Virtual Software Systems, Inc.

ShadowDisk/Z

ShadowDisk/Z Product Summary
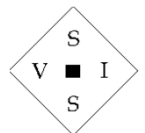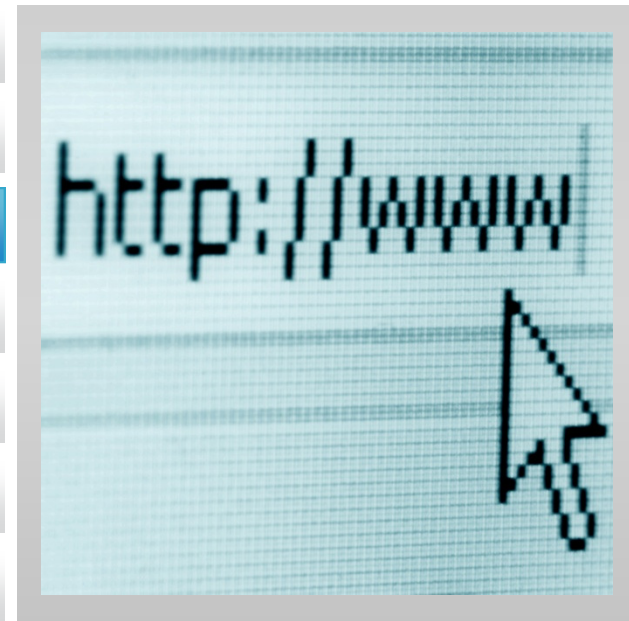
ShadowDisk/Z

ShadowDisk/Z is a software implementation to z/VM which allows multiple Linux virtual machines to transparently share part or all of a virtual Linux file system, without altering the base FS.

1

Implements database technology which intercepts FS read and write commands. Read requests are satisfied from the DB or the base FS; Writes are sent to the DB only.

2

Supports:
. multi-level (concatenated) SDISK databases
. Booting SDISK databases without an underlying base FS (NOBASE option).

3

Is transparent to guest virtual machines

ShadowDisk/Z Product Summary
## Customer Benefits

- Significantly reduces test/developer disk requirements for multiple-user Linux application testing
- Significantly lessens FS backup/restore requirements, since the DB contains only active FS blocks.
- Databases can be shared among multiple users.
- Utilities provided to query, backup, and restore ShadowDisk/Z databases.
- Provides for the creation of databases which do not require a base FS (NOBASE option).
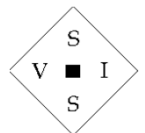
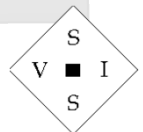# ShadowDisk/Z Product Summary

System Requirements
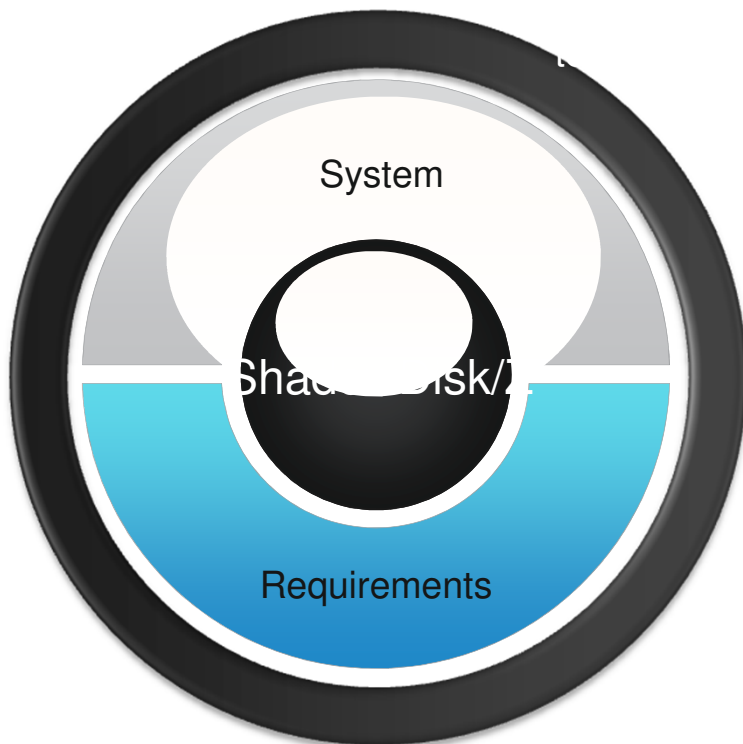
- Z/VM 6.4 or higher

- 200 3390 Cyls or equivalent for Install disk

- 10 3390 Cyls or equivalent VSSI CP PARM disk

- Sufficient disk storage to hold user ShadowDisk/Z databases (ECKD or FBA)

ShadowDisk/Z Product Summary
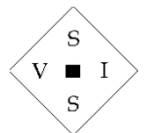
I/O Processing Flow

Linux + apps

Block Reads	Block Writes

z/VM

VSSI CP Code

ShadowDisk/Z Database

Linux Base File System
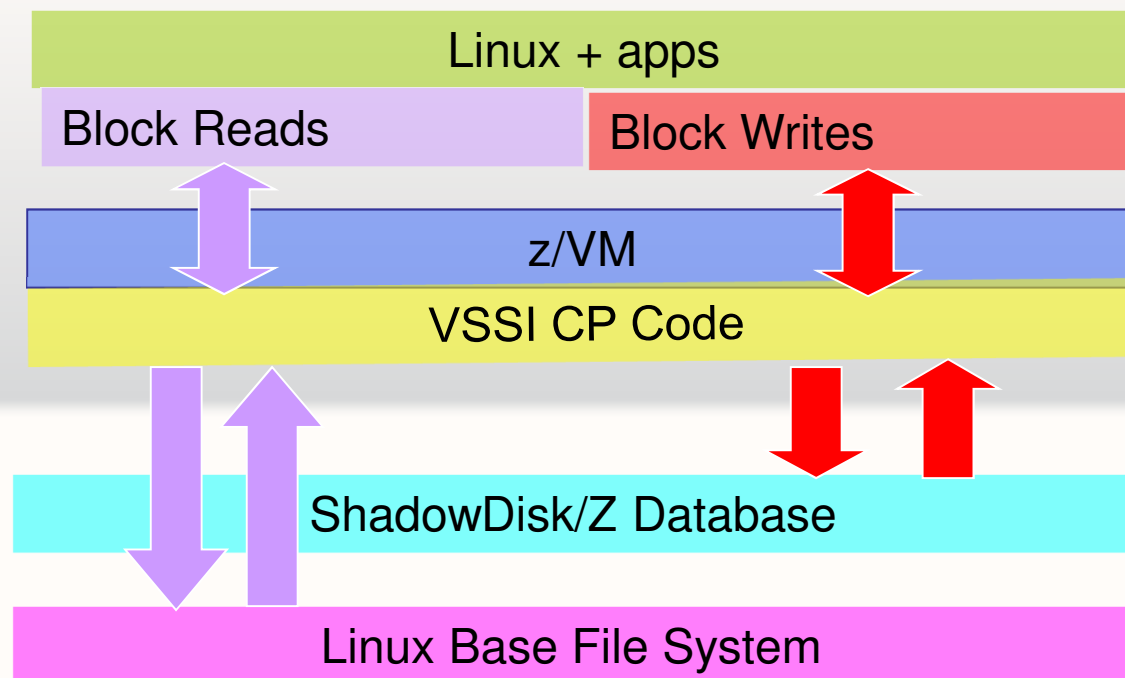
NOTE: Base Linux file system is never modified!
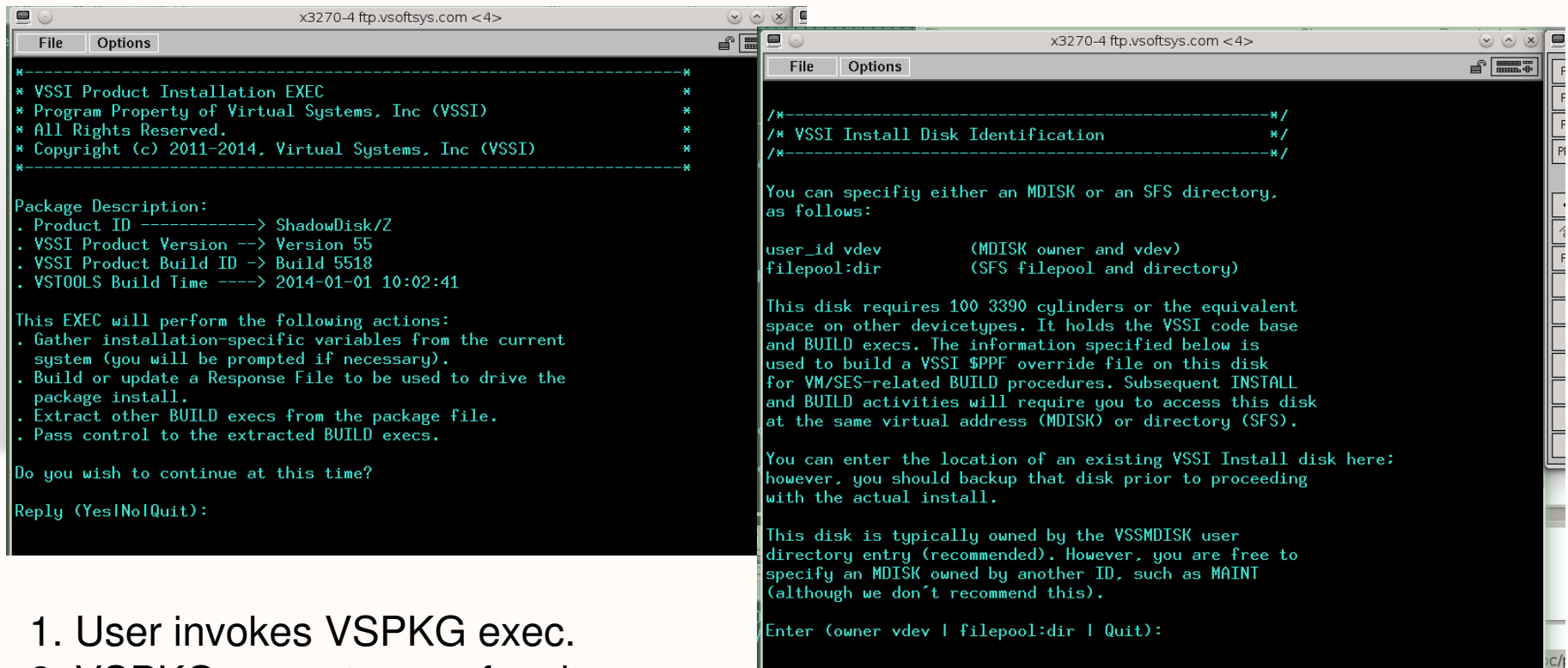
ShadowDisk/Z Product Summary

Installation

Download packages and license from the VSSI FTP site

Add disk owner and MDISK definitions to site z/VM directory

Determine current/projected SES PPF environment

Reboot and test!

Build CP NUC and PARM disk files via VSSI execs

Install via the VSPKG exec, which prompts the user for installation parameters, then invokes the build execs
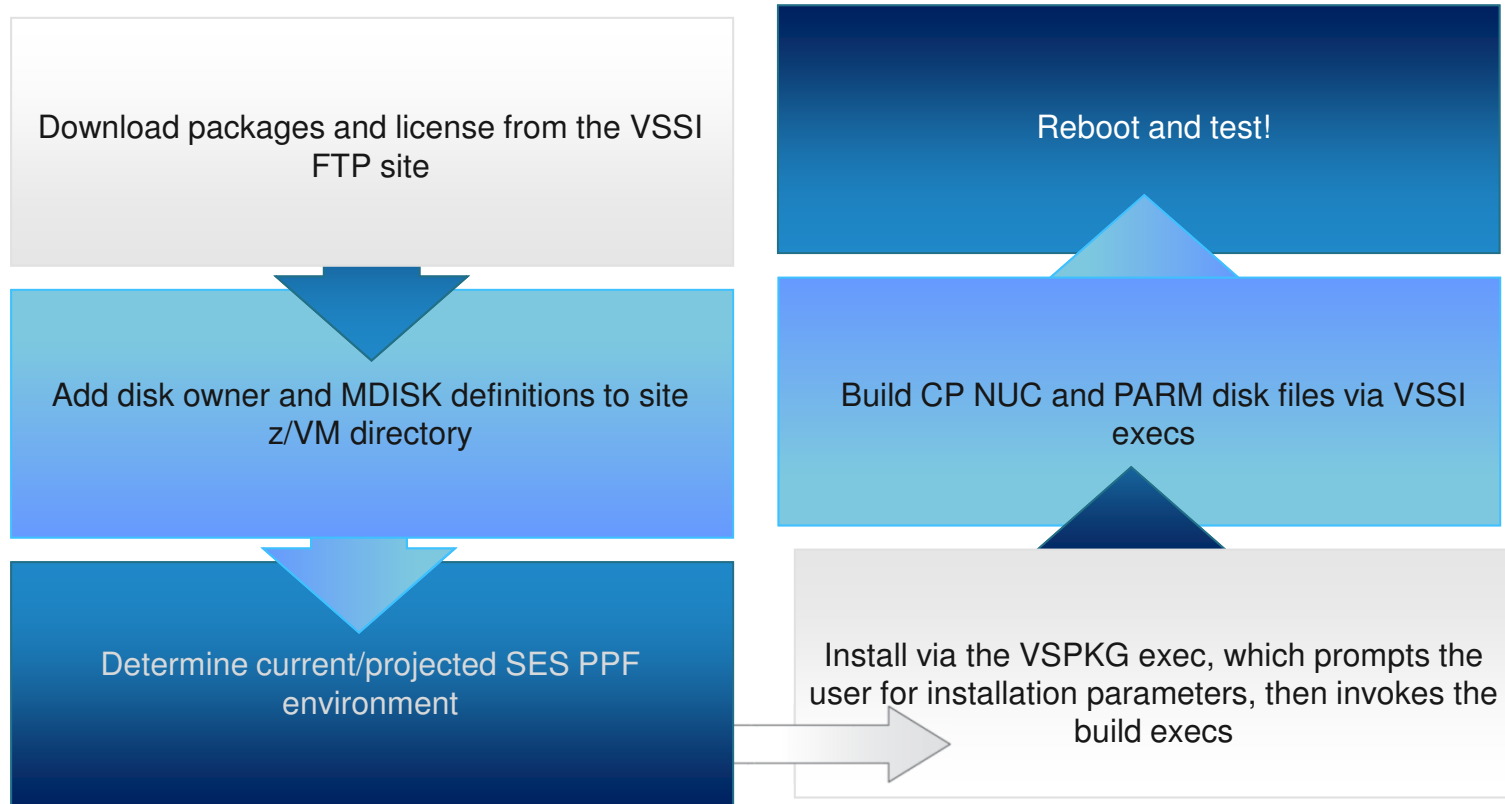
ShadowDisk/Z Product Summary

- Installation Scenario (1 of 3)


```
                                    x3270-4 ftp.vsoftsys.com <4>
 File    Options
*-------------------------------------------------------------------*
* VSSI Product Installation EXEC                                    *
* Program Property of Virtual Systems, Inc (VSSI)                   *
* All Rights Reserved.                                              *
* Copyright (c) 2011-2014, Virtual Systems, Inc (VSSI)             *
*-------------------------------------------------------------------*


Package Description:
. Product ID -----------> ShadowDisk/Z
. VSSI Product Version --> Version 55
. VSSI Product Build ID -> Build 5518
. VSTOOLS Build Time ----> 2014-01-01 10:02:41

This EXEC will perform the following actions:
. Gather installation-specific variables from the current
  system (you will be prompted if necessary).
. Build or update a Response File to be used to drive the
  package install.
. Extract other BUILD execs from the package file.
. Pass control to the extracted BUILD execs.

Do you wish to continue at this time?

Reply (Yes|No|Quit):
```

```
                                    x3270-4 ftp.vsoftsys.com <4>
 File    Options
/*-------------------------------------------------------*/
/* VSSI Install Disk Identification                      */
/*-------------------------------------------------------*/

You can specifiy either an MDISK or an SFS directory,
as follows:

user_id vdev         (MDISK owner and vdev)
filepool:dir         (SFS filepool and directory)

This disk requires 100 3390 cylinders or the equivalent
space on other devicetypes. It holds the VSSI code base
and BUILD execs. The information specified below is
used to build a VSSI $PPF override file on this disk
for VM/SES-related BUILD procedures. Subsequent INSTALL
and BUILD activities will require you to access this disk
at the same virtual address (MDISK) or directory (SFS).

You can enter the location of an existing VSSI Install disk here;
however, you should backup that disk prior to proceeding
with the actual install.

This disk is typically owned by the VSSMDISK user
directory entry (recommended). However, you are free to
specify an MDISK owned by another ID, such as MAINT
(although we don't recommend this).

Enter (owner vdev | filepool:dir | Quit):
```
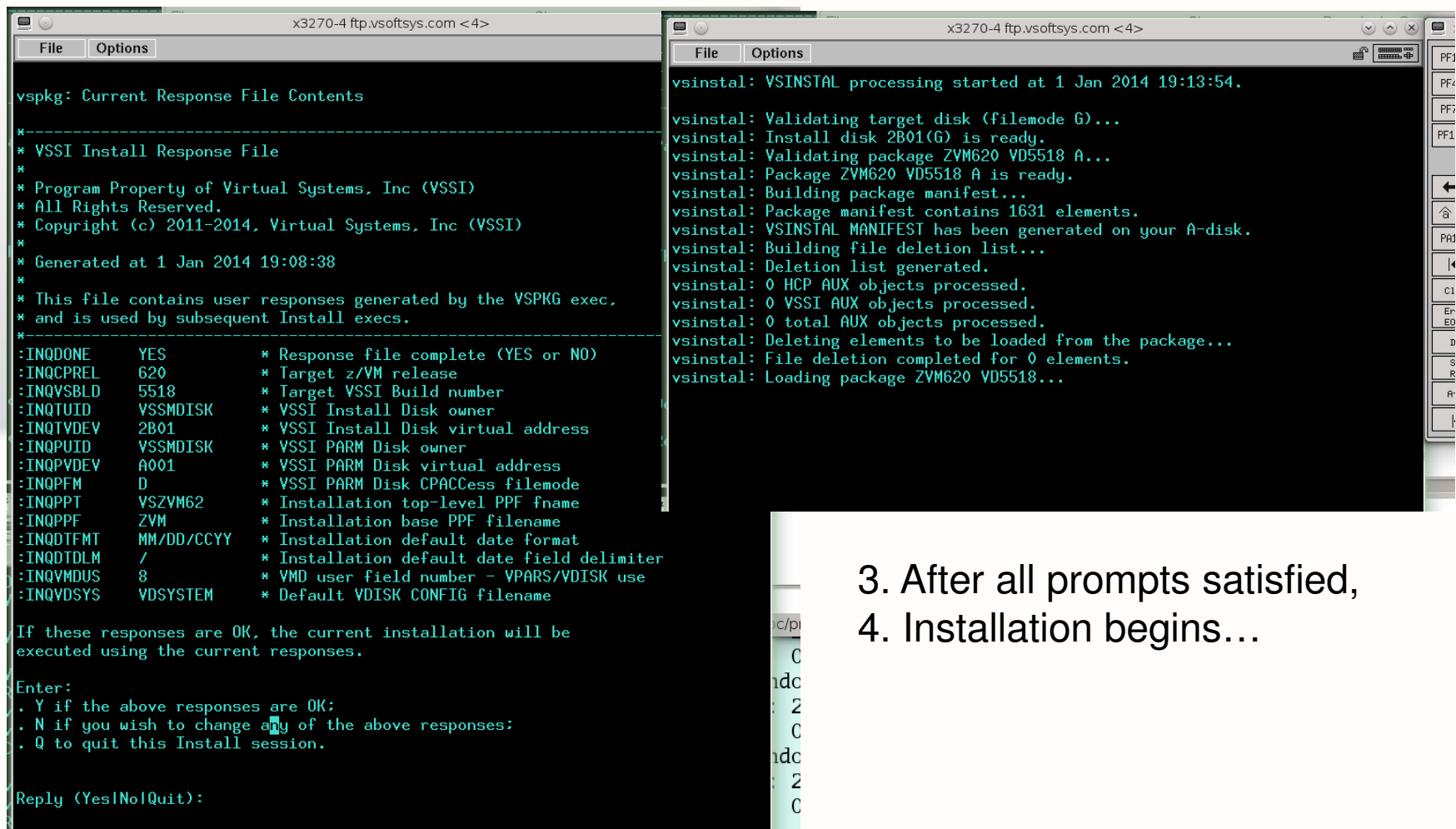
1. User invokes VSPKG exec.
2. VSPKG prompts user for site parameters.

ShadowDisk/Z Product Summary

- Installation Scenario (2 of 3)


```
vspkg: Current Response File Contents

*-----------------------------------------------------------
* VSSI Install Response File
*
* Program Property of Virtual Systems, Inc (VSSI)
* All Rights Reserved.
* Copyright (c) 2011-2014, Virtual Systems, Inc (VSSI)
*
* Generated at 1 Jan 2014 19:08:38
*
* This file contains user responses generated by the VSPKG exec,
* and is used by subsequent Install execs.
*
*-----------------------------------------------------------
:INQDONE    YES         * Response file complete (YES or NO)
:INQCPREL   620         * Target z/VM release
:INQVSBLD   5518        * Target VSSI Build number
:INQTUID    VSSMDISK    * VSSI Install Disk owner
:INQTVDEV   2B01        * VSSI Install Disk virtual address
:INQPUID    VSSMDISK    * VSSI PARM Disk owner
:INQPVDEV   A001        * VSSI PARM Disk virtual address
:INQPFM     D           * VSSI PARM Disk CPACCess filemode
:INQPPT     VSZVM62     * Installation top-level PPF fname
:INQPPF     ZVM         * Installation base PPF filename
:INQDTFMT   MM/DD/CCYY  * Installation default date format
:INQDTDLM   /           * Installation default date field delimiter
:INQVMDUS   8           * VMD user field number - VPARS/VDISK use
:INQVDSYS   VDSYSTEM    * Default VDISK CONFIG filename

If these responses are OK, the current installation will be
executed using the current responses.

Enter:
. Y if the above responses are OK;
. N if you wish to change any of the above responses;
. Q to quit this Install session.

Reply (Yes|No|Quit):
```
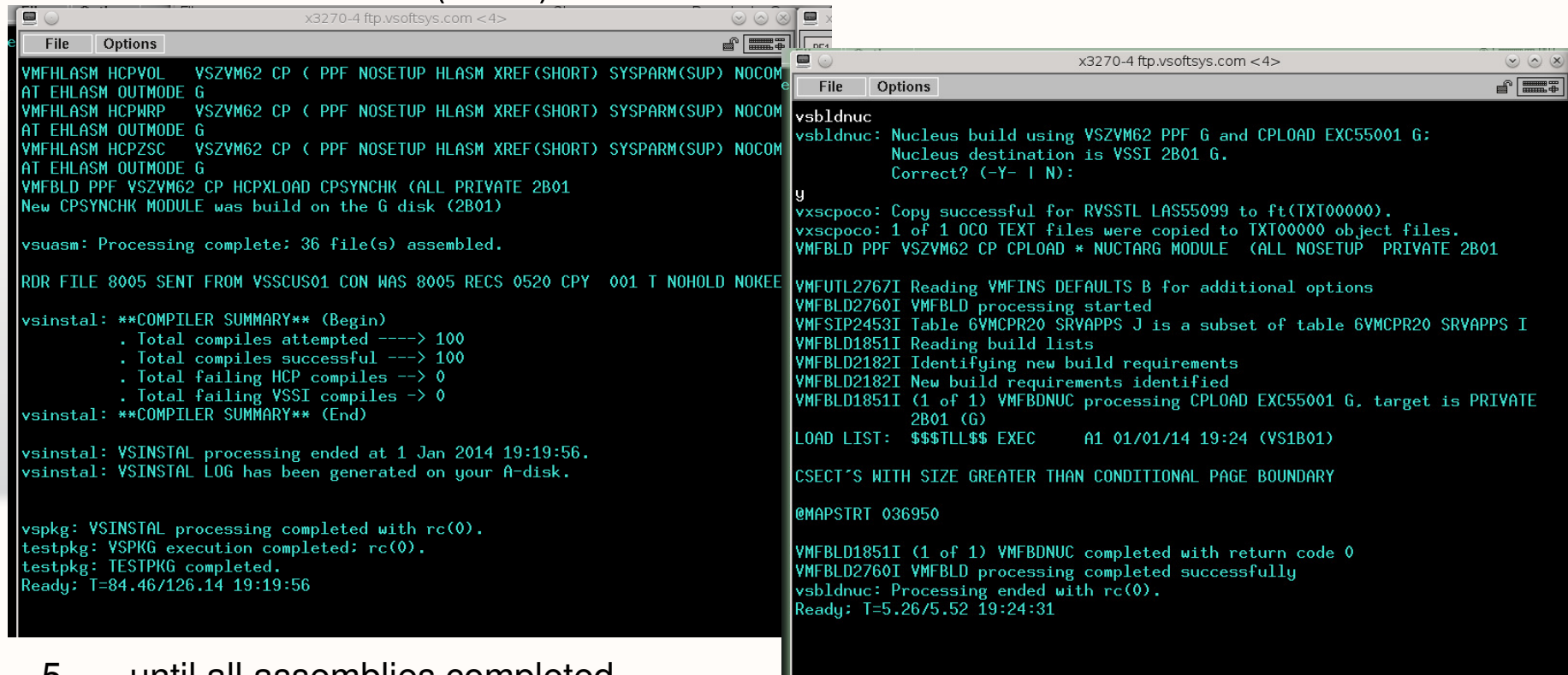
```
vsinstal: VSINSTAL processing started at 1 Jan 2014 19:13:54.

vsinstal: Validating target disk (filemode G)...
vsinstal: Install disk 2B01(G) is ready.
vsinstal: Validating package ZVM620 VD5518 A...
vsinstal: Package ZVM620 VD5518 A is ready.
vsinstal: Building package manifest...
vsinstal: Package manifest contains 1631 elements.
vsinstal: VSINSTAL MANIFEST has been generated on your A-disk.
vsinstal: Building file deletion list...
vsinstal: Deletion list generated.
vsinstal: 0 HCP AUX objects processed.
vsinstal: 0 VSSI AUX objects processed.
vsinstal: 0 total AUX objects processed.
vsinstal: Deleting elements to be loaded from the package...
vsinstal: File deletion completed for 0 elements.
vsinstal: Loading package ZVM620 VD5518...
```

3. After all prompts satisfied,
4. Installation begins…

ShadowDisk/Z Product Summary

- Installation Scenario (3 of 3)

5. … until all assemblies completed.
6. User invokes VSBLDNUC to build CP NUC with VSSI modifications.
7. VSCOPY command (not shown) builds VSSI TXTLIB and configuration files, then copies objects to appropriate CP PARM disks.

ShadowDisk/Z Product Summary
Product Configuration and Specifications

Product Configuration

1

- **Build SDISK Configuration Files**
- **Format SDISK database MDISKs**
- **Issue SDINIT command to initialize configuration**
- **User issues SDOPEN to connect to the specified DB**
- **Run/test configuration**

Product Configuration Specs

2

- **Each SDISK database is open in WRITE mode to the specified user instance**

- **Users can configure multiple concatenated SDISK databases to be accessed at SDOPEN time (primary DB is R/W; secondary DBs are R/O)**

- **Database usage permissions (R/W, R/O, etc) can be assigned to the user population by user name prefix or CP directory class (default permissions apply to all unless overridden via prefix or class)**
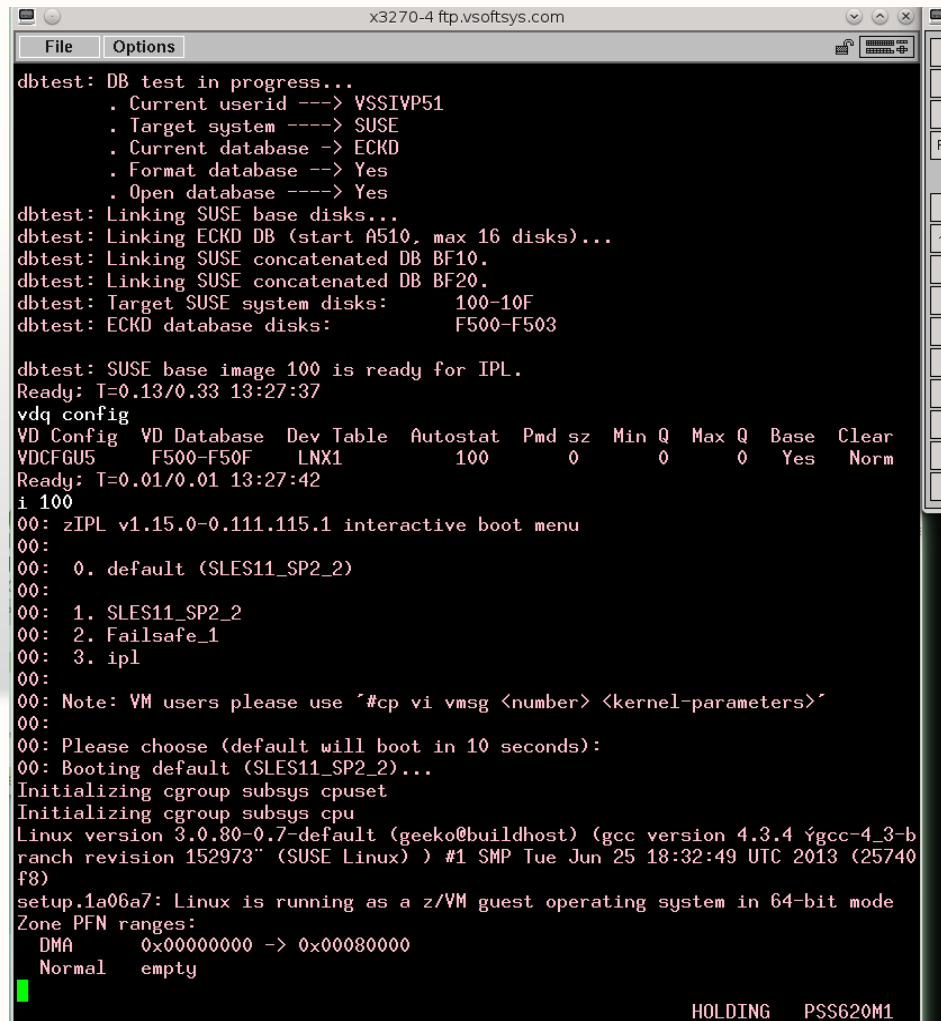
ShadowDisk/Z Product Summary

- Usage Scenario (1 of 2)

CONFIG Filename	Statement(s)	Usage
SDSYSTEM DEFAULTS	USER_CONFIG VSSIVP5 SDCFGU5	Specifies that all users with prefix VSSIVP5 (VSSIVP51, 52, 5A, etc.) will use the database configuration specified by SDCFGU5 SDCONFIG below.
SDCFGU5 SDCONFIG	BASEVDISK_MD F500 VDMD_MAX 16 BASE_SYSTEM YES DEV_TABLE LNX1	Specifies that the ShadowDisk/Z database consists of from 1 to 16 MDISKs, starting at virtual address F500. A base Linux file system exists, and is defined in LNX1 SDDEV below.
LNX1 SDDEV	DEVTBL 100-10F LNX001	Specifies a base Linux file system of 16 MDISKs at virtual addresses 100 thru 10F (linked R/O by all users), as well as the track format table describing the disk geometry. Multiple DEVTBL statements can be specified.
LNX001 SDFMT	(binary)	Block geometry data generated by the VDBLDFMT command against the base disk(s).

ShadowDisk/Z Product Summary

- Usage Scenario (2 of 2)

```
                        x3270-4 ftp.vsoftsys.com
 File    Options
dbtest: DB test in progress...
        . Current userid ---> VSSIVP51
        . Target system ----> SUSE
        . Current database -> ECKD
        . Format database --> Yes
        . Open database ----> Yes
dbtest: Linking SUSE base disks...
dbtest: Linking ECKD DB (start A510, max 16 disks)...
dbtest: Linking SUSE concatenated DB BF10.
dbtest: Linking SUSE concatenated DB BF20.
dbtest: Target SUSE system disks:      100-10F
dbtest: ECKD database disks:           F500-F503

dbtest: SUSE base image 100 is ready for IPL.
Ready: T=0.13/0.33 13:27:37
vdq config
VD Config  VD Database  Dev Table  Autostat  Pmd sz  Min Q  Max Q  Base  Clear
VDCFGU5    F500-F50F    LNX1          100        0      0      0    Yes   Norm
Ready: T=0.01/0.01 13:27:42
i 100
00: zIPL v1.15.0-0.111.115.1 interactive boot menu
00:
00:   0. default (SLES11_SP2_2)
00:
00:   1. SLES11_SP2_2
00:   2. Failsafe_1
00:   3. ipl
00:
00: Note: VM users please use `#cp vi vmsg <number> <kernel-parameters>`
00:
00: Please choose (default will boot in 10 seconds):
00: Booting default (SLES11_SP2_2)...
Initializing cgroup subsys cpuset
Initializing cgroup subsys cpu
Linux version 3.0.80-0.7-default (geeko@buildhost) (gcc version 4.3.4 ýgcc-4_3-b
ranch revision 152973¨ (SUSE Linux) ) #1 SMP Tue Jun 25 18:32:49 UTC 2013 (25740
f8)
setup.1a06a7: Linux is running as a z/VM guest operating system in 64-bit mode
Zone PFN ranges:
  DMA       0x00000000 -> 0x00080000
  Normal    empty

                                             HOLDING    PSS620M1
```

1. Logon as VSSIVP51
2. The DBTEST exec (in-house):
   . Links Linux base system disks as virtual addresses 100-10F (R/O)
   . Links SDISK database disks as virtual addresses F500-F503 (R/W)
3. User boots Linux (vdev 100)

ShadowDisk/Z Product Summary
Sample Initialization Commands

- **SDINIT**

    Initializes SDISK environment at boot time

- **SDOPEN**

    Opens a SDISK database for processing

- **SDCLOSE**

    Closes (releases) a SDISK database

- **SDADD**

    Adds minidisks to a SDISK database

ShadowDisk/Z Product Summary
Sample User Commands

- **SDIPL**
  - **Boots a SDISK DB previously prepared for NOBASE operation**

- **SDLINK**
  - **Links a SDISK DB from a dynamic MDISK pool**

- **SDQUERY**
  - **Displays DB and base FS statistics**

- **SDSET**
  - **Sets/modifies database configuration parameters at run time**

ShadowDisk/Z Product Summary
Sample Initialization Commands

- **SDBKUP**

  Backup a SDISK DB to tape media (physical backup)

- **SDREST**

  Restore a SDISK DB from tape media (physical restore)

- **SDUNLOAD**

  Backup a SDISK DB to tape media (logical backup)

- **SDLOAD**

  Restore a SDISK DB from tape media (logical restore)

- **SDUTIL**

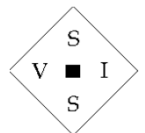 **Copy/move/print/delete database records**

ShadowDisk/Z Product Summary
About us

- Established in 1982
- Located in Gainesville GA (USA)
- Customer base is typically Fortune 100
- Established solid reputation for product support
- Support cost included in yearly license cost
- Support requests handled via toll –free (855-411-VSSI), local number (770-781-3200), and email (support@vsoftsys.com)

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