z/VSE VIA - z/VM IP Assist

This document describes z/VSE's z/VM IP Assist function. The description should be used in addition to the z/VSE Manual "z/VSE V5R1 TCP/IP Support" SC34-2640-00 Chapter 13 "Running z/VSE With a Linux Fast Path".

Overview

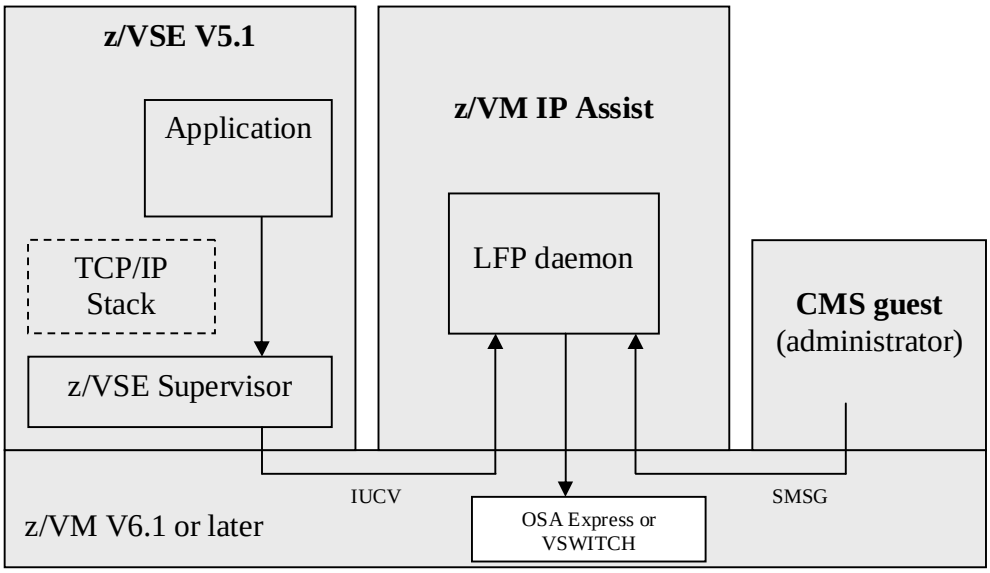
The z/VSE "z/VM IP Assist" function provides the z/VM counterpart to the z/VSE Fast Path to Linux on System z function (also called Linux Fast Path, LFP) on z/VSE.

The 'traditional' z/VSE Linux Fast Path function requires the user to install, administrate and configure a Linux on System z system, in order to run the Linux Fast Path Daemon (lfpd). On this Linux on System z system, the Linux Fast Path Daemon has to be installed and configured.

For customers who prefer to not install and maintain a Linux on System z system on their own, the z/VSE VIA function provides an easy to use and ready to run z/VM guest image that provides all services required to use the z/VSE Linux Fast Path.

Minimum requirements:

- IBM zEnterprise system (z196 or z114) driver level 86 or later
- z/VM V6.1 or later
- z/VSE V5.1



z/VSE VIA z/VM guest configuration

The z/VSE VIA guest image must be configured using the SCPDATA operand of the LOADDEV directory control statement of a z/VM directory entry. The SCPDATA operand specifies the network configuration that is used for the VIA guest. The information is formatted in JSON (www.json.org). The SCPDATA must be specified using **EBCDIC code page 924**. Usually the VIA guest will be configured to start up automatically when z/VM starts.

The z/VSE VIA guest is configured to have access to 2 CMS minidisks:

- Config Disk: This minidisk contains the LFPD daemon configuration files (one for each LFPD instance) and the SENDERS.ALLOWED file. It must be linked as 0D4C in read-only mode.
- Data Disk: Trace files are written to this minidisk when the user starts a trace. This minidisk is optional and only required, if the user wants to start a trace. It must be linked as 0D4D in read-write mode.

The config disk must be linked during startup by the z/VM Directory Entry. The data disk can be linked during startup, or can be linked when a trace needs to be started by using the CP command ‘CP LINK ZVSEVIA 4321 0D4D MR’.

The configuration using the files on the config disk is usually performed through an administrator CMS guest. This CMS guests should therefore be allowed to access the config disk in read-write mode.

Example user directory entry for a z/VSE VIA guest:

```
USER ZVSEVIA  AUTOONLY 1G 1G G
  COMMAND SET D8ONECMD * OFF
  COMMAND SET RUN ON
  COMMAND TERM LINEND #
  COMMAND SPOOL CONS START *
  IPL _0___1__
  LOADDEV PORT 0
  LOADDEV LUN 0
  LOADDEV BOOT 0
  LOADDEV BR_LBA 601
* Network adapters and configuration
  LOADDEV SCPDATA '{',
    '"profiles":["zVSE-VIA"],',
    '"networkCards": [',
            { "OSM": "all", "linkLocalIPv6": null},',
            { "OSA": "2408", "staticIPv4": "9.152.11.86/24"},',
            { "OSX": "110", "staticIPv6": "2001:0db8:85a3::7334/64"},',
            { "hipersockets": "9000", "linkLocalIPv6": null},',
            ],',
    '"defaultGateway":"y.y.y.y/nn",',
    '"DNS":["y.y.y.y/nn","z.z.z.z/nn"],',
    '"hostName":"myServer"',
```

```
    '}'
* machine type and number of CPUs
  MACH XA 1
  OPTION LXAPP LANG AMENG
  OPTION MAXCONN 128
* IUCV authorizations
  IUCV ANY PRIORITY MSGLIMIT 1024
  IUCV ALLOW
* Standard virtual devices
  CONSOLE 009 3215 T
  SPOOL 000C 2540 READER *
  SPOOL 000D 2540 PUNCH A
  SPOOL 000E 1403 A
* Network definitions (use either DEDICATE or NIC+VSWITCH)
  DEDICATE dddd vvvv
* COMMAND DEFINE NIC vvvv TYPE QDIO
* COMMAND COUPLE vvvv TO SYSTEM vswitch
* Minidisks
  LINK MAINT 0190 0190 RR
  LINK MAINT 019D 019D RR
  LINK MAINT 019E 019E RR
* 191 minidisk is optional
* MDISK 191 3390 XXXX 007 AUTOV  MR XXXXXXXX XXXXXXXX XXXXXXXX
* Disk for configuration (D4C) and log file (D4D)
  MDISK D4C 3390 XXXX 009 AUTOV  RR XXXXXXXX XXXXXXXX XXXXXXXX
  MDISK D4D 3390 XXXX 071 AUTOV  MR XXXXXXXX XXXXXXXX XXXXXXXX
```

The SCPDATA operand supports the following elements:

- **profiles** (required)
  Specifies the profile name. You must use “zVSE-VIA”.
- **hostname** (optional)
  String containing the hostName to use. If no hostName is specified the name of the first profile will be used.
- **networkCards** (optional)
  Array of 0-n network cards to use in the guest. Each of the array elements is a JSON object which includes two elements:
  - **card type:** OSA, OSM, OSX, hipersockets
    String with the OSA, OSM, OSX or hypersockets device ccw or “all”. In case “all” is used no other device of the same type may be defined.
  - **IP configuration:** linkLocalIPv6, staticIPv4, staticIPv6 followed by the IP address or null if no further configuration is required.

  Defining an IPv4 and an IPv6 configuration for the same card is valid.
- **defaultGateway** (optional)
  String with the default gateway to be used.
- **DNS** (optional)
  Array of strings containing IP addresses of DNS servers.

z/VSE VIA Linux Fast Path configuration

Besides the z/VM guest that runs the z/VSE VIA image, you also need to configure one or more Linux Fast Path Daemons that the z/VSE VIA guest should run.

The configuration of the Linux Fast Path Daemons (LFPD) is performed using files that reside on the config minidisk (0D4C) and SMSGs that the user sends to the z/VM guest where z/VSE VIA runs in.

The administrator can interact with the z/VSE VIA guest by means of sending SMSG messages from a CMS guest to the z/VSE VIA guest. To prevent unauthorized SMSG traffic each sender is validated against a list of authorized users contained in CMS file ‘SENDERS.ALLOWED’ residing on the config disk (0D4C). This file contains one single z/VM user ID per line. All specified IDs are authorized to send SMSG commands to the z/VSE VIA guest.

The configuration files for the LFPD daemons must also reside on the config disk (0D4C). The config files have the same content as described in the official documentation of the LFPD config files in the z/VSE TCP/IP Support manual. Each configuration file must have the same file name as the IUCV_SRC_APP that it configures, and must have the CMS file type 'LFPDCONF'.

All configurations that exist on the config disk during the start of the z/VSE VIA guest will be started automatically. When the startup of the z/VSE VIA guest has completed, the user can administrate the configurations using the supported SMSG commands.

Sample content of a config disk:

```
CONFIG-1  LFPDCONF
CONFIG-2  LFPDCONF
SENDERS   ALLOWED
```

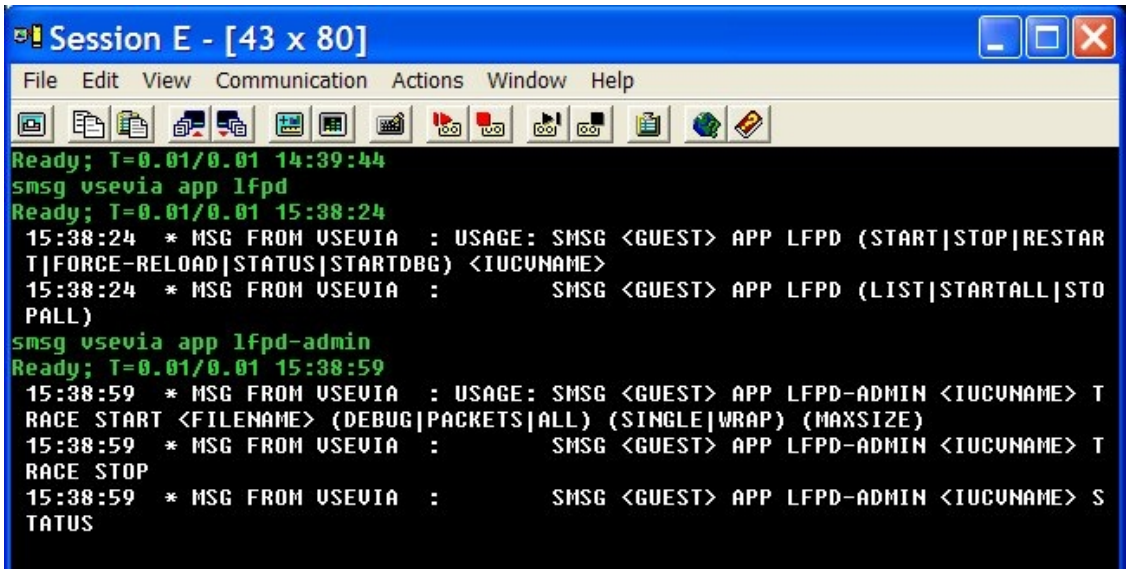
z/VSE VIA Linux Fast Path Administration

The administration of the LFP daemon is usually done using the LFP control script lfpd-ctl and the lfpd-admin program. For the z/VSE VIA function, SMSGs are used to administrate the Linux Fast Path Daemons. SMSG is used to send textual messages from one z/VM guest to another z/VM guest. To allow only authorized users to access the LFP daemon administrative interface the z/VSE VIA function implements a user verification system.

The general syntax to send an SMSG to the z/VSE VIA administrative interface is

```
SMSG <ZVSEVIA> APP <CMD PARAMS>
```

The administrative commands will return their output by sending it line by line using MSG back to the issuer of the SMSG command.



There are 2 administrative commands available:

- LFPD provides the functionality of the lfpd-ctl script
- LFPD-ADMIN provides the functionality of the lfpd-admin script

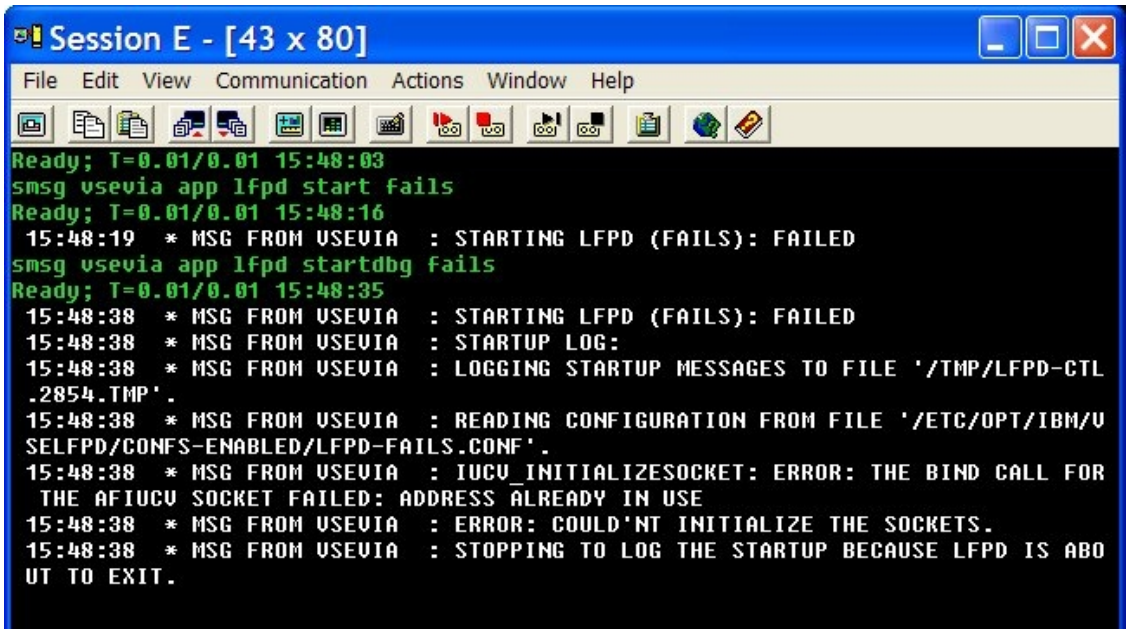
LFPD Command

The LFPD command has the following syntax:

- SMSG <guest> APP LFPD (start|stop|restart|force-reload|status|startdbg) <IUCVNAME>
- SMSG <guest> APP LFPD (list|startall|stopall)

The meaning of the functions is the same as described in the official documentation of the lfpd-ctl control script in the z/VSE TCP/IP Support manual.

The 'startdbg' command can be used to get diagnostic information when starting a Linux Fast Path Daemon instance. The output of the ‘startdbg’ command will show all messages from the LFP daemon during its startup.



LFPD-ADMIN Command

The LFPD-ADMIN command has the following syntax:

- SMSG <guest> APP LFPD-ADMIN <IUCVNAME> trace start <FILENAME> (debug|packets|all) (single|wrap) (maxsize)
- SMSG <guest> APP LFPD-ADMIN <IUCVNAME> trace stop
- SMSG <guest> APP LFPD-ADMIN <IUCVNAME> status

The 'trace start' function starts the LFP daemon trace to a file whose name must be specified. This trace file is created on the CMS mini disk 0D4D. The file name must be a valid CMS file name without the file type. All following parameters have the same meaning as described in the official documentation of the lfpd-admin program in the z/VSE TCP/IP Support manual. All parameters are optional and can be specified in any order.

Before a trace can be started, the user MUST attach a disk with the CMS file format to the device number 0D4D. The disk can be detached after the trace is stopped. The textual LFP daemon trace is written in BINARY mode to the CMS disk. The trace file is not readable on z/VM.

Note: Only one trace can be started at one time.

Support

The z/VSE VIA function is fully supported through regular IBM support facilities. For problems with Linux fast Path, customers should open a problem record (PMR) with IBM Support.

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