



Installation Guide

SAP NetWeaver 7.0 BI Accelerator

Target Audience

- System administrators
- Technology consultants

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Icons in Body Text

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Additional icons are used in SAP Library documentation to help you identify different types of information at a glance. For more information, see *Help on Help → General Information Classes and Information Classes for Business Information Warehouse* on the first page of any version of *SAP Library*.

Typographic Conventions

Type Style	Description
<i>Example text</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation.
Example text	Emphasized words or phrases in body text, graphic titles, and table titles.
EXAMPLE TEXT	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example text	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
Example text	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

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Installing SAP NetWeaver 7.0 BI Accelerator

Purpose

This guide describes how you install a *SAP NetWeaver 7.0 BI accelerator* system with the installation script. The installation script installs the BI accelerator instance, clones it to all blades and configures the RFC connection to the *SAP NetWeaver 7.0 Business Intelligence (BI)* system. The target audience for the guide is the hardware partner that provides the BI accelerator system.

The guide is structured as follows:

- The section [BI Accelerator Concepts and Architecture \[Page 6\]](#) describes the concept of BI accelerator and the connection to the BI system.
- The section [Naming Conventions \[Page 6\]](#) contains information on special naming conventions for this guide.
- The section [Documentation and SAP Notes for BI Accelerator \[Page 19\]](#) lists the documentation that you need for the installation.
- The section [Installation Planning \[Page 9\]](#) describes the steps that have to be done before the installation.
- The section [Installation \[Page 22\]](#) describes the installation steps in detail.

Introduction

SAP NetWeaver 7.0 TREX is the underlying engine for the BI accelerator. BI accelerator is part of the scenario variant *Running a Data Warehouse, Process Performance Optimization* which belongs to the IT scenario Enterprise Data Warehousing. For details see the *SAP NetWeaver 7.0 Master Guide* on SAP Service Marketplace

service.sap.com/instguidesNW70.

A TREX aggregation engine for processing structured business data is powering these capabilities. The data of the BI InfoCubes are replicated to the TREX engine and are stored as TREX indices. The BI accelerator clearly reduces the response time, specially for large data volumes.



You can use BI accelerator only in connection with the *SAP NetWeaver 7.0 BI* starting with *SAP NetWeaver 7.0 Support Package Stack (SPS) 5*. BI accelerator is a special Linux 64 bit version of *SAP NetWeaver 7.0 Search and Classification (TREX)* which is delivered on preconfigured hardware.

You can **not** use BI accelerator for the regular TREX search and classification functionality!



Naming Conventions

The following naming conventions are valid for this documentation:

Terminology

Term	Meaning
AS ABAP	SAP NetWeaver 7.0 usage type Application Server ABAP.

Variables

Variable	Meaning
<SAPSID>	SAP System ID in uppercase letters
<sapsid>	SAP System ID in lowercase letters
<TREX_DIR>	Installation directory for the BI accelerator system on the file server.
<DVD_DIR>	Directory under which you mount the DVD.
<OS>	Name of the operating system in a path.
User <sapsid>adm	Operating system user that you log on with to administrate the BI accelerator system.

Commands

A command line that is separated into several lines in this documentation has to be entered as one line when you execute the command.



BI Accelerator Concepts and Architecture

BI Accelerator Concepts

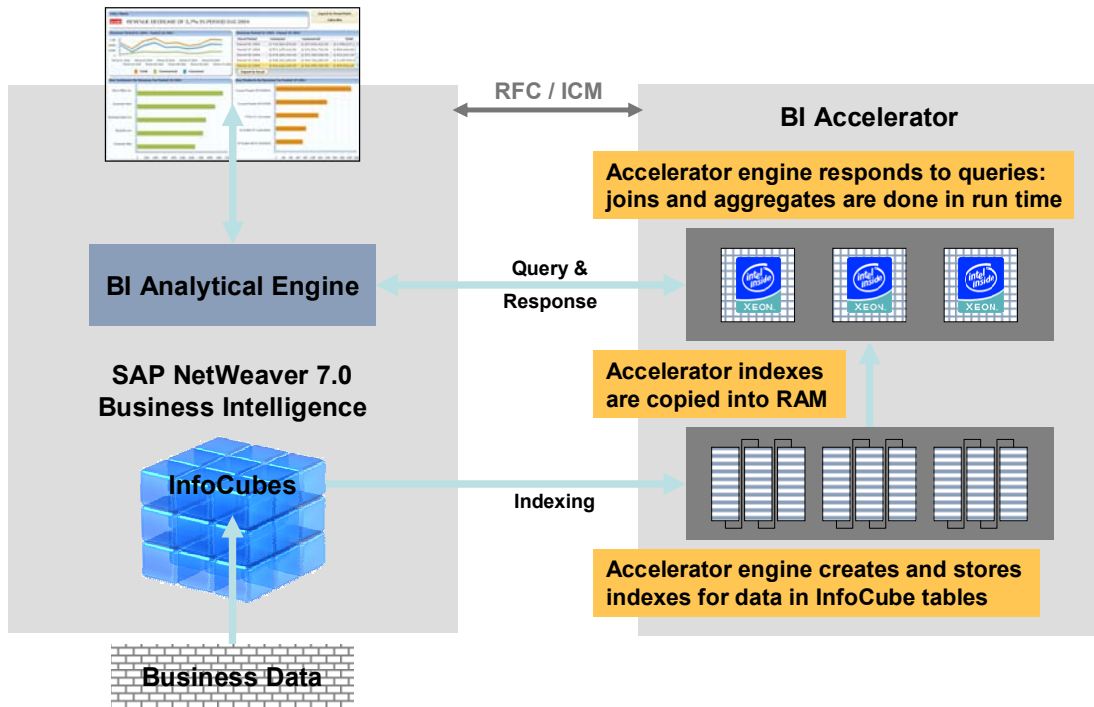
The BI Accelerator is a new approach for enhancing SAP NetWeaver BI performance based on SAP's search and classification engine TREX, and on preconfigured hardware delivered by SAP hardware partners. It is packaged as an appliance for use with SAP NetWeaver Business Intelligence (BI) and provides enhanced performance for online analytical processing in an Enterprise Data Warehousing IT scenario.

A TREX aggregation engine for processing structured business data provides enhances this performance. The data from the BI InfoCubes is indexed in the BI Accelerator and stored as TREX indexes in its storage subsystem. The BIA indexes are loaded into memory and used to answer OLAP queries entirely in memory. The BI Accelerator clearly reduces the response time, specially for large data volumes. SAP NetWeaver BI customers adopting the BI Accelerator can expect significant improvements in query performance through in-memory data compression and horizontal and vertical data partitioning, with near zero administrative overhead. Since the BI Accelerator is delivered to the customer as a preinstalled and preconfigured system on dedicated hardware as BI Accelerator box the installation and initial configuration has been done by the hardware partner and no additional administrative tasks needed to be done by the customer for the first usage of the BI Accelerator. This

documentation describes additional administrative tasks that are possible for optimizing and monitoring the BI Accelerator.

BI System and BI Accelerator

The following graphic depicts the BI Accelerator architecture and its relationship with the BI system:



For more information about BI systems and BI Accelerator landscapes, see [BI Accelerator Local Area Network Landscape \[Page 13\]](#) and [BI Accelerator Environment \[Page 15\]](#).

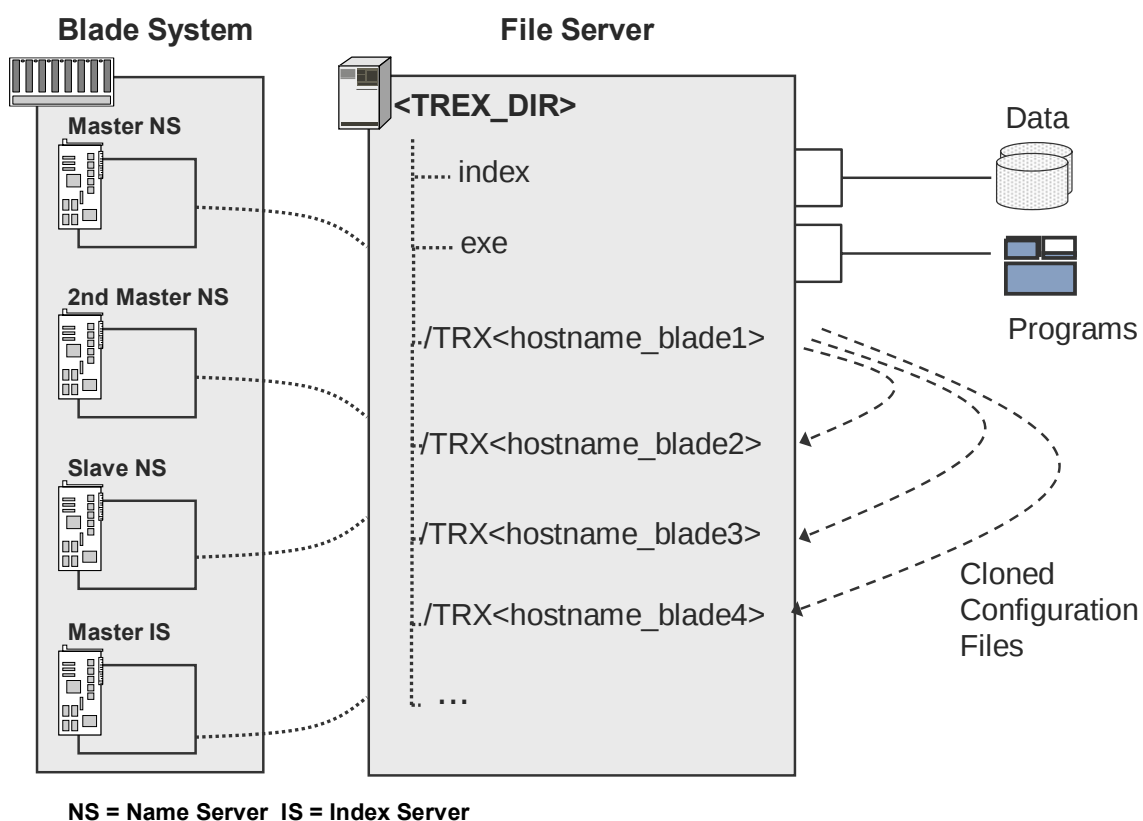
The BI Accelerator is installed on a preconfigured blade system. A blade system consists of hosts in the form of server blades. The server blades are connected to central disk storage. This is referred to here as a file server, regardless of the underlying hardware.

The special feature of a BI Accelerator installation on a blade system is that the BI Accelerator software can be stored centrally as well as the BI Accelerator data. This means that the software will be installed only once on the file server. Maintaining the system is efficient because you only have to implement software updates once.

All server blades on which BI Accelerator is running access the same program files. However, each server blade has its own configuration files. The configuration files in the directory <TREX_DIR> are only used as templates. A script creates a separate subdirectory for each server blade and copies the configuration files to this subdirectory.

BI Accelerator Architecture

The following graphic depicts how data, programs, and configuration files might be stored in a BI Accelerator blade system and the corresponding storage device..



Checklist

Purpose

The BI accelerator installation has three installation steps, one RFC configuration step and final steps. Refer to the following section as follows:

- **Installation**
Starting an installation or resuming a BI accelerator installation that has been paused after step 1 or 2.
- **RFC Configuration**
Resuming a BI acceleration installation that has been paused after step 3.

Installation

Installation Planning

✓	Action
	Check the hardware and software requirements [Page 9] .
	Check the required documentation [Page 19] .

BI Accelerator Installation

✓	Action
	Installation preparation [Page 20]
	Start Installation [Page 22]
	BI accelerator installation: Step 1 [Page 24]
	BI accelerator installation: Step 2 [Page 26]
	BI accelerator installation: Step 3 [Page 27]
	RFC configuration: Step 4 [Page 28]
	Final Steps [Page 30]

RFC Configuration

Configure RFC Connection to the BI System

✓	Action
	Start RFC Configuration
	RFC configuration: Step 4 [Page 28]
	Final Steps [Page 30]



Installation Planning

Purpose

The following sections contain information that is relevant for the installation planning.



Hardware and Software Requirements

The tables below contain the hardware, network and software requirements for the BI accelerator box.

BI Accelerator

Hardware Requirements

Requirement Type	Requirement
Memory size of RAM	16 GB Multiple Core / 8 GB Single Core for every blade
File server	The file server has to be configured as follows: BI accelerator all box sizes: HP system: OCFS IBM system: GPFS

BI accelerator box	Use mount to mount the directory myGlobalFileShare on all blade systems.
--------------------	--

Network Requirements

Requirement Type	Requirement
Network speed	The network speed between the BI system and the BI accelerator box is to be a dedicated 1 GBit or faster.
Network configuration	It is mandatory to have the BI accelerator and the BI Application Server in a private subnet. Otherwise the full BI accelerator performance can not be guaranteed. For more information see, BI Accelerator Local Area Network Landscape [Page 13]

Software Requirements

Requirement Type	Requirement
Operating System	SUSE SLES9 64Bit (IBM) / SUSE SLES10 64Bit (HP) – latest SP
Host name	The host name must be specified in lower case characters, start with a letter and end with a numeric character.  Valid host names : biaccelerator1 biaccelerator100 Invalid host names : biaccelerator BIaccelerator100 bia0001.wdf.sap.corp
Operating system settings	SAP provides the sysctl.conf configuration file to set the property kernel.shmmax to value 2147483648.  Line in configuration file /etc/sysctl.conf : kernel.shmmax = 2147483648 Copy the sysctl.conf configuration file to folder /etc.

Open Files	Use command ulimit -all to get a list of the user limits. The parameter <code>open files</code> must have a value not less than 8000.  Result of command ulimit -all with valid parameters: <pre> core file size (blocks, -c) 0 data seg size (kbytes, -d) unlimited file size (blocks, -f) unlimited max locked memory (kbytes, -l) 3403008 max memory size (kbytes, -m) 6887040 open files (-n) 8192 pipe size (512 bytes, -p) 8 stack size (kbytes, -s) 8192 cpu time (seconds, -t) unlimited max user processes (-u) 69119 virtual memory (kbytes, -v) 23259120 </pre> If the value for <code>open files</code> is smaller than 8000, add the following lines in the file <code>/etc/security/limits.conf</code>: <pre> * soft nofile 8000 * hard nofile 8000 </pre> Copy the modified file <code>/etc/security/limits.conf</code> to the other blades of the BIA system.
Other packages	SAP provides packages that have to be installed on the BI accelerator system and a description how to configure ssh.

BI System

Software Requirements

Requirement Type	Requirement
Version	<i>SAP NetWeaver 7.0 Business Intelligence (BI) SP5 or higher</i>
Connection data	You have to know the following parameters of your BI system: • SAP system name and number • Application server host name • Client • Username and password



BI Accelerator System Check

Use

The *checkBIA* script executes a BI accelerator system check which evaluates the general settings of the BI accelerator and gives a detailed status report. The *checkBIA* script can be used before the installation of the BI accelerator as well as during operation of the BI accelerator. It checks the BI accelerator hardware and the BI accelerator software when it is installed. The script checks the following features:

- Hardware vendor, processor type and memory size
- Hardware name and operating system
- Filer size and usage
- System settings, like open files limit and currently open files
- Network throughput and filer performance
- RFC connection and BI application server availability
- Basic functionality of BIA

Starting BI Accelerator System Check

The start of the BI accelerator system check depends on the installation state of the BI accelerator.

Start BIA System Check if BI Accelerator not Installed

1. Open a shell on a blade.
2. Go in the folder of the installation script (install.sh) and enter the following command and finish the input with the <Enter> key.

```
checkBIA.sh
```

Start BIA System Check if BI Accelerator already Installed

1. Open a shell on a blade.
2. Go to the python support folder with the following commands. Finish the input of a line with the <Enter> key.

```
./TREXSettings.sh
```

```
cd /usr/sap/<sapsid>/TRX<instance>/exe/python_support
```

3. Start the script with the following command and finish the input with the <Enter> key.

```
python checkBIA.py
```

Start BI Accelerator system check on BI system side

The BI Accelerator system check can also be started from the BI system by starting the transaction **RSDDBIAMON2** (*BI Accelerator Monitor*) from the BI system:

1. Start the transaction RSDDBIAMON2 (BI Accelerator Monitor) in the BI system which uses the BI accelerator.
2. Press the button *System Check* or choose *BIA Checks* → *System Check* in the navigation pane to start the BIA system check.

The BIA system check will be executed as part of the *simple functionality test for BIA index*.

Both BIA system check results are display in the *Log Display* screen.

Result

The *checkBIA* script generates a list of the checked features with a result of the check and log file. The status of a check can be:

- INFO
Only displays information about feature, setting, parameters, and values.
- OK

Feature or setting check is OK. No action necessary.

- Warning

Feature or setting needs attention. You can continue with the installation or operation but must take care of the feature as soon as possible.

- Error

Feature or setting does not meet the requirements and needs immediate attention.

For a detailed description of all BI accelerator system check messages see [BI Accelerator System Check Messages \[Page 31\]](#).

Log File

In addition to the screen output the *checkBIA* script creates a log file and stores the log file in an archive. The location and the name of the log file and the archive is displayed at the end of the screen output.



...

OK: Stored report: /tmp/checkBIA_report.txt

OK: Archived: /tmp/checkBIA_report.gz



Attach the log file to any support message you send to SAP or your hardware partner.



BI Accelerator Local Area Network Landscape

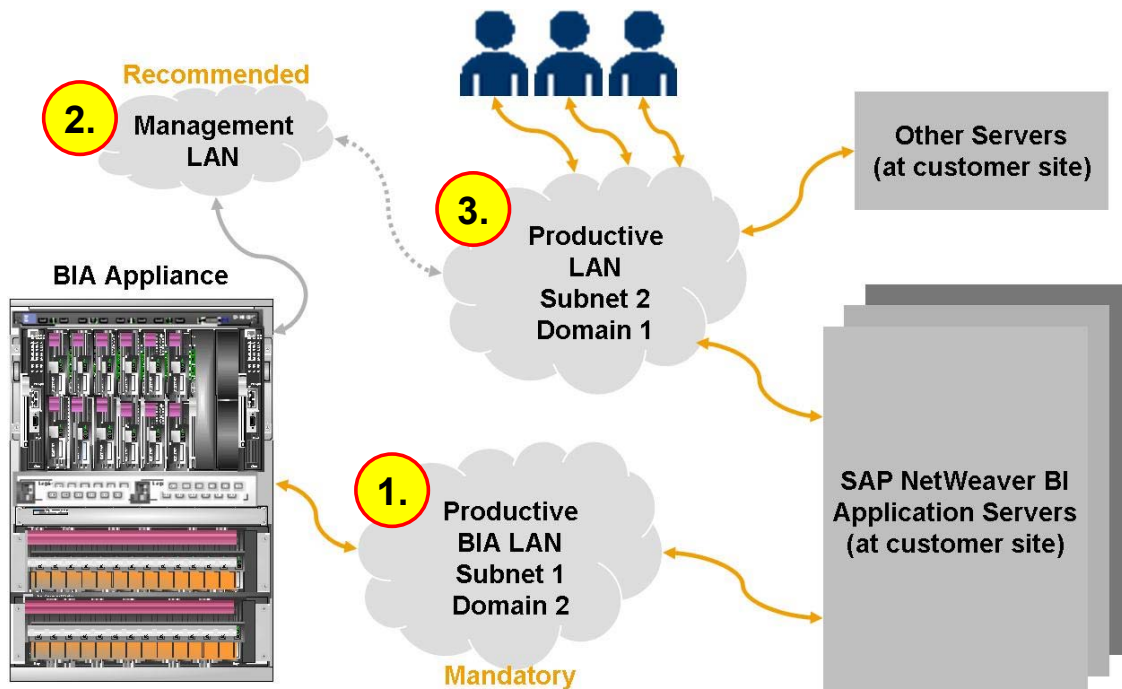
The BI system and the BI Accelerator are both part of several networks on the customer side. However, it is mandatory to have the BI Accelerator and the BI system in a dedicated subnet of their own. Otherwise, full BIA performance cannot be guaranteed.



The number of hops between the BI system and the BI Accelerator should be as low as possible. SAP strongly recommends a maximum of one network hop between the BI system and the BI Accelerator. Note that every hop bears a potential performance risk, since it can be accessed from other systems quite heavily at certain times, and this access is not covered by the BIA system check or other BIA tests.

The following graphic depicts the different local area networks in a productive BI and BI Accelerator landscape:

BI Accelerator Local Area Network Landscape



1. Productive BIA LAN

This LAN must be used exclusively for the connection between the BI system and the BI Accelerator. It is mandatory to have the BI Accelerator and the BI system together in a dedicated subnet of their own. Otherwise, full BIA performance cannot be guaranteed.

There has to be a dedicated LAN connection between the BI system as logical unit on the one hand and the BI Accelerator as a logical unit on the other hand. The network reachability between every BI application and every BI Accelerator blade must be guaranteed. This connection should **not** be established between each BI application server and the BI Accelerator, since a local gateway should be used.

2. Management LAN

This LAN is recommended for support purposes, so that the BI Accelerator can be accessed using this network exclusively for administration purposes and for monitoring problems.

3. Productive LAN

This LAN represents the productive main network of which the productive BI system is part and that can be connected to other servers of the customer landscape as well. All BI users can access the BI system using the LAN.



The network speed between the BI system and the BI Accelerator box must be 1 Gbit (dedicated) or faster.



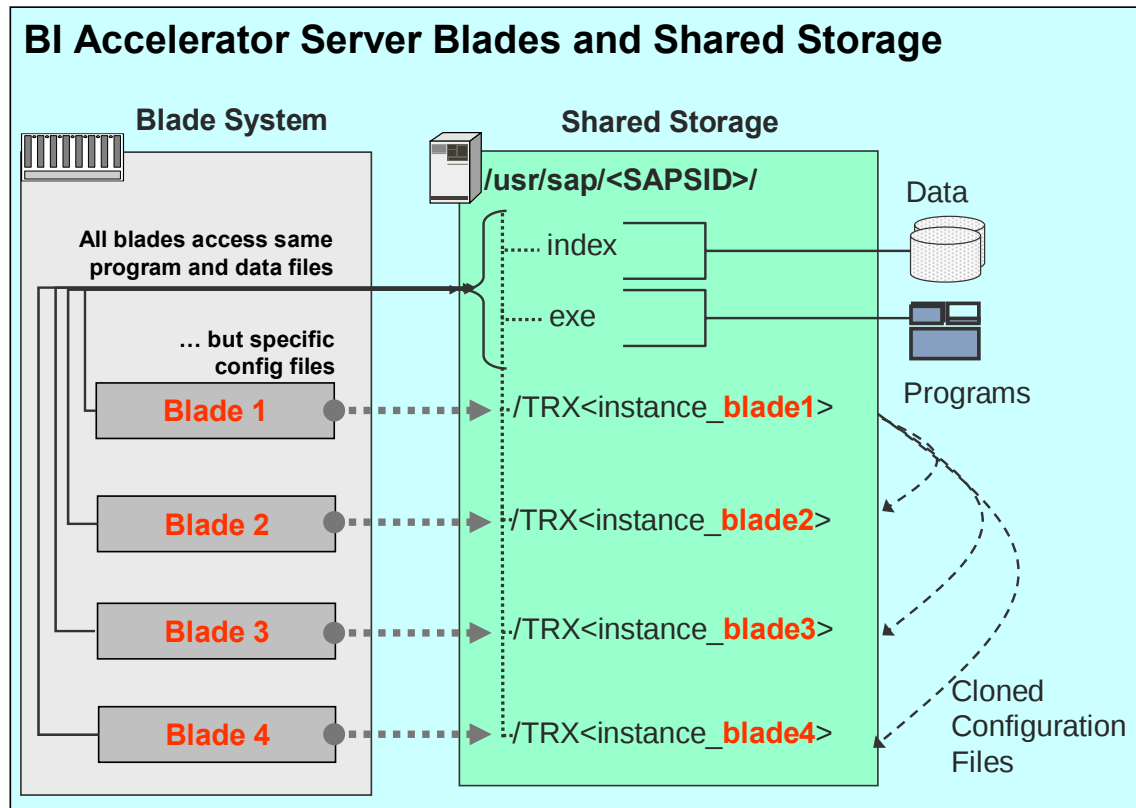
BI Accelerator Environment

Purpose

This section describes the recommendations, constraints, and technical possibilities for using several BI Accelerator landscapes in one or more physical racks. It describes the recommended and supported BIA landscapes for a development, testing, and productive scenario.

Terminology

Term	Definition
BIA landscape/ BIA installation (Software)	A BIA landscape is a BIA installation on a shared storage (e.g. file server) that is used by server blades. The server blades are connected to the shared storage and each server blade uses its own configuration files that are stored in a specific subdirectory on the shared storage. The BIA installation is a logical unit which has a SAPSID and a directory named <code>/usr/sap/<SAPSID>/TRX<instance_number></code> All server blades, on which the BI Accelerator is running, access the same program files. During the BIA installation the configuration files of the initial installation are used as templates. A script creates a separate subdirectory for each server blade and copies the configuration files to this subdirectory.
Rack (Hardware)	A rack consists of several blades. Blades are technically aggregated in groups of blade enclosures (HP), blade centers (IBM), and the BladeFrames solution PRIMERGY BX620 (Fujitsu-Siemens). In this document, the description of BIA landscapes is independent of the aggregation of blades.
SAN (Hardware)	Storage area network



Constraints and Recommendations

Constraints

- Only one BIA installation on one blade system

You can deploy only one BIA installation (landscape) on the blades of a blade system (blade rack). You are not allowed to implement more than one BIA installation per blade system.

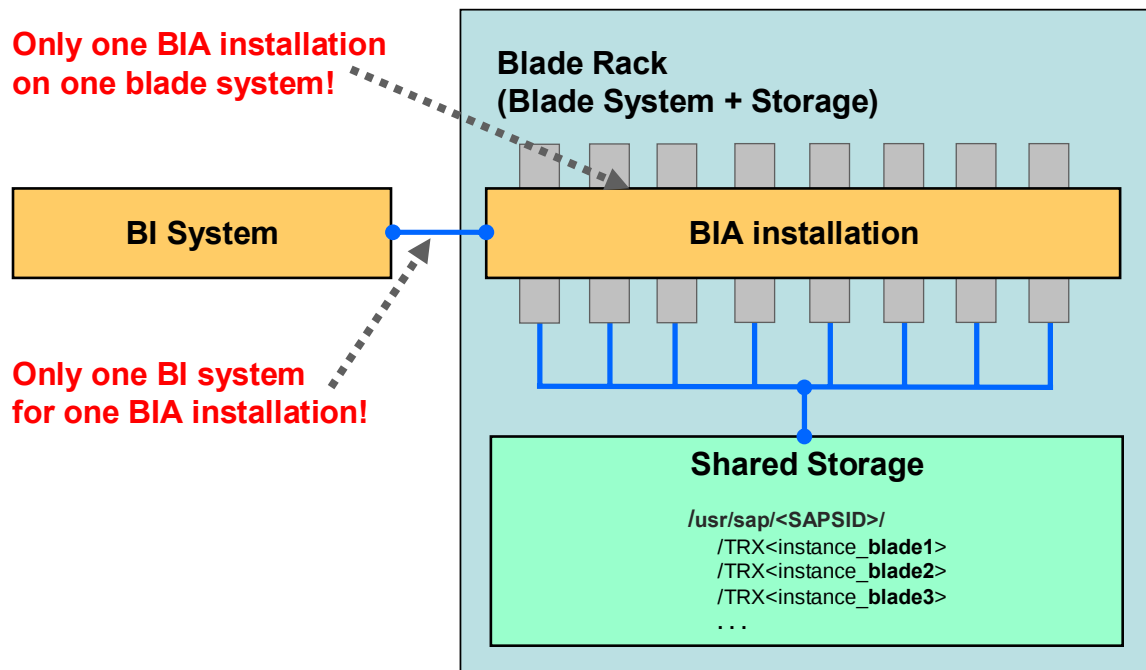


This is the most important constraint for using BIA installations in an effective and high-performance manner.

- Only one BI system for one BIA installation

You can only connect one BIA installation (landscape) to one BI system. You are not allowed to connect more than one BI system to a BIA installation. There is a 1:1 relationship between the BI system and the BIA installation.

Productive BIA System: One BI Accelerator installation with one BI System



- Maximum number of blades in a BIA landscape.

The number of blades in a BIA landscape is restricted to a specific number (for example, 28 or 32). For the specific number of blades of the hardware you are using, please contact your hardware partner. Exceptions are possible with the permission of SAP Active Global Support (AGS).

- Installation of new BI Accelerator instances

- Productive BIA system

On a productive BI Accelerator system the customer should not deploy additional BI Accelerator installations. Note that only one BI Accelerator installation is allowed for each blade system. It is not allowed to implement several BIA installations on a blade system (blade rack).

- BIA test system

On a BI Accelerator test system the customer is allowed to deploy additional BI Accelerator installations.

- No customer-specific SAN storages may be used.

Currently the usage of a customer-specific SAN storage for a BIA customer is not supported. Exceptions are possible with the permission of SAP Active Global Support (AGS).

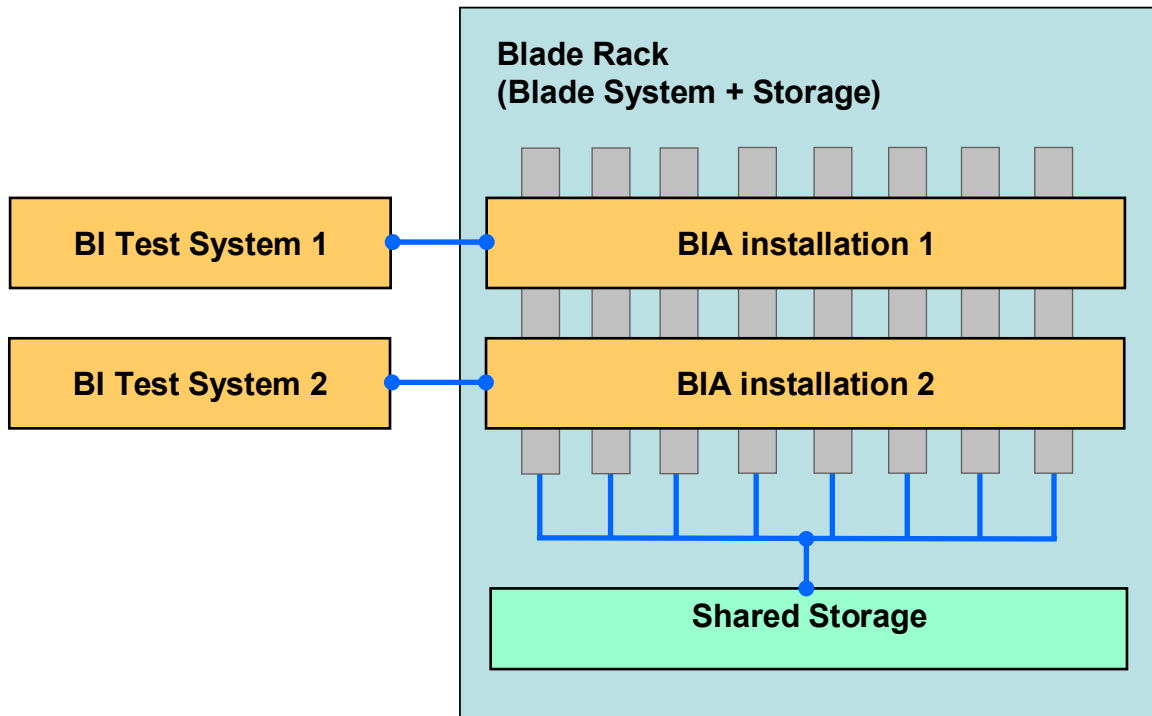
Recommendations (Best Practice)

- BIA test and productive system

Customers should not run development and testing landscapes on the same racks as the productive landscape, since this may cause severe performance problems.

- BIA test system
 - On the hardware of a BIA test system several disjunctive BIA software installations (not BIA instances) can be deployed. Each of these disjunctive BIA installations differ regarding their SAPSID and are allowed to be connected only to one and only one BI system.

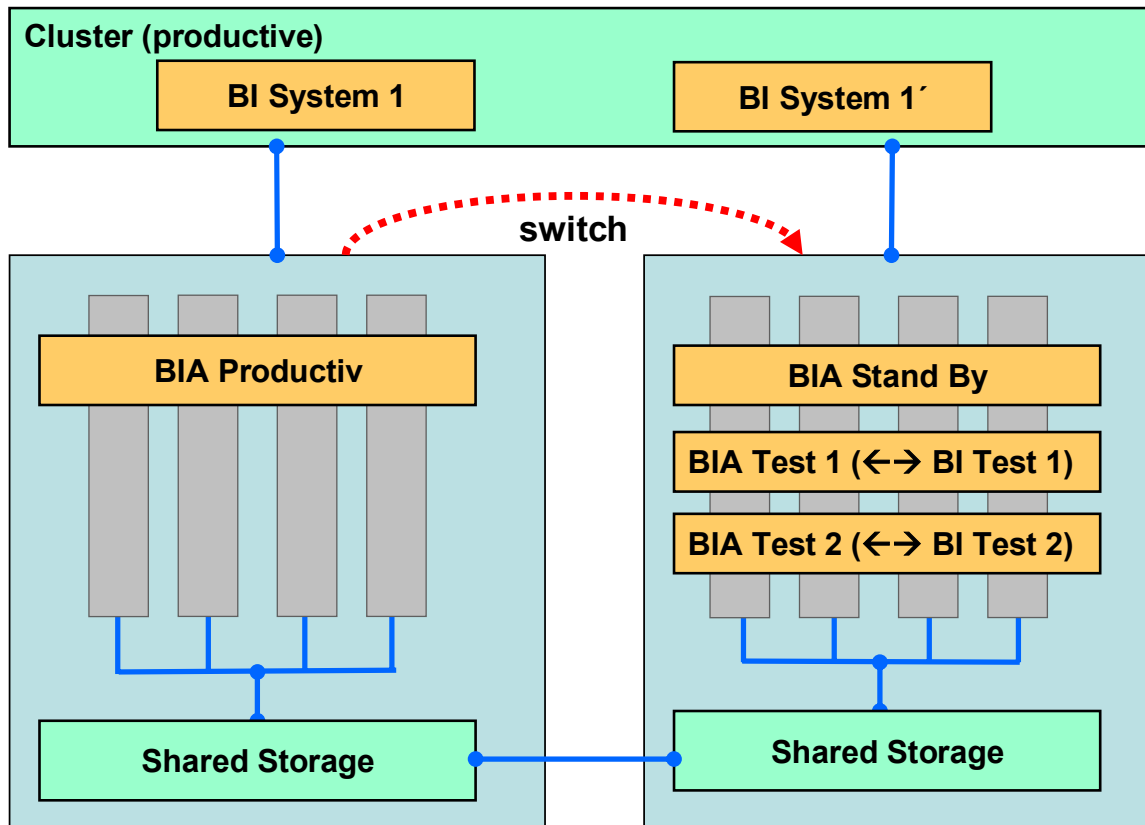
BIA Test System only: Two BI Accelerator installations with two BI Systems



- The minimal configuration for a BI Accelerator test landscape can consist of only one blade for testing purposes. You can use several BI systems with one BI Accelerator in a test landscape. However, this is not recommended for a productive scenario.
- Productive BIA system

In a productive scenario, a one-to-one relationship is needed between the BI system and the BIA. On the hardware of a productive BIA system one and only one BIA software installation is allowed to be deployed. This BIA software installation is allowed to be connected only to one and only one BI system. In addition, the use of more than one BI system with one BI Accelerator was not part of the original BIA concept (performance, distribution of data, possibility of restarting the BIA), since it does not allow the synchronization of data across several BI systems.

Productive BIA System (Planned/Future)



After the switch over the test system must be shut down.

Supported BIA Environments

- The usage of different CPU type (*Irwindale*, *Woodcrest*, and *Clovertown*) based blades is supported.
- The BIA sizing remains unchanged. The initial hardware sizing of the BI Accelerator to be implemented is carried out by the SAP hardware partner based on the input provided by the BI customer. The values and parameters needed to estimate the hardware sizing are requested from the customer by means of the SAP sizing report for the BI Accelerator.



For more information, see [SAP Note 917803 Estimating the memory consumption of a BIA index](#).



Documentation and SAP Notes for BI Accelerator

To keep the BI Accelerator up-to-date, you have to check the SAP Service Marketplace for the latest Support Package. The SAP Notes contain the most up-to-date information and corrections for the documentation.

Documentation

- [Performance Optimization with BI Accelerator](#)
- BI Accelerator on SAP Developer Network (SDN) <https://www.sdn.sap.com/irj/sdn/bia>.

SAP Notes for BI Accelerator

Make sure that you use the current version of the SAP Notes. The SAP Notes can be found in the SAP Service Marketplace at service.sap.com/notes.



Note that you need a SAP Service Marketplace (SMP) user to access the links in the SAP note list below.

TREX SAP Notes for BI Accelerator

875400	BIA 7.0: Install SAPNetWeaver 7.0 BI accelerator
883725	BIA 7.0: Updating SAP NetWeaver 7.0 BI accelerator
883726	BIA 7.0: Central Note SAP NetWeaver 7.0 BI accelerator
893498	BIA 7.0: Creating a client trace for the BI Accelerator
902533	BIA 7.0: HowToGuide Connecting/Operating BI Accelerator Box
917803	BIA 7.0: Estimating the memory consumption of a BIA index (Sizing Report)
979609	BIA 7.0: Move a BIA box from Test to Production Environment
984034	BIA 7.0: BI Accelerator High Availability
992064	BIA 7.0: System Check
997772	BIA 7.0: Shared Memory Problem
1002839	BIA 7.0: Error due to huge resultset of query
1010267	BIA 7.0: Questionnaire and Sizing Sheet
1023843	BIA 7.0: Improving indexing performance
1051100	BIA 7.0: Reduce Number Parts per Blade – Performance
1091088	BIA 7.00: How to activate ICM

BI SAP Notes for BI Accelerator

940635	BIA High Availability: DB fallback for BIA
959565	Activating and filling a BIA index as a process type
970771	BI accelerator monitor messages to CCMS
1016781	BIA indexing performance with unequal data distribution
1018798	Reading large data volumes from BI accelerator
1027176	Restricted support of BIA index in BCS reporting
1044015	Check whether all data has arrived in the BIA
1052941	Creating shadow indexes in SAP NetWeaver BI Accelerator
1055071	BIA index for FLOAT key figure with rounding errors



Installation Preparation

Purpose

The following sections describe the steps you carry out before the BI accelerator installation



Creating a SAP System User for the TREX Admin Tool (Stand-Alone)

Use

You must create an SAP user that the TREX admin tool (stand-alone) can use to log on to the SAP system. In addition, the SAP user is required so that the TREX alert server has permission to regularly test and check the RFC configuration. When doing this, the user can have been created in the default client or in another client. In this case, make sure that you enter the associated client for the user during the configuration of the RFC connection in the TREX admin tool.

The TREX admin tool (stand-alone) is used to configure and monitor TREX. You also use this admin tool to configure the RFC connection between TREX and the ABAP application that is using TREX. To use the TREX admin tool (stand-alone) to create the RFC destination, the admin tool requires an SAP system user that you create based on the predefined role SAP_BC_TREX_ADMIN. This user then has the authorization required to configure the RFC connection.



For more information on the SAP_BC_TREX_ADMIN role, see SAP Note 766516.

Overview of the Permissions Assigned by the SAP_BC_TREX_ADMIN Role

Type and Scope of the Permission	Activity	Explanation
Permission check for RFC access	Execute	Name of the RFC object to be protected: SYST, TREX_ARW_ADMINISTRATION
Administration for the RFC destination	Add or generate, change, display, delete, extended maintenance	Type of entry in RFCDES: Start of an external program using TCP/IP
Check on the transaction code at transaction launch		Transaction code: SM59, TREXADMIN, TREXADMIN_AUTH
Administering TREX	Change, display, execute	
ABAP: Program flow checks	Schedule programs for background processing, execute ABAP program, maintain variants and execute ABAP program	
ALV standard layout	Maintain	
Application log	Display, delete	

More Information

[Configuring and Administering the RFC Connection \[Extern\]](#)

[Configuring the RFC Connection in the TREX Admin Tool \[Extern\]](#)

Procedure

Create an SAP system user for the TREX admin tool (stand-alone) and assign the SAP_BC_TREX_ADMIN role to this user.

4. Launch transaction SU01 (user maintenance) or choose *Administration → System Administration → User Maintenance → User* in the SAP menu. The *User Maintenance: Initial Screen* appears.
5. Enter a new user name and choose *Create*.
6. On the *Address* tab page, enter the personal data for the user.



For more information about creating users, see [Creating and Maintaining User Master Records \[Extern\]](#).

7. On the *Roles* tab page, assign the SAP_BC_TREX_ADMIN role and thus the permission to access the SAP system to the SAP system user for the TREX admin tool (stand-alone).

Result

This user for the TREX admin tool (stand-alone) now has the authorization required to configure the RFC connection.



Installation

Purpose

This section describes the steps of the BI accelerator installation.

Starting Installation from Downloaded BIA Software Package

You start the BIA installation from the BIA software package that you have downloaded from the SAP Service Marketplace. BIA hardware partner can use the most current BIA software package on SAP Service Marketplace service.sap.com/swdc not only for updating older versions of BIA but also for an initial full installation of BIA. They do this by starting the Python script `update.py` in installation mode.

1. Access the SAP Software Distribution Center on SAP Service Marketplace at service.sap.com/swdc
2. Navigate to: *Download → Support Packages and Patches → Entry by Application Group → SAP NetWeaver → SAP NetWeaver → SAP NETWEAVER 2004s → SAP BI Accelerator → SAP BI ACCELERATOR 2004S → TREX 7.00 → Linux on x86_64 64bit*.
3. Download the software package and extract it to your installation host.
4. Log on to the installation host as **root**.
5. Start the update script in installation mode as follows:

```
cd /<TREX_Revision>/tx_trex_content/TX_LINUX_X86_64  
python update.py --install
```

The script `update.py` comes with the downloaded software package.

The update script in installation mode starts and displays some information how the installation works and how to use it. The script is now asking for various parameters.

Starting Installation from BIA Installation DVD

You start the BIA installation from the BIA software DVD.

1. Log on to the installation host as root.
2. Mount the DVD with the installation files.



Mount the DVD locally. We do not recommend using Network File System (NFS).

3. Start the installation script.



```
sh install.sh
```

The installation starts and displays some information how the installation works and how to use it. The installation procedure is now asking for various parameters.



Every input has to be ended with the <Enter> key.

To remove a character left of the cursor press the <Backspace> key. If the <Backspace> key does not delete the character left of the cursor but generates characters like ^?, you can try the following key combinations:

```
<Shift><Backspace>, <Ctrl><Backspace>, <del>, <Shift><del>, <Ctrl>< del>.
```

When you made a type error and none of the key combinations mentioned above is working, press the <Enter> key. Some questions validate the input immediately, for example, if an expected numeric value is in the allowed range. In this case the question will be repeated and you can type in the correct value.

If the value cannot be checked, the question will not be repeated. In this case continue with the script until you can select the option to repeat the data entry for the current step.

Options for Executing the BIA Installation Script

After starting the BIA installation script, the following options will be shown:

- 1 - install a new TREX instance
- 2 - clone an existing TREX instance to a new blade host
- 3 - update an existing TREX instance
- 4 - configure RFC connection of an existing TREX instance
- 5 - deinstall an existing TREX instance
- 6 - quit without any system change

Enter one of the options: 1, 2, 3, 4, 5, 6

1. Choose option **1** to start a new BIA installation. A screen with a disclaimer text appears.
2. Continue with the command **c**.

Step 1: BIA System Check before BIA Installation

The script now automatically performs the *BIA system check* before the BIA installation itself has started. Parameters like hardware vendor, processor type and memory size, hardware name, operating system, filer size and usage will be checked in advance.

For more information, see [BI Accelerator System Check \[Page 11\]](#).

- If the system the BIA is to be installed on meets the predefined requirements, the BIA system check will display an OK.
- If the system the BIA is to be installed on does not meet the predefined Requirements, BIA system check message will be displayed. For more information, see [BI Accelerator System Check Messages \[Page 31\]](#).

Continue with [Step 2: Getting Parameters for BIA Instance Installation \[Page 24\]](#).



Step 2: Getting Parameters for BIA Instance Installation

To install the BI accelerator instance, the script shows you the following messages and asks for the following parameters:

Prompt	User Input / Procedure Steps
Enter the System Id (SAPSID, like C11) of your new TREX system	<SAPSID> of the new BI accelerator system specified by three characters. The first character of the has to be a letter (A-Z). The following characters can be alphanumeric characters (A-Z and 0-9). For example: C11 It is recommended to give the new BI accelerator system a different <SAPSID> than the <i>SAP BI</i> system.  The <SAPSID> is added to the user name. When the SAP BI system and BI accelerator have the same <SAPSID> and the Yellowpages/NIS is installed on the BI accelerator box you have to check if the admin user name used for the BI accelerator box is listed in NIS. If the user exists you have to enter the BI <SAPSID>adm password when the password is required.
Enter the Instance Number (two digits)	Instance number of the BI accelerator system. The instance number must be entered as a two digit number and the range is 00 – 98. For example: 00
Do you want to define the user id of user <user_name>, otherwise it gets computed? (y/n)	You can manually define a specific user ID in case the automatically created use ID had been already allocated to a host.
Enter the user id of the user <user_name> (default 6000635)	Enter the user ID.

Password of the new TREX admin user <SAPSID>adm (min 5 chars, input is hidden).	TREX or BI (see security advice in first row/action) admin password for the system.  The characters typed in will not be echoed. If you enter a wrong password, you have to repeat the data entry for step I by selecting the option Repeat data entry later in the script and enter the correct password.
Confirm password	To confirm, enter the password again.
Enter the shared filer directory	Enter the shared filer directory myGlobalFileShare where the BI accelerator instance should be installed. The directory must exist. A warning will be displayed if the directory does not exist and you have to correct the entry.
Enter the number of blade hosts including the local host [default:8]	Enter the number of blades in your system including the blade you are currently working on.
By default the instance of local host <nameOfLocalHostnnn> will be cloned to blade <nameOfLocalHostnnn+1>. Do you want to use this blade? (y/n).	To clone the installed BI accelerator instance to the other blades (performed in step 3), the name of the local host, for example bs11004, is incremented by one for every blade in the system. Example: 4 blades, local host bs11004 Cloned to blades bs11005 through bs11007 If you want to use other names for the blades, you have to enter n (=No) and you will be prompted for the host name of every blade in the system, except the blade you are currently working on.
Optional: Enter host name of blade #x	If you entered n before, you will be prompted for the host name for every blade in the system, except the blade you are currently working on.
Enter the root user to be used for ssh remote access to all blades (default root)	Enter the name of the root user that will have access to all blades via ssh remote.
TREX SAPSID: Instance Nr.: User id of user <user_name>: Password: Shared filer directory: Central instance directory: Number of blades: Master instance is on: Root user for remote ssh:	An overview of the entered parameters will be shown and some BIA checks will be executed by the system.

The dialog for step 1 is finished. The specified parameters are displayed and the installation script gives you following options:

- **c**
Continue with the installation. Make sure that the displayed parameters are correct before you continue.
- **e**
Exit the installation script. When you select this option, the installation script is terminated without any changes on your system.
- **r**
Repeat the questions for the first step to change or correct the parameters.
- **3**
Skip the installation of BI accelerator (step3) and continue with the cloning of the installed instance (see [Step 4: Clone Installed BI Accelerator Instance \[Page 27\]](#)).

Select this option only when you already have installed BI accelerator in a previous installation process.
- **4**
Skip the installation of BI accelerator (step 3) and the cloning (step 4) and continue with the RFC configuration [Step 5: Configure RFC Connection to the BI System \[Page 28\]](#).

Select this option only when you already have installed BI accelerator and cloned it in a previous installation process.

When you have entered **c** to continue, [Step 4: Clone Installed BI Accelerator Instance \[Page 27\]](#) is performed.



Step 3: Installing the BI Accelerator Instance

This step installs the BI accelerator instance with the parameters provided in [Step 2: Getting Parameters for BIA Instance Installation \[Page 24\]](#) on the first blade. This step requires no user input and will take a while.

The system also performs remote login preparations and access checks to facilitate the remote access to the other blades via ssh utility by distributing key files.



Due to the ssh remote connection a question for a password may appear. Enter then the root password.

The system is performing the following actions:

- Extracting the installation archives
- Configuring SAP system
- Syncing binaries
- Creating host configuration
- Saving installation files

- Creating cloning preparation file

Result

When the installation is finished a BI accelerator instance is installed on the blade. Next installation step is to clone the BI accelerator instance to the other blades: [Step 4: Clone Installed BI Accelerator Instance \[Page 27\]](#)



Step 4: Clone Installed BI Accelerator Instance

Prerequisites

A BI accelerator instance must exist on the local host. See [Step 2: Getting Parameters for BIA Instance Installation \[Page 24\]](#) for details.

Procedure

To clone the installed BI accelerator instance, the script asks for the following parameters:

Prompt	Input
You can start cloning now or exit the script and clone later. Enter c to continue or e to exit [default: c]	You can exit the installation at this point by entering the character e. To resume the installation you start the installation script <code>install.sh</code> again and skip installation step 3. (see Step 2: Getting Parameters for BIA Instance Installation [Page 24] for details). We recommend to continue the installation.
When you continue the installation:	
Password	The password for the super user (e.g. root) is required to clone the BI accelerator instance. The password may be necessary for every blade.  You have three (3) attempts to enter the correct password.

When you entered the correct password cloning for this blade is started. This step is repeated until all blades are processed.

When the cloning step is finished, the installation script gives you following options:

- **c**
Continue with the installation - RFC configuration ([Step 5: Configure RFC Connection to the BI System \[Page 28\]](#))([Installation step 4 \[Page 28\]](#)).
- **e**
Exit the installation script. When you select this option, the installation script is terminated and the RFC connection will not be created.

Result

The installation of BI accelerator is now completed. When you have entered **c** to continue, the RFC configuration is started (see [Step 5: Configure RFC Connection to the BI System \[Page 28\]](#)).



TREX data and program files are stored only once on the file server. After the cloning process every blade contains symbolic links (*symlinks*) in the <TREX_DIR> to the TREX data and program files on the file server.

Error Handling

When an error message is displayed while the installation script is executing this step, please check the shmmax setting of the BI accelerator system. See [Hardware and Software Requirements \[Page 9\]](#) for details.



Part of the error message that indicates that the shmmax setting is too low.

```
invoking TREX_CONFIG_HOOK euclidConfig.cloneConfig(...)
error!
```



Step 5: Configure RFC Connection to the BI System

Prerequisites

The BI accelerator instance must be installed and cloned:

- See [Step 2: Getting Parameters for BIA Instance Installation \[Page 24\]](#) for details.
- See [Step 3: Installing the BI Accelerator Instance \[Page 26\]](#)

You have to know the following parameters:

- <SAPSID> of the BI system
- System number
- Application server host name of the BI system and the username and password for this system.
- Client number

Procedure

The script prompts you for data to establish a connection between the BIA engine and the specified BI system. To configure the RFC connection, the script asks for the following parameters:

Prompt	Input
SAP System Name	<SAPSID> of the BI system. For example: BCI
System Number	System number of the BI system. For example: 26

Application Server Host	Application Server host name of the BI system. For example: 1x0297
Client	Client number: For example: 000
User	User name for application server.
Password	Password
Should a new RFC destination be created in the SAP system <SAPSID>? (y/n)	You have the choice to use an existing RFC destination from the BI system or create a new one. This option has the following affect: • n (=No) Use this answer, when your BI system already has a RFC destination that you want to use for the BI accelerator connection. No new RFC destination is created in the BI system. • y (=Yes) Use this answer, to create an new RFC destination in the BI system.
Name of new RFC destination [default: TREX_BIA]	Enter the name of the new RFC destination. If you answered the previous question with n (=No) the settings are made on the BI accelerator host but no new RFC destination is created in the BI system. If you answered the previous question with y (=Yes) the settings are made on the BI accelerator host and a new RFC destination is created in the BI system.

The dialog for step 4 is finished. The specified parameters are displayed and the installation script gives you following options:

- **c**
Continue with the installation. Make sure that the displayed parameters are correct before you continue.
- **e**
Exit the installation script. When you select this option, the installation script is terminated without creating a RFC destination.
- **r**
Repeat the questions for the RFC destination to change or correct the parameters.

Step 6: BIA System Check after BIA Installation

After finishing the creation of the RFC destination the BIA system check will be executed again, but now with a full check of all relevant BIA system parameters and settings. For more information, see [BI Accelerator System Check \[Page 11\]](#).

- If the system the BIA is to be installed on meets the predefined requirements, the BIA system check will display an OK.
- If the system the BIA is to be installed on does not meet the predefined Requirements, BIA system check message will be displayed. For more information, see [BI Accelerator System Check Messages \[Page 31\]](#).

Result

When you entered c (=continue), the BI accelerator system is now ready to use.

See [Final Steps \[Page 30\]](#) for details about settings on the BI system.



Check RFC Connection BI System to BI Accelerator Box

Procedure

The RFC connection has to be registered on the BI system.

✓	Action
	Log on to the BI system as administrator.
	Start the transaction sm59 .
	Select the BI accelerator RFC connection. Default name for the RFC connection: TREX_HPA
	Choose Connection Test button.

Result

A result of the test is displayed. The list must not contain red entries.



Final Steps

Check BIA Installation Log Files

Installation steps 1 through 4 have to be successfully finished.

Steps to check if the installation was successful.

✓	Action
	Check the log files of the BIA installation. The log files can be found at: /tmp/bia_install_<year-month-day>_<timestamp>/_install.log

Check RFC Connection BI System to BI Accelerator Box

The RFC connection has to be registered on the BI system.

✓	Action
	Log on to the BI system as administrator.
	Start the transaction sm59 .
	Select the BI accelerator RFC connection. Default name for the RFC connection: TREX_HPA
	Choose Connection Test button.



Appendix



BI Accelerator System Check Messages

The BIA Accelerator system check messages comprise the following sections:

- BIA System Check Report
- Common Parameters
- Nodes
- Parameter Deviation
- Performance
- Functionality Test
- BIA Connectivity

The tables below describe the messages that the BI Accelerator system check displays in detail.

***** BIA SYSTEM CHECK REPORT *****

This section displays information about the BIA **checkBIA.py** script, such as version, user, and the start time for the script.

Info Type	Parameter	Description and Values
OK	Version: <version_nr>/ <Perforce_branch> <change_list>/<date> Example: Version: #13/ BIA_COR 109174 2006/12/20	Version of the checkBIA.py script.

Info	user: <SAPSID>adm (<user_ID>) Example: user b71adm (1111)	<SAPSID>adm user that started the checkBIA.py script. The user ID can be specified separately during the BIA installation.
Info	started on: <name_of_BIA_server> Example: started on: loantrhx001	Name of the server/blade on which the BIA system check was first started.
Info	Time: <date_and_time> Example: Time: 2007-01-30 09:49:13 UTC	Start time of the check.
Info	check of <BIA_install_directory> (<number_of_hosts>) Example: check of /usr/sap/B71/TRX71 (8 hosts)	• BIA installation directory that is checked by the script. This path is identical for all BIA nodes of the BIA landscape. • Number of TREX hosts/blade installations to be checked

***** COMMON PARAMETERS *****

This section displays information about common parameters for the BIA installation such as the following:

- Hardware vendor, processor type, memory size, CPU speed and so on.
- Hardware name and operating system
- System settings such as maximum shared memory, core file limit, and shared storage.

Info Type	Parameter	Description and Values
OK	Hardware vendor: <vendor_name> Source: <protocol> Example: Hardware vendor: HP Source: Inet6	Name of hardware vendor. Possible values: HP, IBM, Fujitsu Siemens The source parameter signifies the source from which the information about the hardware vendor is retrieved (Inet6 = Internet protocol version 6 family).
WARNING	Hardware vendor not available	
ERROR	Hardware vendor not	

	supported	
OK	CPU vendor: Intel	Name of CPU manufacturer. Mandatory value: Intel
ERROR	CPU vendor not supported	All other CPU vendors. This message appears if the CPU vendor does not match the mandatory value.
INFO	CPU speed: <value> Example: CPU speed 3600.000	CPU clock rate measured in MHz. - For single-core CPUs: 3.6 GHz Note: Intel CPUs switch to sleep mode with a clock rate of 2.8 GHz when not used. - For dual-core CPUs: 3.0 GHz
OK	CPU count: <value>	Number of CPUs. A CPU is a physical package of one (single-core) or several (dual/quad-core) cores. A single-core CPU comprises only one processor or core. A dual-core CPU comprises two cores, a quad-core CPU four cores.
ERROR		A CPU count of less than 2 is not allowed.
INFO	CPU cores: <value>	Number of cores for each CPU (single-core: 1, dual-core: 2, quad-core: 4).
INFO	Logical CPU count: <value>	Total number of logical processors. Logical CPU count = CPU count * CPU cores (* 2 if hyper-threading is enabled)
INFO	CPU siblings <value>	Number of logical processors for each CPU.
INFO	Hyper-threading: yes/no	Tells you whether or not hyper-threading is enabled. Hyper-threading doubles the number of logical processors.
OK	CPU cache size: <value> Example: CPU cache size: 2048 KB	Size of CPU cache measured in KB. Threshold - For single-core CPUs: 2048 KB - For dual-core CPUs: 4096 KB
WARNING		Less than 2048 KB.
INFO	CPU name: Intel(R) Xeon(TM) CPU 3.60 GHz	CPU brand name/CPU clock rate.

OK	CPU type: x86_64	CPU type. Mandatory value: x86_64
ERROR		Occurs if the CPU type is not a mandatory value.
OK	Total OS memory: <value> Example: Total OS memory 8 GB	Total size of computer memory (RAM) measured in GB. Threshold values for all CPU types: • ERROR: Less than 8 GB For single-core CPUs: • OK: 8 GB For dual-core CPUs: • OK: 16 GB • WARNING: Less than 16 GB • ERROR: More than 16 GB For quad-core CPUs: • OK: 16 GB • WARNING: Less or more than 16 GB
WARNING/ ERROR	Total OS memory is <value>, needed <value>GB	

OK	Kernel: Linux	Kernel of operating system.
ERROR	Kernel not supported	Mandatory value: Linux
OK	Kernel release: <version> Example: Kernel release 2.6.5-7.252-smp	Release version of Linux kernel Note: All BIA nodes must have the same Linux kernel release.
Error		Minimum requirement: SLES 9 SP3 2.6.5-7.244-smp
OK	Operating system SUSE Linux <release_nr> Example: Operating system SUSE	Name and release number of operating system.

	Linux 9.3	
WARNING	Operating system is SUSE Linux <OS_version>, needed 9.3 at least	Minimum operating system requirement for all hardware vendors: SUSE Linux 9.3 Minimum operating requirement for IBM, HP and Fujitsu Siemens: SUSE Linux 10
ERROR	Operating system too old/Operating system not supported	
OK	Max shared memory: <value> Example: Max shared memory: 2 GB	Maximum shared memory (kernel parameter: Large block of RAM that can be accessed by different processes for fast data exchange).
WARNING	Max shared memory<value>, needed <value>GB	Default value: 2 GB This value is set to 2 GB during the BIA installation.
ERROR		Less than 1 GB
OK	Net: Channel bonding is OK	Checks whether or not the bond interface is available. Channel bonding in computer networking is an arrangement in which two or more network interfaces on a host computer are combined for redundancy or increased throughput.
ERROR		Occurs if the bond interface has the status 'down'.
OK	Open files limit: <value> Example: Open files limit: 8000	Maximum number of open files. On UNIX platforms, each process may only have a certain number of files open at once. If you create a large number of BIA indexes, a large number of files are opened. The open files limit parameter shows you the value of the open files limit. The open files limit parameter must have a value that is not less than 8000.
ERROR		Occurs if the Open files limit is less than 8000.
OK	Actual open files limit<SAPSID>adm_user) Example: Actual open files	Actual open files limit for the <SAPSID>adm user. The actual open files limit parameter shows the current value for the number of open files. The actual open files limit parameter

	(ABCAadm): 8000	must have a value that is not less than 8000.
ERROR		Occurs if the Actual open files limit is less than 8000
OK	Core file limit: <value>/unlimited	If the core file limit is set to unlimited core, files of any size can be written. Core files can be used to check the core for errors. A core dump is the recorded state of the working memory of a computer program at a specific time, generally when the program has terminated. Mandatory value: unlimited
ERROR	Core file limit is <value>, needed unlimited	If core file limit is set to a value other than unlimited, a WARNING/ERROR message appears.
OK	GDB is installed	GNU Debugger (GDB) is a command line-based debugger tool that can be used for checking core files. Mandatory value: installed
ERROR	GDB is missing	
OK	DDD is installed	Data Display Debugger (DDD) is a graphical user interface for the GDB command line debugger.
INFO	DDD is missing	DDD is not mandatory.
OK	Shared storage: <mount_point> Example: Shared storage: /export	Mount point for central data storage device specified as a path. All BIA nodes must be able to access the central storage device using this mount point. There is only one central mount point for each BIA installation/system. It points to the central storage device acting as one logical volume. From the /.../usr/sap directory, a symbolic link points to the /export directory so that the paths /.../usr/sap and export/ can be used synonymously.
ERROR		An error message appears if the following requirements are not met for the central storage device: • For the hardware vendor IBM, the device must be a GPFS (General Parallel File System). • For the hardware vendor HP, the device must be an OCFS (Oracle Cluster File System). • The mount point for shared storage for the hardware vendor HP must be /export or /import or /filer.

OK	size: <value> T/GB	Size of central storage device available for BIA, measured in terabytes or GB.
WARNING		Less than 500 GB
ERROR		Less than 200 GB
OK	usage: <percentage>	Proportion of usage of the central storage device by BIA as a percentage value, Threshold values: • With BIA installed: Usage of less than 80% • Otherwise: Usage of less than 10%
WARNING		Threshold values: • With BIA installed: Usage of 80 to 95 % • Otherwise: Usage of 10 to 25%
ERROR		Threshold values: • With BIA installed: Usage of more than 95 % • Otherwise: More than 25%
OK	BIA shared memory free space <percentage>	Proportion of BIA shared memory. 64 MB are allocated for the BIA shared memory. The percentage value refers to this absolute value.
WARNING	BIA shared memory free space not checked	
ERROR	BIA shared memory is full, free space <percentage>	Tells you that the proportion of usage is less than 5%.
OK		The BIA check has found one BIA instance on the node where the BIA script was executed. Only one BIA instance should be installed on each node.
WARNING	More than one instance found (<number_of_instances> Example: More than one instance found (5)	The BIA check has found more than one BIA instance on the node where the BIA script was executed. It is highly recommended that you install only one BIA instance on each node.

***** NODES *****

This section displays information about the different server blades (nodes) of your BIA installation.

Info Type	Parameter	Description and Values
INFO	<FQDN> (IP address)	Fully qualified domain name (FQDN) and IP address of the server/blade where the BI Accelerator is installed.
INFO	loantrhx001.wdf.sap.corp (10.17.65.139)	Example
INFO	loantrhx002.wdf.sap.corp (10.17.65.140)	Example
INFO	loantrhx003.wdf.sap.corp (10.17.65.141)	Example
INFO	...	The BI Accelerator is installed on several server blades/nodes, and the messages belonging to the BIA installation occur several times depending on the number of BIA server blades/nodes.

***** PARAMETER DEVIATION *****

This section describes how the parameters of specific nodes deviate from the common parameters in the *Common Parameters* section. The name of the specific node is listed together with the deviating parameter and the expected parameter.

Info Type	Parameter	Description and Values
ERROR/ WARNING	<name_of_BIA_server>: <parameter> differs: <deviating_value>, exp <expected_value>	- Name server/blade where the BI Accelerator is installed. - Value of the deviating parameter and the value that was expected for comparison purposes.
ERROR	loantrhx001: Kernel release differs: 2.6.5- 7.282-smp, exp: 2.6.5- 7.252-smp	Example
WARNING	loantrhx001: CPU speed differs: 2800, exp: 3600	Example
ERROR/ WARNING	...	Example
OK	No IP address duplications found	IP addresses must be unique in the BIA landscape.
ERROR	Duplicated IP address <IP_address> for <specific_host>	If there is a duplicated IP address for a specific host, an error is shown.
ERROR	BIA shared memory not used on all nodes	BIA shared memory should be used on all BIA nodes. Otherwise, an error is shown.
ERROR	BIA shared memory not used (<specific_host>)	If a specific host does not use shared memory, an error is shown.
WARNING	BIA shared memory availability not checked	
OK	BIA shared memory used on	

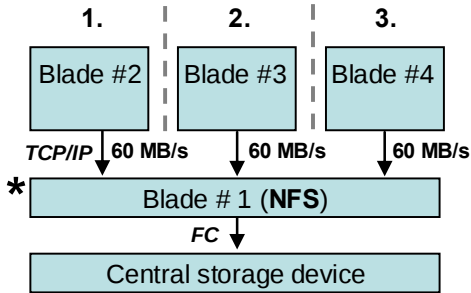
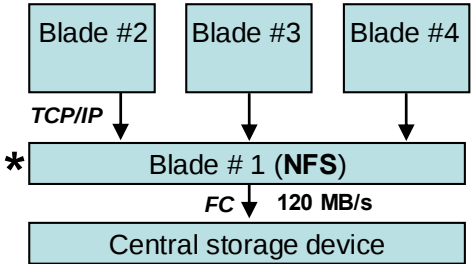
	all nodes	
INFO	===== BIA Instances =====	
	This section lists the specific BIA nodes and the corresponding instances that are installed on them. For each instance, characteristic parameters describe the BIA node.	
WARNING	<name_of_BIA_server>: more than one instance found (<number_of_ instances>) Example: loantrhx001: More than one instance found (6)	The BIA check has found more than one BIA instance on the node specified by the <name_of_BIA_server>. It is highly recommended that you install only one BIA instance on each node.
INFO	----- Instances <name> -----	
INFO	Version: <BIA_build_nr> Example: 700.47.122347 <release>: 700 <revision>: 47 <internal_version _number >: 122347	BIA build number, comprising number of BIA release, BIA revision, and internal version number.
INFO	Storage: <mount_point> Example: storage /sapmnt/test/	Mount point for central data storage device, specified as a path.
INFO	state active/inactive	Status of BIA instance.

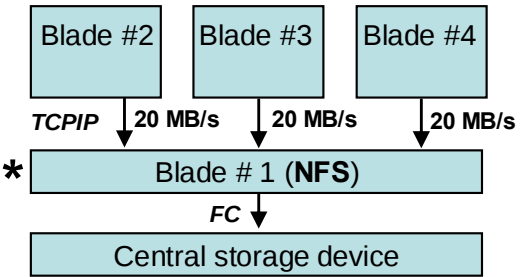
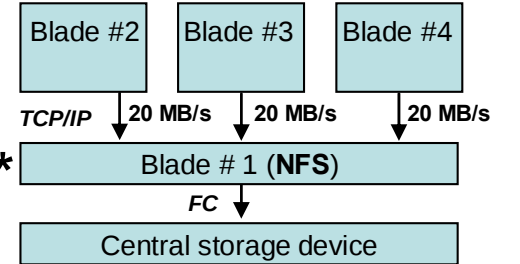
***** PERFORMANCE *****

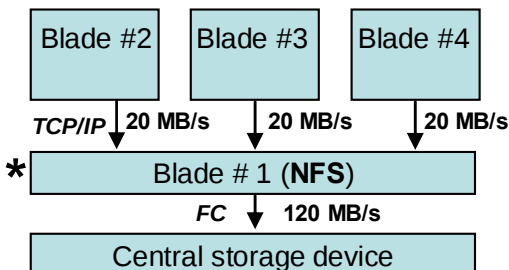
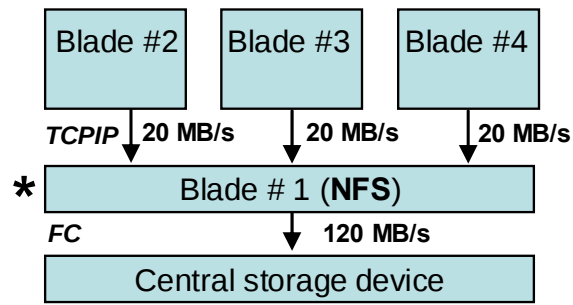
This section displays parameters and issues related to BIA performance.

Info Type	Message	Description and Values
INFO	Current network load <state> Example: Current network load low	Overall network load. Possible values: very high/high/low
INFO	===== Network =====	
OK	Net throughput <value> avg Example: Net throughput 64.9 MB/s avg	Network throughput between BIA nodes, measured in MB per second. Threshold value: 50 MB/s Expected values: 75 to 90 MB/s Note: These values refer to a BIA system that runs in no-load mode.

ERROR		Network throughput is less than 50 MB/s.
OK	Local network throughput <value> avg Example: Local network throughput 160.9 MB/s avg	Local network throughput measured in MB/second between different services communicating by TCPIP (local network interface/loop back interface) and not by shared memory. This value is relevant since BIA uses this type of communication frequently. Threshold value: 133 MB/s Expected value: 150 to 266 MB/s Note: These values refer to a BIA system that runs in no-load mode.
ERROR		Local network throughput is less than 133 MB/s.
INFO	===== Shared Storage =====	
	The performance test in the Shared Storage section checks the throughput of the central storage device (filer) that is connected to the BIA nodes. All BIA nodes read and write on the same central storage device. The performance test checks whether or not this device meets the necessary BIA requirements.	
INFO	----- Local Parallel Test -----	
INFO	Shared storage: <usr/sap/<SAPSID>/TRX<instance_number> Example: Shared storage: /usr/sap/B71/TRX71/index.checkbia	Mount point for the central storage device (filer). All BIA nodes must be able to access the central storage using this mount point. There is only one central mount point for each BIA installation/system. The central storage device acts as one logical volume. From the /.../usr/sap directory, a symbolic link points to the /export directory so that the paths usr/sap/<SAPSID>/TRX<instance_number> and /export/<SAPSID>/TRX<instance_number> can be used synonymously. Index.checkbia is the file that is used for testing the central storage device.
INFO	1 thread: <value> Example: 1 thread 143.39 MB/s	Throughput result measured in MB/second: Writing one file with one thread on one BIA node.
INFO	10 thread: <value> Example: 10 thread: 179.01 MB/s	Throughput result measured in MB/second: Writing 10 files with 10 threads in parallel on one BIA node.
INFO	20 thread Example: 191.82 MB/s	Throughput result measured in MB/second: Writing 20 files with 20 threads in parallel on one BIA node.
INFO	----- Distributed Serial Test -----	
OK	Average write <value> (<number_of_BIA_host> hosts)	Throughput for each BIA node (except the BIA node with NFS): Sequentially writing files on the central storage device measured in MB/second.

	Example: Average write 60 MB/s (3 hosts) 4 blades in total	This value shows the maximum throughput one single blade can write in ideal circumstances. Example: 1. Blade # 2 writes files and stops. 2. Blade # 3 writes files and stops. 3. Blade # 4 writes files and stops.  * Note: If a file system other than NFS is used (for example, GPFS, OCFS), the blades of the BIA installation are connected directly to the central storage device. In this case, no blade is needed exclusively for the NFS.
WARNING		Value is less than 50 MB (only valid if there is no network traffic from other applications).
ERROR		Value is less than 40 MB (only valid if there is no network traffic from other applications).
INFO	----- Distributed Parallel Test -----	
INFO	Write throughput <name_of_BIA_server> <value> Example: write throughput loantrhx001 120 MB/s	Throughput for one BIA node only, accessing the central storage device as the NFS (Network File System), measured in MB/second. This value shows the largest possible throughput from a BIA node to the central storage device. Example:  * Note: If a file system other than NFS is used (for example, GPFS, OCFS), the blades of the BIA installation are connected directly to the central storage device. In this case, no blade is needed exclusively for the NFS and the test of the Write throughput parameter is superfluous.
INFO	Average write <value>	Average throughput result for each BIA node

	(<number_of_BIA_host> hosts) Example: Average write 20 MB/s (3 hosts) In brackets: Number of BIA nodes writing in parallel	(without the BIA node with NFS), measured in MB/second. All BIA nodes (except the BIA node with NFS) write files in parallel on the central storage device. <average_write>/<number_of_BIA_hosts> Example:  * Note: If a file system other than NFS is used (for example, GPFS, OCFS), the blades of the BIA installation are connected directly to the central storage device. In this case, no blade is needed exclusively for the NFS.
INFO	Shared storage write channel <value> Example: Shared storage write channel 60 MB/s	Throughput result for all BIA nodes (without the BIA node with NFS) measured in MB/second: <average_write> * <number_of_BIA_hosts> Example: 20 MB/s * 3 hosts = 60 MB/s  * Note: If a file system other than NFS is used (for example, GPFS, OCFS), the blades of the BIA installation are connected directly to the central storage device. In this case, no blade is needed exclusively for the NFS.
INFO	Average write <value>	Average throughput result for each BIA node (including the BIA node with the NFS) measured in MB/second: <write_throughput> + <shared_storage_write_channel> / <number_of_BIA_hosts>

	Example: 45 MB/s (all 4 hosts)	Example: $120 \text{ MB/s} + 60 \text{ MB/s} / 4 \text{ host} = 45 \text{ MB/s}$  * Note: If a file system other than NFS is used (for example, GPFS, OCFS), the blades of the BIA installation are connected directly to the central storage device. In this case, no blade is needed exclusively for the NFS.
INFO	Write channel <value>	Summed up throughput result for all BIA nodes (including the BIA node with NFS), measured in MB/second: <write_throughput> + <shared_storage_write_channel> Example $120 \text{ MB/s} + 60 \text{ MB/s} = 180 \text{ MB/s}$  * Note: If a file system other than NFS is used (for example, GPFS, OCFS), the blades of the BIA installation are connected directly to the central storage device. In this case, no blade is needed exclusively for the NFS.

***** FUNCTIONALITY TEST *****

This section displays information about testing basic BIA functions such as index creation, indexing, and searching.

Info Type	Message	Description and Values
OK	Creating	The creation of the BIA test index was successful.
ERROR	Creating failed	The creation of the BIA test index failed.

OK	Indexing	The BIA indexing test was successful.
ERROR	BIA indexing/ searching not functioning	The BIA indexing/searching test failed.
OK	Searching	The BIA searching test was successful.
ERROR	BIA indexing/searching not functioning	The BIA indexing/searching test failed.
OK	Deleting	The deletion of the BIA test index was successful.
ERROR	Deleting failed	The deletion of the BIA test index failed
OK	BIA searching functioning	All BIA function tests work correctly.

***** BIA CONNECTIVITY *****

This section displays information on the following:

- RFC connection that the BI Accelerator uses to communicate with the application servers of the BI system
- Availability and performance of the BI application servers

Info Type	Message	Description and Values
INFO	===== RFC Configurationm =====	
OK	RFC configuration	RFC configuration test. BIA is connected to the BI system by means of RFC.
ERROR	RFC check failed	The RFC configuration test failed.
OK	Rfc Servers and threads	For the BIA scenario, the multi-threaded mode is mandatory. An RFC server runs on every BIA node/blade. As many RFC server threads are automatically started as dialog and batch processes are initiated on the BI application server side. The BIA system automatically starts the corresponding number of RFC server and server threads.
ERROR		Single-threaded mode is being used.
OK	RFC server mode: single threaded/ multi threaded	The RFC server can run in single threaded and multi-threaded mode. For the BIA scenario, the multi threaded mode is mandatory.
OK	Number of RfcServer Threads/Processes. Data found:	Detailed information about the RFC connection between the BIA and the BI system, especially about the total number of RFC server threads on the BIA side and the total number of work (dialog and batch) processes on the BI application side. The total number of work processes on the BI application side should not exceed the number of RFC server threads on the BIA side:

	Example: Number of RfcServer Threads/Processes. Data found: BCE:TREX_B2 numRfcServers=120 (numInstances=3 numTrexHosts=8 numAppServers=5) totalWPs=102 (totalDiaWPs=84 totalBgdwPs=18)	<number_of_RFC_server_threads> ≥ <total_number_of_work_processes> Syntax: <SAPSID_of_BI_system> <name of RFC connection> <number_of_RFC_server_threads>= <number_of_RFC_server_instances> * <number_of_TREX/BIA_hosts> * <number_of_BI_application_servers> <number_of_work_processes>= <number_of_dialog_work_processes> + <number_of_background_work_processes>
WARNING		A WARNING message appears if <number_of_RFC_server_threads> is not greater than <total_number_of_work_processes>.
ERROR		An ERROR message appears if the RFC connection is not configured.
INFO	System <SAPSID_of_BI_system> connection: <RFC_connection_type>: <BI_system_ID> Example: System BCE A:bcemain:26	SAPSID and system ID of the BI system to which the BIA is connected. <RFC_connection_type>: • A = Connect to a specific SAP application server • B = Connect to an SAP message server using load balancing
INFO	RFC destination <SAPSID_of_BI_system>: <name_of_rfc_destination>: <number_of_RFC_server_instances>: <automatic_changes: on/ff> Example: RFC destination BCE:TREX_B2: 3:1	Information about the RFC destination.
	AppServer <SAPSID_of_BI_system> <name_of_BI_application_server> <BI_system_ID> -><BI_host_name> Examples BCE:bsl8015 26 -> bsl8015 AppServer BCE:bcemain 26	Information about the BI application server that is connected to the BIA. If the BIA is connected to several BI application servers, a list of connected application server is displayed.

	-> bcemain AppServer BCE:bsl8010 26 -> bsl8010	
INFO	===== Application Server Ping =====	
INFO	host(ip) min/avg/max/mdev	This section displays information about the availability of the application server of the BI system to which the BI Accelerator is connected.
INFO	----- System <name> -----	
INFO	<BI_host_name>(IP address) response time: minimal/average/maximal/ mediumdeviation	The availability of the application server is checked by the ping command, which sends a request to the server. The minimum, average, and maximum response times are displayed.
INFO	bsl8015(10.66.64.26) 0.324/0.324/0.324/ 0.000 ms	Example
INFO	bcemain(10.21.80.255) 0.376/0.376/0.376/ 0.000 ms	Example
INFO	bsl8010(10.66.64.21) 0.330/0.330/0.330/ 0.000 ms	Example
INFO	...	Note: A list of messages is displayed depending on the number of BI application servers.
INFO	===== Application Servers traceroute =====	
INFO	Route hops to <BI_system>	This section displays information about the hop count from the BIA to the BI system. The hop count describes how many intermediate points the data needs to pass through on its way from the BIA to the specified BI system. Ideally this value should be 0. In an ideal scenario, the BI systems and the BIA should be connected directly and should use the same switch/router/hop to avoid transmission delays.
INFO	----- System <name> -----	
INFO	route hops to bsl8015: 6 route hops to bcemain: 6 route hops to bsl8010: 6	
OK	All 5 AppServers(BCE) are connected directly	Ideally, the BI systems and the BIA should be connected directly and should use the same switch/router/hop to avoid transmission delays.
WARNING	All 5 AppServers(BCE) are not connected directly	Signals that the BI systems using the BIA are not connected directly to the BIA.



Configuring RFC Connection by Script

Use

You configure the RFC connection by a script individually, when the BI accelerator installation script has been ended before the RFC configuration step.

Prerequisites

The BI accelerator installation step 1, 2, 3, and 4 have to be successfully finished.

Configuring RFC Connection by Python Script

Starting the RFC configuration script:

1. Log on to the BI accelerator system with the user <sapsid>adm.
2. Set the environment variables required by TREX:
 - Bourne shell sh, Bourne-again shell bash, Korn shell ksh:
. TREXSettings.sh
 - C shell csh/tcsh:
source TREXSettings.csh
3. Go to the python_support directory in the TREX installation directory <TREX_DIR>.
4. Start Python script:

```
python initialRfcConfiguration.py
```



When the Python directory is not included in the search path you have to enter a full qualified file name:

```
/usr/bin/python initialRfcConfiguration.py
```

Configuring RFC Connection by BIA Installation Script

You can also use the BIA installation script for configuring the RFC connection individually.

After starting the script, choose the option 4 - configure RFC connection of an existing TREX instance. Enter the requested input as described in [Step 5: Configure RFC Connection to the BI System \[Page 28\]](#).

Result

The RFC configuration dialog is started. See [Step 5: Configure RFC Connection to the BI System \[Page 28\]](#) for details.