

ZeBu[®] Server 3 Site Planning Guide

Version O-2018.09-SP1, June 2019



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About This Book

The *ZeBu® Server 3 Site Planning Guide* contains information to prepare for the installation of ZeBu Server 3 hardware. This guide provides you the necessary information to make appropriate decisions.

Physical installation of the ZeBu Server 3 hardware is performed by a qualified Synopsys personnel. To prepare for the installation of the ZeBu Server 3 hardware, you must plan the following items:

- **Floor space:** Floor space is needed for the following items:

- ☐ ZeBu Server 3 Racks: Configurations can vary up to 4 racks for a 10U system.

NOTE: *Synopsys does not provide racks for ZeBu Server 3. Instead, it provides recommendation for third-party racks.*

For details, see [ZeBu Server 3 Racks](#).

- ☐ Host PCs: These are usually installed in racks (not provided by Synopsys). They must be located adjacent to the ZeBu Server 3 Racks. For details, see [Host PCs](#).

- ☐ Compilation PCs: These are usually installed in racks (not provided by Synopsys). There is no location constraint for compilation PCs.

For details, see [Compilation PCs](#).

- **Relative locations of elements to each other**

- **Electrical power supply:** Electrical power supply is required for the following items:

- ☐ ZeBu Server 3 Racks: Each ZeBu Server 3 Unit and the ZeBu Server 3 Hub are fitted with one power cord. The racks themselves are also fitted with one power cord each. For details, see [Power Cords of ZeBu Server 3](#).
- ☐ Host PCs and Compilation PCs: See the documentation from the PC manufacturer.

- **Cooling**

- ☐ ZeBu Server 3 Racks

For details, see [ZeBu Server 3 Racks](#).

-
- ❑ Host PCs and Compilation PCs
See the documentation from the PC manufacturer.

- **Host and Compilation PCs**

- ❑ Synopsys does not provide Host PCs and Compilation PCs. The number of necessary PCs depends on the characteristics of the user designs and testbenches. For recommendations, see [PC Requirements](#).

Note

In this guide, the term "ZeBu Server 3 system" refers to a single unit or multiunit configuration for ZeBu Server 3.

Intended Audience

This guide is intended for users to help them in preparing the installation of their ZeBu Server 3 System.

Contents of This Book

The ZeBu[®] Server Site Planning Guide has the following sections:

Chapter	Describes...
ZeBu Server 3 Hardware	ZeBu Server 3 hardware and its configurations
Interconnection With Host PCs	Components required for interconnecting with the host PC
PC Requirements	Hardware and software components to be installed on Linux operated PCs
End-User Operations	Information on the hardware operations

Related Documentation

Document Name	Description
<i>ZeBu Server 4 Site Planning Guide</i>	Describes planning for ZeBu Server 4 hardware installation.
<i>ZeBu Server 3 Site Planning Guide</i>	Describes panning for ZeBu Server 3 hardware installation.
<i>ZeBu Server Site Administration Guide</i>	Provides information on administration tasks for ZeBu Server 3 and ZeBu Server 4. It includes software installation.
<i>ZeBu Server Getting Started Guide</i>	Provides brief information on using ZeBu Server.
<i>ZeBu Server User Guide</i>	Provides detailed information on using ZeBu Server.
<i>ZeBu Server Debug Guide</i>	Provides information on tools you can use for debugging.
<i>ZeBu Server Debug Methodology Guide</i>	Provides debug methodologies that you can use for debugging.
<i>ZeBu Server Unified Command-Line User Guide</i>	Provides the usage of Unified Command-Line Interface (UCLI) for debugging your design.
<i>ZeBu Server Functional Coverage User Guide</i>	<p>Describes collecting functional coverage in emulation. For VCS and Verdi, see the following:</p> <ul style="list-style-type: none">- Coverage Technology User Guide- Coverage Technology Reference Guide- Verification Planner User Guide- Verdi Coverage User Guide and Tutorial <p>For SystemVerilog, see the following:</p> <ul style="list-style-type: none">- SystemVerilog LRM (2017)
<i>ZeBu Server Power Estimation User Guide</i>	<p>Provides the power estimation flow and the tools required to estimate the power on a System on a Chip (SoC) in emulation.</p> <p>For SpyGlass, see the following:</p> <ul style="list-style-type: none">- SpyGlass Power Estimation and Rules Reference- SpyGlass Power Estimation Methodology Guide- SpyGlass GuideWare2018.09 - Early-Adopter User Guide
<i>ZeBu Verdi Integration Guide</i>	Provides Verdi features that you can use with ZeBu. This document is available in the Verdi documentation set.
<i>ZeBu Server LCA Features Guide</i>	Provides a list of LCA features available with ZeBu Server.
<i>ZeBu Server Release Notes</i>	Provides enhancements and limitations for a specific release.

Typographical Conventions

This document uses the following typographical conventions:

To indicate	Convention Used
Program code	OUT <= IN;
Object names	OUT
Variables representing objects names	<sig-name>
Message	Active low signal name '<sig-name>' must end with _X
Message location	OUT <= IN;
Reworked example with message removed	OUT_X <= IN;
Important Information	NOTE: This rule...

The following table describes the syntax used in this document:

Syntax	Description
[] (Square brackets)	An optional entry
{ } (Curly braces)	An entry that can be specified once or multiple times
(Vertical bar)	A list of choices out of which you can choose one
. . . (Horizontal ellipsis)	Other options that you can specify

1 ZeBu Server 3 Hardware

This chapter provides information about the ZeBu Server 3 hardware.

This section describes the following subtopics:

- [*ZeBu Server 3 System*](#)
- [*ZeBu Server 3 Hardware Configurations*](#)
- [*ZeBu Server 3 Hardware Elements*](#)
- [*Floor Space Requirements*](#)
- [*Electrical Power Supply*](#)
- [*Cooling*](#)

1.1 ZeBu Server 3 System

A ZeBu Server 3 system consists of 1 to 10 Units.

ZeBu Server 3 multiunit systems can accommodate up to 49 users (for a 10-unit System) and can handle designs up to 3 billion ASIC-equivalent gates (exact capacity utilization is dependent on design and use case). The ZeBu Server 3 system is available in 2-slot or 5-slot units.

The ZeBu Server 3 system is connected to the host PCs through host adapter cards. In multiuser environments, depending on the configuration, a maximum of five PCs can be connected to one ZeBu Server 3 unit.

1.1.1 2-slot ZeBu Server 3 Unit

The ZeBu Server unit is the basic element in a ZeBu Server system. The 2-slot unit is not intended to be part of a multiunit configuration; it is always seen as the ZeBu Server system itself. 1 or 2 FPGA modules can be plugged in the chassis.

A 2-slot ZeBu Server 3 chassis consists of the following elements:

- 2 slots to plug up to 2 FPGA modules
- A backplane
- 4 connectors to link up to 4 PCs
- A Smart Z-ICE interface: 4 connectors with 64 data pins and 4 clock pins

Note

For more information on 2-slot ZeBu Server Units, contact Synopsys support center.

1.1.2 5-slot ZeBu Server 3 Unit

The ZeBu Server 3 unit is the basic element in any ZeBu Server system. Unlike 2-slot units, the 5-slot unit can be standalone or part of a multi unit configuration. Therefore, it can be the ZeBu Server system itself in a single-unit configuration or part of the ZeBu Server system in a multi unit configuration. The 5-slot ZeBu Server 3 chassis consists of the following elements:

- 5 slots to plug up to 5 FPGA modules.
- A backplane

- 10 connectors to link up to 5 PCs, 4 units, and a hub
- A Smart Z-ICE interface (5 connectors with 80 data pins and 5 clock pins)

1.1.2.1 Front Panels

The front panel features:

- ON/OFF switch
- SD slot accepting compact memory cards



FIGURE 1. : Front panel of a 5-slot unit

1.1.2.2 Rear Panel

The rear panel features:

- **HOST** connectors (in a single-unit system):
 - C0-C4: PCIe connectors to link up to 5 PCs
 - C5-C9: Not used
- **HOST** connectors (in a multi unit system):
- Unit U0:
 - C0-C3: PCIe connectors to link up to 4 PCs
 - C4: Connector to link a hub

- ❑ C5-C9: to inter-connect with the other units
- Units U1-U4:
 - ❑ C0-C4: PCIe connectors to link up to 5 PCs
 - ❑ C5-C9: to interconnect with the other units
- **Smart Z-ICE** connectors:
 - ❑ P0-P4: 5 ERNI 50-pin connectors
- Power supply connector (standard IEC-C20 inlet)
- Fuse: 15A max

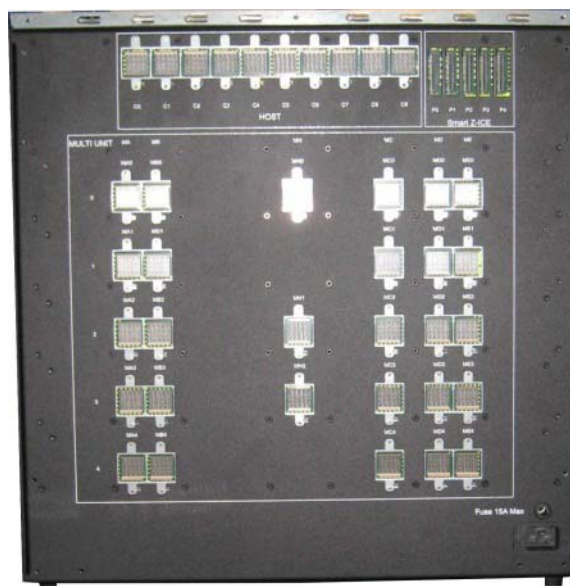


FIGURE 2. Rear Panel of a 5-slot Unit

1.2 ZeBu Server 3 Hardware Configurations

ZeBu Server 3 hardware configuration is available as a single unit configuration or a multiunit configuration.

1.2.1 ZeBu Server 3 Single Unit Configuration

The ZeBu Server 3 unit can act as the ZeBu Server 3 system in a single unit configuration, and consists of the following elements:

- One backplane
- One to five ZeBu Server 3 modules

1.2.2 ZeBu Server 3 Multiunit Configuration

A ZeBu Server 3 multi unit system consists of 1 to 10 units that are interconnected by hubs to offer more emulation resources.

Depending on the number of units, the ZeBu Server 3 system consists of:

- One or more ZeBu Server 3 5-slot units
- One hub

1.3 ZeBu Server 3 Hardware Elements

The following hardware elements are present in a ZeBu Server 3 system:

- [ZeBu Server 3 Module](#)
- [ZeBu Server 3 Unit](#)
- [ZeBu Server 3 Hub](#)
- [ZeBu Server 3 Racks](#)

1.3.1 ZeBu Server 3 Module

ZeBu Server 3 module is categorized as follows:

- 9F module
- 9F/ICE module

1.3.1.1 ZeBu Server 3 9F Module

Each ZeBu Server 3 Module can handle up to 60M ASIC gates and provides 18 gigabytes of memory to model design memories. Each unit can contain up to 5 modules based on the configuration.

1.3.1.2 ZeBu Server 3 9F/ICE Module

Each ZeBu Server 3 Module can handle up to 60M ASIC gates and provides 18 gigabytes of memory to model design memories. Each unit can contain up to 5 modules based on the configuration.

1.3.2 ZeBu Server 3 Unit

The ZeBu Server 3 unit is the basic component of any ZeBu Server 3 system. The unit can act as the ZeBu Server 3 system in a single unit configuration or is a part of the ZeBu Server 3 system in a multiunit configuration. Each ZeBu Server 3 unit includes its own power block.

Each ZeBu Server 3 unit can handle designs from 60M to 300M ASIC-equivalent gates (exact capacity utilization is design and use case dependent). Up to 5 users can

connect to a unit at the same time.

Each ZeBu Server 3 unit also provides a Smart Z-ICE interface for connecting the DUT to a standard software debugger using a JTAG cable or to a target system. This interface and its usage are described in the *ZeBu Server User Guide*.

TABLE 1 ZeBu Server 3 Unit Characteristics

Weight			W x D x H including handles and feet	
ZeBu Server 5-slot unit	< 70 kg	< 155 lbs	50 cm X 50 cm X 51 cm	19.7" X 19.7" X 20.1"

1.3.3 ZeBu Server 3 Hub

ZeBu Server 3 Systems with more than 2 Units require one ZeBu Server 3 Hub

TABLE 2 ZeBu Server 3 Hub Characteristics

Weight			W x D x H including handles and feet	
ZeBu Server hub	< 10 kg	< 22 lbs	40 cm X 40 cm X 8.5 cm	15.7" X 15.7" X 3.3"

1.3.4 ZeBu Server 3 Racks

Synopsys recommends installing ZeBu Server units and Host PCs in separate racks. One rack holds three ZeBu Server 3 units or two ZeBu Server 3 units and one ZeBu Server 3 hub.

To ensure proper airflow from the top to the left side of your ZeBu Server, follow the cabinet requirements:

TABLE 3 Racks and Cabinet Recommendations

Cabinet Width	72 cm
Lateral Clearance	10 cm (4") on the right side for airflow

TABLE 3 Racks and Cabinet Recommendations

Front Clearance (for maintenance)	1 m (39.3")
Rear Clearance (for maintenance)	1m (39.3") - depends on lab organization and number of interconnection cables
Right Panel	Right panel must be perforated
Left Panel	Left panel must be solid

Note

- For a multiunit configuration, contact your Synopsys representative.
- For recommendations on suitable third-party racks, contact your Synopsys representative.
- For 5-slot units, the shelf must be carefully chosen to support the weight of the system.

1.4 Floor Space Requirements

The rack footprint varies according to the racks that you purchase. The following table lists typical dimensions for ZS3 racks.

TABLE 4 Dimensions of Rack (Typical)

	Cm	Inches	
External width	72		
External depth	100		
Height	212		
Lateral clearance	10	3.73"	On right side for airflow
Front clearance	100	39.3"	
Rear clearance	100	39.3"	

TABLE 5 Number of Racks for Each Configuration

Number of Units in System	1	2	3	4	5	6	7	8	9	10
Number of Racks	1	1	2	2	2	3	3	3	4	4

1.5 Electrical Power Supply

The ZeBu Server 3 has the following power supply features:

- [Uninterruptible Power Supply](#)
- [Characteristics of the Power Supply](#)
- [Power Consumption of ZeBu Server 3](#)
- [Power Cords of ZeBu Server 3](#)

1.5.1 Uninterruptible Power Supply

The whole server room must be equipped with an Uninterruptible Power Supply (UPS).

1.5.2 Characteristics of the Power Supply

Each ZeBu Server 3 power supply is protected by a 15 Ampere fuse and the input voltage range is 200-240 V, 50-60 Hz, single phase.

1.5.3 Power Consumption of ZeBu Server 3

The power consumption of the ZeBu Server 3 system depends on the following factors:

- Number of FPGAs in the system
- Number of FPGAs used by the DUT

- Fill rate and toggle rate of your DUT FPGAs
- Initial state of the design and the memory requirements
- Frequencies of the system clock and design clocks

The measurement of mean power provides variable results depending on the application. This measurement is always lower than the values given in the following tables:

TABLE 6 Maximum Power Consumption

ZeBu Server 3 Modules	Power Consumption
Empty 5-slot Chassis	300W
9F Module	350W
9F/ICE Module	400W

Example:

For a single-unit ZeBu Server 3 system with a 5-slot chassis and 5x9F modules, the maximum power consumption would be:

$300 + 5 \times 350 = 2050 \text{ W}$

In any case, the power consumption of your ZeBu Server 3 unit depends on the following:

- Number of FPGAs in the unit
- The number of used FPGAs for the DUT
- Fill rate and toggle rate of your DUT FPGAs
- Initial state of the design, the memory requirements
- System clock and design clocks frequencies

For a given application, the mean power measurement can give variable results, always lower than the values given in the preceding tables. However, the main supply must be chosen based on the maximum consumption.

1.5.4 Power Cords of ZeBu Server 3

Power cords are provided with ZeBu Server 3.

Cooling

There is one power cord for each unit and one for the rack.

TABLE 7 Number of Power Cords for Each Configuration

Number of units	1	2	3	4	5	6	7	8	9	10
Number of Power Cords	2	3	6	7	8	10	11	12	14	15

Each of these power cords must be connected to a separate 16 Ampere circuit.

Note

Prior to installation, you must ensure that the correct power cords are shipped for your premises. For more information, contact Synopsys support.

1.6 Cooling

The operating temperature is a critical point for ZeBu Server 3. For proper air circulation around ZeBu Server 3, Synopsys recommends installing it in an air-conditioned room with sufficient clearances on both left and right sides.

TABLE 8 Environmental Constraints

Operating ambient temperature	10°C to 20°C (50°F to 68°F)
Operating relative humidity	Up to 80% non-condensing
Cooling for a 5-slot unit	6,800 BTUs (for total power of 2 kW)
Cooling for a 2-unit system	14,200 BTUs (for total power of 4 kW)
Cooling for a 3-unit system	21,000 BTUs (for total power of 6 kW)
Cooling for a 4-unit system	27,00 BTUs (for total power of 8 kW)
Cooling for a 5-unit system	34,600 BTUs (for total power of 10 kW)
Noise generated by a 5-slot unit	80 dBA
Installation	Category II

TABLE 8 Environmental Constraints

Operating ambient temperature	10°C to 20°C (50°F to 68°F)
Pollution	Pollution degree 2
RoHS	Compliant with Directive 2002/95/EC

Airflow

It is required to make a 10 cm clearance on the right side of each ZeBu Server 3 rack.

2 Interconnection With Host PCs

This section describes the following subtopics:

- [Host Adapter Card](#)
- [Host Adapter Cable](#)
- [Numbers of Host PC](#)
- [Location Constraints](#)

Note

The connection of the ZeBu Server 3 units to the host PCs and interconnections between ZeBu Server 3 units are physically performed by an authorized Synopsys personnel.

Do not attempt to plug or unplug a cable to/from a unit. You can damage it.

2.1 Host Adapter Card

The host adapter card for ZeBu Server 3 is compliant with the PCI Express 2.0 standard. It is 8-lanes PCIe interface board, but only uses 4. It can fit into any 8- or 16-lane PCIe slot and in some 4-lane PCIe slot.

TABLE 9 External Dimensions of Host Adapter Card

	W x H
Host Adapter Card	16.8 cm x 11.2 cm 6.6" x 4.4"

2.2 Host Adapter Cable

The length of the host adapter cable is 3 meters (9.8 feet) (optionally 5 meters).

Note

The connection of the host adapter cable to the ZeBu Server 3 must only be performed by an authorized Synopsys personnel.

2.3 Numbers of Host PC

The maximum number of hosts is listed in the following table.

TABLE 10 Maximum Numbers of Host PCs

Configuration	Maximum Number of Concurrent Hosts/Users
1x 5-slot unit	5
2x 5-slot unit	9
3x 5-slot unit	14
4x 5-slot unit	19
5x 5-slot unit	24
6x 5-slot unit	29
7x 5-slot unit	34

TABLE 10 Maximum Numbers of Host PCs

Configuration	Maximum Number of Concurrent Hosts/Users
8x 5-slot unit	39
9x 5-slot unit	44
10x 5-slot unit	49

The number of host adapter cards equals the number of host PCs that you decide to connect to the ZeBu Server 3 system.

Note

Ensure that you order the right number of host adapter cards and Cables from Synopsys.

2.4 Location Constraints

Due to the limited length of the Host Adapter Cables, the racks containing the host PCs must be located close to the ZeBu Server 3 system.

3 PC Requirements

The ZeBu Server 3 hardware and software can be installed on most Linux-operated PCs.

Read this chapter before installing the ZeBu Server 3 software and hardware to ensure that the chosen PC is suitable for installation.

This section describes the following subtopics:

- [*General Requirements*](#)
- [*Host PCs*](#)
- [*Compilation PCs*](#)
- [*Hard Disk Requirements*](#)

3.1 General Requirements

The ZeBu Server 3 compilation and runtime software are 64-bit programs that can only be used on 64-bit PC configurations.

It is recommended to use only PC configurations that have been previously tested by Synopsys. If you use a PC configuration that has not been tested by Synopsys, you might encounter malfunction during installation and at runtime. In such a case, see the “*Troubleshooting*” section in the *ZeBu Server Software Installation Manual*.

Note

You must inform Synopsys if you want to use a PC configuration, which is not part of the list of PC configurations tested and recommended by Synopsys. It is important that Synopsys has enough time to test this new PC before you use it with ZeBu Server 3.

The list of recommended PC configurations for compilation and emulation runtime are listed in this chapter.

3.2 Host PCs

This section describes the following subsections:

- [PCIe Slots](#)
- [Suggested Machines for Emulation Runtime](#)
- [Numbers of Cores](#)
- [RAM Requirements for Emulation Runtime](#)
- [Cooling](#)
- [Operating System](#)



WARNING

The fan should be set at the maximum speed. It is usually done in the BIOS but in some cases (for example, SuperMicro), it has to be done by a user command.

3.2.1 PCIe Slots

The ZeBu Server 3 Host adapter card is plugged in a PCIe slot in the Host PC.

TABLE 11 Number of PCIe Slots in Host PCs

Number of units	2	3	4	5-10
Required number of PCIe slots in each Host PC	2	3	4	5

For debug purposes, use a PC with a RESET button to restart the system without powering OFF.

3.2.2 Number of Host PCs

You must have the same number of Host PCs as testbenches that might run simultaneously on your ZeBu Server 3 system. For more information, see [Numbers of Host PC](#).

3.2.3 Suggested Machines for Emulation Runtime

The following PCs have already been tested by Synopsys and are recommended for use with ZeBu Server 3:

- Dell
 - ❑ PowerEdge R620
- HP
 - ❑ HP Proliant DL360p, Gen8, and Gen9
 - ❑ HP DL580 Gen8
 - ❑ HP Z620, HP Z640
 - ❑ HP Z820, Z840
 - ❑ HP Z420, HP Z440

For the host PC, the ZeBu Server 3 emulation runtime software requires PC configurations with at least 4 cores. Additional cores are required when using advanced features or multithreaded verification environments.

Note

Some of the recommended models that are listed are available in various form-factors. Ensure that the form-factor can accommodate the ZeBu Server 3 host adapter card.

For large configurations, PC Hosts that can accommodate multiple ZeBu Server 3 host adapter cards are required.

The list of PCs can frequently be outdated based on the rapid market changes. You must do your research and ask Synopsys for feedback on their potential.

3.2.4 Numbers of Cores

The ZeBu Server 3 emulation runtime software is multithreaded. The number of threads depends on the type of testbench and the features used. It is recommended to use a host PC with a minimum of 8 cores.

3.2.5 RAM Requirements for Emulation Runtime

RAM requirements, when using ZeBu Server 3, vary based on the design size.

For emulation runtime, the host PC must have enough memory to load the runtime database. Synopsys recommends the following:

Design Size	FPGA Resources in the System	RAM Size for Runtime Database
60 MGates	1x 9F module	16/32 Gbytes
300 MGates	5x 9F modules	32/64 GBytes
1.5 BGates	5 units x (5x9F modules)	128 GBytes
3 BGates	10 units x (5x9F modules)	256 GBytes

Based on your verification environment (in particular for an HDL simulator) and the architecture of your testbench, you might need to increase the memory capacity to achieve the required performance.

3.2.6 Cooling

**WARNING**

The fan should be set at the maximum speed. It is usually done in the BIOS but in some cases (for example, SuperMicro), it has to be done by a user command.

3.2.7 Operating System

The ZeBu Server 3 software runs on Linux. Note that only a few variants of Linux are tested. To check the tested Linux version, see the latest *ZeBu Server Release Notes*.

3.3 Compilation PCs

This section describes the following subsections:

- [Suggested Machines for Compilation](#)
- [Farm Requirements](#)

3.3.1 Suggested Machines for Compilation

The following PCs are tested by Synopsys and are recommended for use with ZeBu Server 3:

- Dell
 - ☐ PowerEdge R620
 - ☐ PowerEdge R630
- HP
 - ☐ Proliant DL360p Gen8, and Gen9
 - ☐ Proliant DL380p Gen8, Gen9
- SuperMicro PCs
 - ☐ SYS-1028U-TR4+
 - ☐ SYS-6028R-TR

Note

The preceding information can frequently be outdated based on the rapid market changes. You must do your research and ask Synopsys for feedback on their potential.

3.3.2 Farm Requirements

For any ZeBu Server 3 configuration, it is recommended to compile the design in parallel on a PC farm with the memory requirements listed in the following table.

The ZeBu Server 3 compilation software consists of many components with different requirements. The software allows to send jobs on different compilation PCs depending on the component. It is recommended to use a grid engine to dispatch computing jobs.

3.3.2.1 Memory Requirements for ZeBu compilation

The following table provides memory requirements for compilation:

Design Size	FPGA Resources in the System	RAM Size for ZeBu Compilation
60 MGates	1x 9F module	32 Gbytes
300 MGates	5x 9F modules	64 GBytes
1.5 BGates	5 units x (5x9F modules)	128 GBytes
3 BGates	10 units x (5x9F modules)	256 GBytes

3.3.2.2 Memory Requirements for FPGA Place and Route

For FPGA Place and Route software, to avoid swapping when compiling one FPGA, Xilinx Vivado and Triton Placer for Vivado requires 16 GB RAM.

3.3.2.3 How to Determine the Number of Compute Servers for Compilation

The following example shows the breakdown for a 15-module design.

Number of Threads Calculation

- 15 modules x 9 FPGAs = 135 FPGAs
- 135 FPGAs x 4 threads = 540 concurrent jobs

Estimation of Number of Servers

Assuming each server has 16 cores with each running 2 threads: 32 threads:

- Number of servers = $540 / 32 \approx 17$ machines

Vivado Memory Requirements

Each Vivado job is expected to take 16GB independently of the number of threads and uses 4 threads. A 32-thread machine accommodates 8 concurrent Vivado jobs and requires at least 128GB RAM (256GB suggested).

Note

If your computing farm allows for more fine tuning, contact Synopsys support for more detailed information.

Actual data is design-dependent.

3.4 Hard Disk Requirements

This section describes the following subsections:

- [*Hard Disk Requirements for Installation of Software Package*](#)
- [*Hard Disk Requirements for Configuration Directory*](#)
- [*Hard Disk Requirements for Design Compilation*](#)

3.4.1 Hard Disk Requirements for Installation of Software Package

The ZeBu Server 3 software, including the specific Xilinx Place and Route subset, and the additional packages require a maximum of 52 GB on your hard disk after installation.

In addition, VCS requires 10 GB and Verdi requires 12 GB.

The overall size recommended for your hard disk to install the ZeBu Server 3 software is larger, due to the temporary data stored during installation.

This disk space must be accessible from host PCs and Compilation PCs.

3.4.2 Hard Disk Requirements for Configuration Directory

The ZeBu Server 3 software uses a central directory to store information about the configuration of the system and to store log files.

This disk space must be accessible from host PCs and Compilation PCs.

3.4.3 Hard Disk Requirements for Design Compilation

When compiling the design for ZeBu Server 3, the estimated necessary disk space is about 1GB for each FPGA.

This disk space must be accessible from host PCs and compilation PCs.

4 End-User Operations

This chapter provides information on the hardware operations that might be performed by customers.

Hardware installation (or upgrade) of a ZeBu Server 3 unit must be performed by a Synopsys personnel. In addition, the ZeBu Server 3 unit must not be moved without explicit authorization of a Synopsys personnel.

Only the following operations might be performed without the presence of Synopsys personnel:

- *Switching the Power ON and OFF for ZeBu Server 3*
- *Installing the ZeBu Server 3 Host Adapter in a Host PC*
- *Removing the ZeBu Server 3 Host Adapter From a Host PC*
- *Connecting the ZeBu Server 3 Cable to the Host PC*
- *Connecting ZeBu Server 3 Units to the Power Supply*

4.1 Switching the Power ON and OFF for ZeBu Server 3

Each ZeBu Server 3 contains several power supplies, from 1 to 15, depending on the number of units. To power on or off the ZeBu Server 3 system, use the power switch (ON/OFF) of every ZeBu Server 3 unit in the system.

4.2 Installing the ZeBu Server 3 Host Adapter in a Host PC

Safety Note

Installation of the host adapter must be performed by a trained personnel (with sufficient knowledge and training, and suitably equipped). Especially, the host PC and the power socket outlet must be switched OFF (wherever possible), and then the power cord must be removed BEFORE you attempt to install the host adapter inside a host PC.



Electricity can kill. Even non-fatal shocks can cause severe and permanent injury. Voltages inside the host PC are POTENTIALLY LETHAL.

The host adapter can become very hot.

To install the ZeBu Server 3 Host Adapter in a host PC, perform the following steps:

1. Remove all jewelry from your hands and wrists.
2. Use only insulated or non-conducting tools.
3. Switch OFF the PC and then switch OFF the power socket (if possible).
4. Unplug the power cord connected to the PC.
5. Wait for 10 to 20 seconds to allow voltage levels inside the PC to fall.
6. Remove the cover from the PC.
7. Remove the slot-cover from a vacant, unshared bus-mastering PCIe slot and save the screw.
8. Carefully insert the Host Adapter in the PCIe slot.

Removing the ZeBu Server 3 Host Adapter From a Host PC

9. Secure the Host Adapter in place using the slot-cover screw removed in [step 6](#).
10. Replace the PC cover.
11. Reconnect the power cord to the PC.

NOTE: *The Host Adapter is powered from the PCIe bus and the white power connector on the board MUST NOT be connected directly to the PC power supply.*

4.3 Removing the ZeBu Server 3 Host Adapter From a Host PC

Safety Note

Installation of the host adapter must be performed by a competent personnel (with sufficient knowledge and training, and suitably equipped). Above all, the host PC and the power socket outlet must be switched OFF (wherever possible), then the power cord removed BEFORE you attempt to install the host adapter inside a host PC.

**WARNING**

Electricity can kill. Even, non-fatal shocks can cause severe and permanent injury. Voltages inside the host PC are POTENTIALLY LETHAL.

The host adapter can become very hot.

To remove the host adapter from a host PC, perform the following procedure:

1. Remove all jewelry from your hands and wrists.
2. Use only insulated or non-conducting tools.
3. Switch OFF the PC and then switch OFF at the power socket (if possible).
4. Unplug the power cord connected to the PC.
5. Wait for 10 to 20 seconds to allow voltage levels inside the PC to fall.
6. Check and write down the cabling between the host PC and the unit. This facilitates your next installation.
7. On the host PC, unplug the cables from the host adapter.
8. Remove the cover from the PC.
9. Unmount the host adapter carefully.

4.4 Connecting the ZeBu Server 3 Cable to the Host PC

You might need to connect or disconnect one ZeBu Server 3 cable on the host adapter while replacing a host PC in your system.

The connection of the ZeBu Server 3 cables to the ZeBu Server 3 units is performed by an authorized Synopsys personnel.

End-users are only allowed to connect the ZeBu Server 3 cables to the host PCs.

There is no need for tools to connect/disconnect the cables on the host adapter.

To connect the ZeBu Server 3 cable to a host PC:

1. Check that the ZeBu Server 3 units are already switched OFF and unplugged.
2. Switch OFF the host PC.
 - a. Unplug the PC's power cord.
 - b. Wait for 10 to 20 seconds to allow voltage levels inside the PC to fall.
3. If necessary, plug the Host Adapter in the new host PC as described.
4. Connect the cable to the connector of the Host Adapter located nearest the PCIe bus.
 - a. For a good connection, the connector should be correctly locked.
 - b. The connector can be inserted both ways up.

You can insert its full length and hear the locking click only when inserting it the correct way up.

4.5 Connecting ZeBu Server 3 Units to the Power Supply

Note

Changing the fuse in a ZeBu Server 3 unit is not an end-user operation.

There is one power cord for each ZeBu Server 3 unit plus one for the ZeBu Server 3 hub, and one for each rack to power the fans.

Ensure that the main socket and the ZeBu Server 3 units are all switched OFF (panel switch position on the ZeBu Server 3 units = O).

Select the appropriate cord and connect it as follows:

1. Connect the power cords to the respective ZeBu Server 3 units.
2. Connect the power cords to the mains socket.
3. Switch ON the mains socket.
4. Switch ON the ZeBu Server 3 units (panel switch position = I).

You can now switch ON the host PCs connected to ZeBu Server 3 units and initialize the ZeBu Server 3 system from the relevant PC.

For more information, see chapters *ZeBu Server System Setup* and *Initializing the ZeBu Server System* sections in the *ZeBu Software Installation Manual*.

