before an LPR operation if forced. Since LPR is a spooled protocol and GPS is emulating a serial device, GPS uses the MAXPAGES parameter as one way of determining when to segment the report and transmit it using LPR. The advantage of triggering by page count is that no extraneous page breaks are introduced. The default is 1000 pages. The maximum permitted is 99,999. This parameter has effect only if OUTPUT=LPR is also specified.
NRT=	- This is the time interval that is used between retries of network operations, including LPR/LPD. Values range from 0 through 550 minutes. This value may also be specified as "NETWORK_RETRY_Time=". The default is 60s.
NRC=	- This value controls how many times potentially retriable network failures will be retried, including LPR/LPD. Allowable value range from 0 through 99,999. This parameter may also be specified as "NETWORK_RETRY_Count=". The default value is 3.

NOEJect= - Many reports begin with a page eject character. GPS normally passes this character through to the printer. However, depending on the printer or LP Daemon, this may create an extra blank page. Note that GPS ends each report with a form feed to force printing of the final page.

Not used with EMULATE=TRANSPARENT.

Yes - Specifying YES suppresses the initial form feed character at the beginning of a listing.

No - Specify NO if you do not want to suppress initial form feed characters

OUTPut= - A keyword that controls how GPS connects with the remote host.

Lpr - GPS will accumulate data into "reports" of appropriate length and then transmit then report to a remote LPD using the LPR protocol. This is the default.

Direct - GPS will connect directly with a "network" printer. Data will be transmitted as received and will not be accumulated. This type of connection is supported by Hewlett-Packard JetDirect printers and many others. When DIRECT is specified, GPS will open the data connection upon receipt of the first VTAM request to deliver data. The connection will remain open until the VTAM connection is idle for the time specified by MAXIDLE.

PORT= - This parameter designates the remote port where data should be sent. For LPR processing, this value must be 515, the default. For direct processing, this value must be as specified by the network printer manufacturer.

PRinter= - 1 to 16 mixed-case characters

Specifies a 1- to 16- character, mixed-case name of an LPD print queue. This value is sent to the LPD on the remote host to identify the target printer. You must know this name and specify it here. Otherwise, the LPD rejects the attempt to establish a session. This is a required parameter if OUTPUT=LPR is specified or implied. The parameter is ignored for OUTPUT=DIRECT.

Queuing= - A keyword that indicates where GPS is to store data until a complete "report" is accumulated.

Disk - Each report will be stored in the storage disk file until it is processed as an LPR data stream. The disadvantage of disk-based queuing is that considerable (100k) of 24-bit storage is required to support the I/O routines and buffers. The advantage is that the disk file is retained in the event of error.

Memory - Each report will be stored in 31-bit GETVIS until it is processed as an LP data stream. The advantage is that no 24-bit GETVIS is required. The disadvantage is that, if the TCP/IP partition fails or is shutdown before transmission completes, the data is lost. If the LPR transmission fails the data will be written to disk before the Daemon shuts down.

STORage= - Specifies the library to be used for staging LPR data and for the optional logging and debug files. The specified file refers to a file defined to the TCP/IP file system. This is a required parameter if QUEUING=DISK, LOG=YES, DEBUG=YES, or OUTPUT=LPR is specified or implied.

TARGet=	- Identifies the VTAM application name (APPL) that you want GPS to bind with immediately at startup. This parameter is effective only if you also specify INSESSION=YES. If you specify INSESSION=NO or if you omit this parameter, GPS will not attempt a bind and instead waits for an application to initiate a bind.
TERMname=	- Specifies the VTAM application name that GPS will use to connect with VTAM. This name will also be the LUNAME that GPS uses to communicate with other VTAM applications. This is a required parameter.
TRANslate=	- Specifies the name of the translate table to be used when converting the EBCDIC data stream to ASCII. If not specified, the system default table is used.
	This parameter has no meaning if EMULATE=TRANSPARENT is in effect.
TYPe=	Specifies the interface to be used for connecting with the application.
	VTAM - The GPS Daemon will obtain data through a VTAM interface. This is the default and the only interface currently available.
VRC=	- Numeric, 0 through 99999
	This value controls the number of times that a GPS Daemon will retry any (retriable) VTAM operation before giving up. Acceptable values are in the range of 0 (no retry) through 99,999. The default is 10. This parameter may also be specified as "VTAM_RETRY_Count=".
VRT=	- Used in conjunction with VRC=, this parameter controls the length of time that will elapse before any VTAM operation will be retried. Acceptable values are in the range of 0 (no retry) through 9,999,999. The default is 18000 (1 minute). This parameter may also be specified as "VTAM_RETRY_Time=".

Process
Overview

The GPS feature is designed to allow VSE applications to direct print streams to TCP/IP enabled printers. These printers may be supported by a Line Printer Daemon (LPD) or may be directly attached to the network (Direct Socket).

To a VSE application, GPS appears to be a series of VTAM-attached printers, each with its own LUname. Printout is sent across the VTAM connection just as if the destination was a physical 3287 printer.

When GPS transmits the printout to the remote printer, it can use the LPD protocol. The LPD protocol requires the remote destination to be a server. Using this technique, GPS must buffer the VTAM stream, format it, and then send it to the LPD as a dataset. Although the VTAM-attached application considers the printout to be going directly to a printer, GPS must arbitrarily carve the stream into discrete LPD transmission. GPS attempts to segment reports only on page boundaries. In this manner, the final printed version will appear to be one continuous transmission. Note that the LPD protocol REQUIRES the remote host to completely receive the transmission before printing can begin. In general, this means that the LPD must run on a server with disk storage. Few "network printers" have this capacity. Instead, they simply print the data stream as it is received. The LPD control dataset is ignored and discarded. Unfortunately, this has three drawbacks:

- Since the control file is ignored, requests for multiple copies, banner pages, etc., are also ignored.
- Since the data prints in "real-time", the connection is tied-up for the duration. Such a printer cannot be shared by multiple users (a "busy" printer appears to be offline to all other requestors).
- LPD protocol error-recovery states that any batch that is not fully transmitted and acknowledged must be restarted from the beginning. This means that any interruption in printing will result is duplicate pages.

A better technique, when available, is the "direct socket" connection. This is supported by most "network" printers. When using the direct socket interface, no protocol is used. Data received by the printer is sent directly to paper. GPS does no buffering.

Controlling
Segmentation

When using the LPD protocol, the print stream must be broken into discrete pieces for transmission. How and when this occurs is controlled by the "MAX" parameters. MAXPAGES controls the number of pages to be included in each report. This is a nominal value. Due to the way data is transmitted to GPS from the application, additional pages may be included. These will seldom contain much data. Two other "MAX" values, MAXLINES and MAXCHARS are included to handle reports that do not have embedded page breaks. These parameters ensure that GPS is not flooded by a data stream that it can't segment. If a report is broken by either MAXLINES or MAXCHARS, the break will probably be within a page. Finally, MAXIDLE controls when remaining data should be sent to the printer after the VTAM connection becomes idle.

Segmentation does not occur with a direct socket connection, although MAXIDLE will cause the TCP/IP connection with the printer to be closed.

Example:

```
IPN237I define gpsd,id=gps1,storage=gps.save, ipaddr=rmt1,printer=prt1
GPS900I GPS1 GPS Daemon Starting
FPS917I GPS1 Waiting for BIND
```

Notes: • There is no MODIFY GPSD command. To change any specification, you must delete and redefine the Daemon.

| Related Commands: | DELETE GPSD | - | Terminate a General Print Server Daemon. |
| | QUERY GPSDS | - | Displays the status of the General Print Server Daemons. |