

Installation

LENA Support

Version 1.3.1.7

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Chapter 1. Overview

! " # \$ LENA Server% &' () * # + , - . /) O 1 2. LENA 3 4 5) 6 7 &' - . 1 8 9:
; < = > ? @ \$ &' A B C D E F G 1 2.

1.1. ! " # \$

LENA\$ Web Server, WAS(Web Application Server)H Web Server3 Status% I J (\$ Node Agent,
Application Server- + , @K StatusL M% > ? (\$ AdvertiserH NOA- P > ? @ \$ QRNO < SJ
Manager= STU2.

1.1.1. Server

LENA- # > ? @ \$ # V 3 WX\$ Web Server, Application Server 2 Y Z Y [2. \ # V 3 9 < \$] ^ H
_ 2.

- ¥ Web Server: ` 9 A a b - c d Web Resource% > ? 1 2. Application ServerY > ? (\$
e 9 # f g 3 Fronthi E j k (l # , m n o p = Load Balancing 7 M q r s K (SSL)% > ? (\$
h i E j k 1 2.
- ¥ Application Server: Java= t T U e 9 # f g % u k / > ? 1 2.

1.1.2. Agent, Advertiser

Node, Server- + , @K > K 7 v w x y) 6 E z { (\$ Agent s 2.

- ¥ Node Agent
 - | Web Server } ~ v w x y • s x % ∈ R (• Manager- P > ? 1 2.
- ¥ Advertiser
 - | Application Server } ~ v w x y • s x % ∈ R (• Manager- P > ? 1 2.

1.1.3. Manager

Manager\$ Node AgentH Advertiser% Q (• NodeH Server3 > K 7 v w x y) 6 , E
> ? (\$ Web Applications 2. . f o p =] ^ H _ :) 6 E > ? 1 2.

Table 1. LENA Manager „ a) 6

%&	' (
Dashboard	¥ Server ...† ¥ Notification I J
Server	¥ System (‡ O o Server ^ % o) , Š / j L / < >
Resource	¥ Reosource3 Œ • 7 , Š / j L / < > Database / DataSource / Application ¥ Resource% ` 9 (\$ Server Ž Š Œ • 7 , Š / j L / < >

%&	' (
Diagnostics	¥ Server- . 1 s• ...† v w x y) 6
Topology	¥ System; Server S T ...† €•
Admin	¥ ` 9A 7 • 1 NO, ` 9A/• 1/' C B' ¥ ` 9A &' s" €• ¥ d s m g NO, ...† €• 7 " =•

1.2. Mechanism

LENA\$ Manager% Q/ # Web Server/WAS % v w x y 7 QRNO(\$) 6E >? 1 2. s% - /
Noded\$ --- = AgentY +, @\$• s% Node AgentdG 1 2. Node Agent\$ Manager3 ` 9A
~™E 4Š>] Node- +, U Web Server/WAS % >K(œ NodeY +, U Host/VM, Web Server 3
v w x y L M% Manager= 4• 1 2.

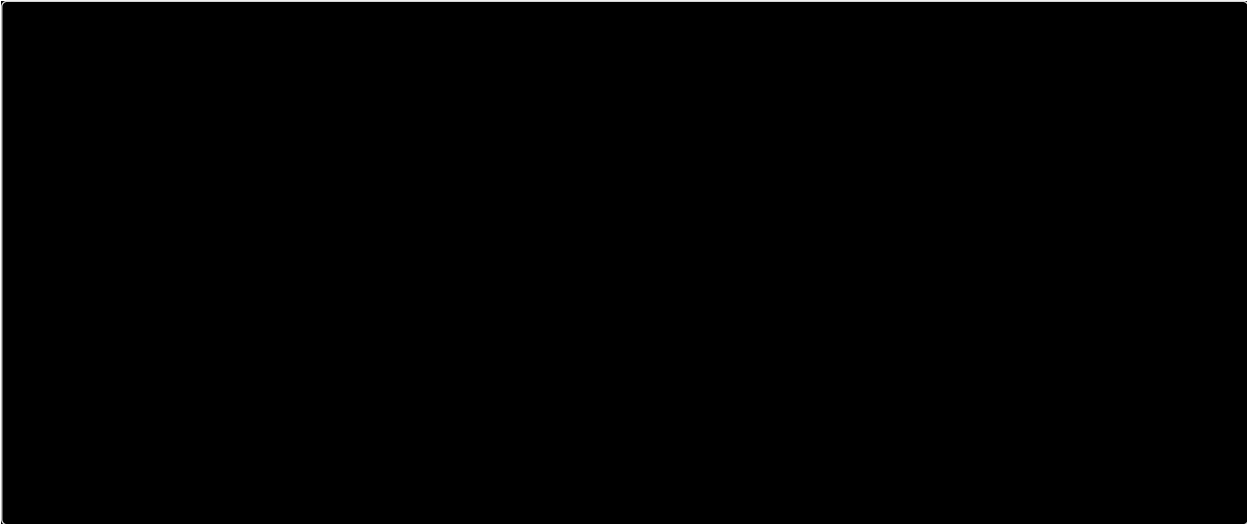


Figure 1. LENA Manager3 v w x y 7 QRNO3 t ž Ÿ

LENA Manager, Web Server, WAS j - < Manager3 ž t E - / ` 9@\$ Manager Repository, WAS3
v w x y L M j €E - 1 AdvertiserY t ž (• Manager% Q1 v w x y 7 QRNOY Y6(<Š
1 2.

%&	' (
Manager	# V- £ ¤ @\$ + L ¥! NO 7 Server v w x y) 6 >?
Manager Repository	Manager &' E - 1 ¥! \$ `` Repository, \ W + L L M 7 DB L M% ¤ © ©
Node Agent	Web # V v w x y • s x € R 7 Manager- P • ^a , Manager= « x j ^a 1 >K/+L ~™ u k
Application Server	Application Server Instance
Web Server	Web Server Instance
Advertiser	v w x y • s x € R 7 Manager- P • ^a (Application Server- QR)

Chapter 2. Installation Prerequisite

2.1.) * + # ! , %

2.1.1. Hardware Resource

¥ CPU

4op= Sž (GA (\$ Web Applications K- L<3 T6E aS(\$Z- š- [2.) ! oJ
LENA #fg Sž - @a1 CPU\$ 2 Core s} E • G12.

¥ Memory

Memory- . /#\$] ^ f% FÆ12. Web Server% >ı 1 v- Module: JVM) ° p=
ž t (±= Heap Memory% ` 912. LENA- # \$) ! Heap Memory ² E ³ O +L/ ´ μpœ,
+, ¶ - /{ ² p= +, @. @a- cd j Ls Y6(2. qLoJ &' E - / (. 3 ı Oo
#V- +, 1 v- v° 3 Heap Memory +L ² 3 Rs ı O #V3 »• ' vO 9¼M2 ½Z
¾<Š ğ 312.

LENA Manager 7 \ Server +, - . 1 ÄÄ aS` Ä: 2ÄÄ _2.

! -	JVM	Disk Space	. \$ Memory	/ O Memory
Manager	JDK 1.8 +	Ä 300 MB	512 MB	1 GB
Node Agent	JDK 1.8 +	-	64 MB	256 MB
Application Server	JDK 1.8 +	Ä 100 MB	512 MB	2 GB
Web Server	JDK 1.8 +	Ä 50 MB	512 MB	-

\ Server +, ¶) ! Memory) Æp= +, @œ, Memory +L: ÄÄ Memory s} p= +L² E
ÇÈ (• o9ı j [2.

2.1.2. 1 2 3 4

¥ Linux

Redhat (RHEL, CentOS) 6.5 s} / Ubuntu 12.04 s} E ZÉ (œ Y¨ • G(\$ &' 5>s2.
ı ° oJ x86] ÊËÌ 3 Í T- Î <Š . 9¼ QR#V STM2\$ §9¼ 2j 3 #V- Ĩ Đ
+, (\$ ÑE • ¨ 12.

!

) ! op= LENA ModuleE uk¶Ê) -1 g½ÒÓ% >?12.
ÔÅ OS Service= , Šs @ai ¶ #Vz{ AY OS ÕË- Î P Öx +L/Ø12.

2.1.3. 5 6

LENA% +, () 4 LENA +, 7) ž- s91 ÛLs @a(2. oR1 sğ Y Ú2ı Mq } Root /
Administrator ÛL: • G@Z ¾pœ s% Q/ LENA% uk¶Û j Úpw ; <3 ÛLE ³ O
ÛT(<Š 12.

||

X86] ÊËÌ - # • G@\$ Ý\$] wZÔ, ÔÅ 1 ı O #V- # = 2P 2j 3 " B
¶gàs &' @G \ ¶gà ; = z{ &' AY Sİ @œ ¶gà á xâ Q>% - /
ÛLE Ĩ O(• ` 912G YL(A. sã Èä &' A ÛL ; (" B ¶gà ;) =
Node% ST/+, (• &' /Ø (œ LENA Manager ä1 ¶gà ; = ST(\$ ÑE
• G12.

2.1.4. 789:

LENA +, % æk () - * # s 4 —Ü- # ÜT1 ÛLs s9 Y61 +, çèéO%Æf (• Ø 1 2.
] ^ f\$ LENA- # >q(\$ çèéO STsæ` 9A ; = Lê- Î \$ çèéO STE s9(I U2.

Table 2. Directory Requirement

! -	Directory	; <
LENA WAS Node(Binary)	/engn001/lena	
LENA WEB Node(Binary)	/engn001/lenaw	
Web Server, WAS Log	/logs001	logË = Ï O ®a ¶ +L
Web Application Source	/sorc001	

G- i ` Â: log ¥| E Ï Oi ÑJ Z • « s 2. log\$; < Ï O +L (Z ¾pI LENA Node Y
+, @\$ Ë = (- -) ! ÜTU2. log I J E èi P (I # < Disk 9¼ NO% í (P () - / # \$
log çèéO3 Ï O% • `` 1 2.

Y6(2I ; < j `` disk î ï E Node, log, source çèéO- Mount(• OS System ' hÄ ðO(\$
ÑE • `` 1 2.

2.1.5. JVM

JDK3 È ä LENA +, æk () 4 ; < Binary ñ ~ = ò: OS- # >? (\$ Package +, NOA% Q/
+, Y @K [KØ 1 2. LENA 2.0: OracleJDK/OpenJDK 8s } E Z É 1 2.

! OracleJDK3 È ä 8u202 V4 óZ Ô ßô = s9i j [2.

2.1.6. Network

] ^ 2sK^ õ: LENA3 \ Moduleá Ó^ö3 ÷øE · ùú <f s 2. LENA Management Nû
Ë =H Web Service Nû Ë =Y } üý f...@K[2.

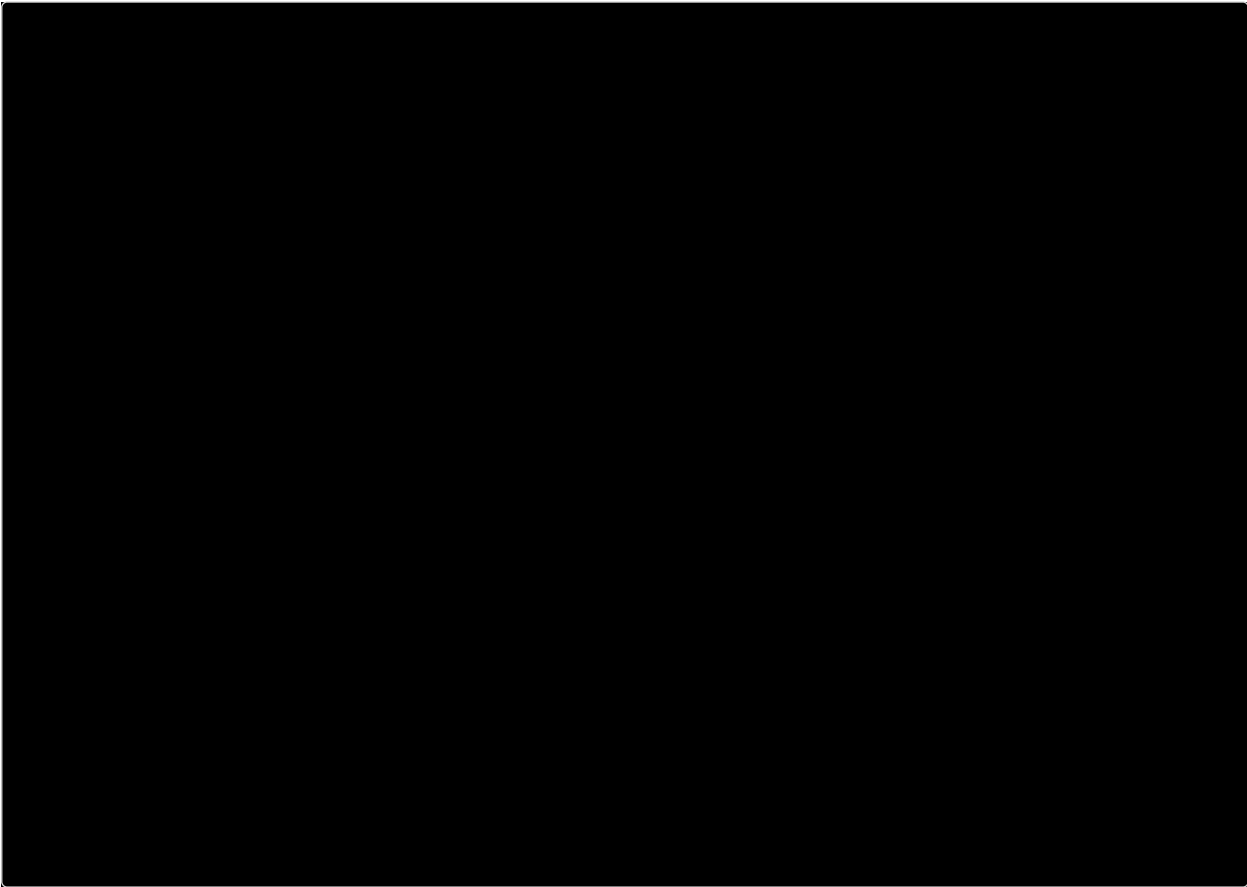


Figure 2. LENA Network Traffic

– 2sK^ õ- f...U LENA v° á Ó^ö È=H` 9 Port\$] ^ fH_2. ~ ¶U Port pÿ\$ ` 4 L3U) ! ² sœ \ Module +, ¶ ; <= ZLi j [2.] ^ f% FG(• Port% mL 1 ! , ` 4- ÿ" # E Open / ´] Ø 1 2.

!

LENA- # ` 9(\$ Port\$ Mq a\$ } 1025s} 3 Port% s912. —, #f g >? ¶ 80 Port , 3 Well-known Port% s9/Ø 1 2I « Š- # >?@\$ 80αÖ s9 Ys • % FG1 2.

Table 3. LENA Firewall Open Rule

Src	Dest	Protocol	Port	; <
&' A	LENA Manager	TCP	7700	Manager Web UI × %
LENA Manager	WEB Node Agent	TCP	16900	WEB Node > K
	WAS Node Agent	TCP	16800	WAS Node > K
WEB Node Agent	LENA Manager	UDP	16100	vwxy LM • a
WAS Node Agent				
WAS Advertiser				

Src	Dest	Protocol	Port	; <
Web Server	Web Server	HTTP	8000	WEB # f g x %
		HTTPS	8363	WEB # f g Mq(SSL) x % (HTTP + 363 / j L Y 6)
&' A	WAS	HTTP	8080	WAS # f g x %
Web Server		AJP	8009	Web Server-WAS & Û (HTTP - 71 / j L Y 6)
WAS	DB	TCP	3306	WAS JDBC x %

LENA\$ Web Server / WAS + , ¶ HTTP Port% Z L (• + , (< Š (G[2. s
HTTP Port%) Æp= HTTPS ¤ÓH _ : Server ž t E – 1 2P Port% Až ÛĐ(•
+ , (\$• ^ ' ¶Y – f- # s () 5= f¶U ¤Ós 2. c d # , Web Server,
WAS% 2j + , (\$ ÄL- # s³ ` 9U 2P Port H3 * +E ŸZ () – / # 1Ä
103 AO\$ Web Server· WAS ; = ž | (P, 1003 AO\$ ÇÈ (• + , (\$ ÑE
• 1 2.

Table 4. IPY _ : ¶ f – Web Server, WAS + , ¶ HTTP Port + L ' ¶

Sİ	Server ~	HTTP Port	f G
WAS	ee_01	8080	-
	ee_02	8180	ee_013 HTTP Port ² + 100
Web	web_01	7180	-
	web_02	7280	web_013 HTTP Port ² + 100

å 1 Dynamic Port Range% 45 Port , – = ` 9(Z - ÑE • G1 2. LENA) ž -
®a 1 Port% OS3 2P ServiceY Source Port= . ¿ (\$ | s / Üi Y 6Ts [2.

Chapter 3. Installation

3.1. LENA ' =

LENA +, ¥| E . } #V3 ÆfU çèéO- " =• 1 2. +, ¥| E Q/ LENA Manager% +, (GA (\$ Server- LENA Manager% +, (G Web Server% +, i Server- Web Server Node%, WAS% +, i Server- WAS Node% +, 1 2.

!

LENA +, % æk () - * # JVM E FÆ(• JDK% ³ O +, (<Š 1 2.

Node3 +, O Web ServerH WAS3 +, \$ LENA Manager3 Web UI% Q/ # +, 1 2. LENA +, ¥| : >1 SĬ Ä 9<- cd 2ÄÄ _s SĬ U2.

Table 5. LENA +, ¥| SĬ

' = >?	; <
lena-standard-linux_na_x86_64-2.0.0.0.tar.gz	LENA Manager, WAS +, 9
lena-web-linux_na_x86_64-2.0.0.0.tar.gz	Web Server +, 9

3.1.1. LENA Manager ' =/@A

LENA +, 2ÊZ\$ 34¥| ñ p=, +, i #V- " =• O- 34E />(• ` 91 2. LENA Manager\$ WAS Node +, ¥| - æ©@K [pœ +, i Ê=(' :/engn001/lena)- +, ¥| E " =• O 34E 52.

#

LENA Manager\$ WAS Node +, ¥| - æ©@K [2.

' = BC D ' = >? ECF GH

```
Ê[l ena]# cd /engn001/l ena
Ê[l ena]# ll
Ê-rw-rw-r-- 1 l ena l ena l ena-standard-l inux_na_x86_64-2.0.0.0. tar. gz
```

!

34 /> ¶ +, ¥| 3 l ` A «Ĭ E >| 1 · 6Z søp= çèéOY ÛT@\$• s çèéO ~ E 2.0 p= á 7(P ÇË(• ` 91 2.

' = >? I J K 4 / 789: (L B

```
Ê[l ena]# tar -xvzf l ena-standard-l inux_na_x86_64-2.0.0.0. tar. gz
Ê[l ena]# mv l ena-standard-l inux_na_x86_64-2.0.0.0 2.0
Ê[l ena]# ll
Êdrwxr-xr-x 12 l ena l ena 2.0
Ê-rw-rw-r-- 1 l ena l ena l ena-standard-l inux_na_x86_64-2.0.0.0. tar. gz
```

install.sh(' :/engn001/l ena/2.0/bin/install.sh) ¥| E s 9(• +, (œ 2ÄÄ _: ~ ™K% ` 9(• +, i j [2.

LENA Manager ' =

```
[lena]# cd /engn001/l ena/2.0/bi n
[l ena]# ./install.sh create lena-manager
*****
*   LENA Server Install !       *
*****

+-----+
|-----|
| 1. SERVICE_PORT is the port number used by Manager.
|    ex : 7700
| 2. MONITORING_PORT is the port number used by Manager for monitoring.
|    ex : 16100
| 3. RUN_USER is user running LENA Manager.
|    ex : lena, wasadm
+-----+
|-----|

Input SERVICE_PORT for execution. (q: quit)
Default value is '7700'
7700
```

LENA Manager +, Y 8ô@l install.sh E uk 1 çèéO- LENA Manager H NûU Script ¥| s ÛT U2.

Table 6. LENA Manager NO9 Script ¥|

Script >? (' (
start-manager.sh	LENA Manager % ¶ t 1 2.
ps-manager.sh	LENA ManagerY uk 9J Z I J 1 2.
stop-manager.sh	LENA Manager % 9Z 1 2.

start-manager.sh E uk (• LENA Manager% ¶| t 1 2.

```
[lena]# ./start-manager.sh
-----
Ê          LENA Manager
-----

Usi ng LENA_HOME      : /engn001/l ena/j adeu3/2.0
Usi ng JRE_HOME       : /engn001/j ava/j dk1.8.0_202
Usi ng SERVER_PID     : /engn001/l ena/j adeu3/2.0/modul es/l ena-manager/l ena-
manager_sol manager. pi d
Usi ng SERVER_HOME    : /engn001/l ena/j adeu3/2.0/modul es/l ena-manager
Usi ng SERVER_ID      : l ena-manager
Usi ng INSTANCE_NAME  : l ena-manager_sol manager
LENA started.
```

LENA ManagerY L } op = uk @l / { # V3 Service Port = Manager- x%i j [2.

http://Server_IP:7700

] ^3 :) x% ÛL/f ; þÿ = x%(I :) " I E I J i j [2.

M/ NO 56/; PQR

admin / ladmin1234

3.1.2. Node ' = (Command Line)

Node3 +, \$ LENA +, 2ÊZ3 34E <\$ ÑÄ _2. WAS, Web Server% +, i #V- \ +, 2ÊZ% Æf 1 Ê =(' : /engn001/lena å \$ /engn001/lenaw)- " =• O 34E />1 2.
Node% +, (I] ^H _s Node Agent% uk, 9Z, } ~I J E () - 1 scriptY =>1 2.

Table 7. Node Agent NO Script

script BC	script (; <
Node +, Ê = (- 'bin' (' : /engn001/lena/2.0/bin)	start-agent.sh	Node Agent uk
	ps-agent.sh	Node Agent ? = üg I J
	stop-agent.sh	Node Agent 9Z

WAS Node ' =

WAS Node3 +, ¶ G- i j [\$ ` Â: 2ÃÄ _2.

1. LENA ManagerH WAS Node% _ : Server- +,
2. LENA ManagerH WAS Node% 2P Server- +, (LENA Manager @Ö +,)

1p3 Èä LENA Manager +, /uk - # LENA Manager% +, () - / WAS Node +, 2ÊZ3 34E ABp± = s³ WAS NodeY +, @K [\$ } ~s2.

2p3 Èä WAS Node% +, i Server3 Æf 1 Ê =(' : /engn001/lena)- LENA WAS +, 2ÊZ% " =• O 2ÃÄ _s 34E AK +, 1 2.

+ , Ê = 7 +, ¥| " =• I J

```
Ê[l ena]# cd /engn001/l ena
Ê[l ena]# ll
Ê-rw-rw-r-- 1 l ena l ena l ena-standard-l inux_na_x86_64-2.0.0.0. tar. gz
```

!

34 /> ¶ +, ¥| 3 I ` A «İ E >ı 1 · 6Z søp = çèéOY ÜT@\$•
s çèéO ~ E 2.0 p = á 7(P ÇÈ(• ` 912.

+ , ¥| 34 /> /çèéO ~ ÇÈ

```
Ê[l ena]# tar -xvzf l ena-standard-l inux_na_x86_64-2.0.0.0. tar. gz
Ê[l ena]# mv l ena-standard-l inux_na_x86_64-2.0.0.0 2.0
Ê[l ena]# ll
Êdrwxr-xr-x 12 l ena l ena 2.0
Ê-rw-rw-r-- 1 l ena l ena l ena-standard-l inux_na_x86_64-2.0.0.0. tar. gz
```

Node% + , C2I start-agent.sh= Node Agent% uk 1 2.

Node Agent uk

```
[lena]# cd /engn001/l ena/2.0/bi n
[l ena]# ./start-agent.sh
Input JAVA_HOME path for LENA. ( q: qui t )
JAVA_HOME PATH :
/engn001/j ava/j dk1.8.0_202 !
Input Agent port for LENA Agent. ( q: qui t )
Agent port (Default : 16800):
16800 "
Input Agent user for LENA Agent. ( q: qui t )
Agent user (Default : l ena):
l ena #

-----
Ê          LENA Agent
-----
Usi ng LENA_HOME      : /engn001/l ena/2.0
Usi ng JAVA_HOME      : /engn001/j ava/j dk1.8.0_202/j re
Usi ng CONF_FILE      : /engn001/l ena/2.0/conf/agent.conf
Usi ng LOG_HOME       : /engn001/l ena/2.0/l ogs/l ena-agent
Usi ng RUN_USER       : l ena
Usi ng PORT           : 16800
Usi ng UUID           : 98449860-0a9a-323b-9766-98c4292000df
LENA Agent is started.
```

Node Agent uk ¶ D" > \$ ÃŽ: 2ÃÄ _2.

- ¬ JAVA HOME (jdk) Ê = D"
- ¬ Node AgentY ` 9i Port D"
- ¬ Node Agent uk OS ÛL D"

Web Server Node ' =

Web Server% + , i Server- LENA Web Server + , 9 2ÊZ% " =• O 34E AK + , 1 2.

Ê = / ¥ | I J

```
Ê[l enaw]# cd /engn001/l enaw
Ê[l enaw]# ll
Ê-rw-rw-r-- 1 l ena l ena l ena-web-l inux_na_x86_64-2.0.0.0.tar.gz
```

+, ¥! 34 /> /çèéO ~ ÇÈ

```
Ê[lnaw]# tar -xvzf l ena-web-l inux_na_x86_64-2.0.0.tar.gz
Ê[lnaw]# mv l ena-web-l inux_na_x86_64-2.0.0 2.0
Ê[lnaw]# ll
Êdrwxr-xr-x 12 l ena l ena 2.0
Ê-rw-rw-r-- 1 l ena l ena l ena-web-l inux_na_x86_64-2.0.0.0.tar.gz
```

#

34 /> ¶ +, ¥! 3 l " A «İ E >ı 1 · 6Z s øp= çèéOY ÜT@\$•
s çèéO ~ E 2.0 p= á 7(P ÇÈ(• ` 912.

Node% +, 1 O start-agent.sh= Node Agent% u k 1 2.

Node Agent u k

```
[l ena]# cd /engn001/l enaw/2.0/bi n
[l ena]# ./start-agent.sh
Input JAVA_HOME path for LENA. ( q: qui t )
JAVA_HOME PATH :
/engn001/j ava/j dk1.8.0_202 !
Input Agent port for LENA Agent. ( q: qui t )
Agent port (Defaul t : 16800):
16800 "
Input Agent user for LENA Agent. ( q: qui t )
Agent user (Defaul t : l ena):
l ena #

-----
Ê          LENA Agent
-----

Usi ng LENA_HOME      : /engn001/l enaw/2.0
Usi ng JAVA_HOME      : /engn001/j ava/j dk1.8.0_202/j re
Usi ng CONF_F ILE      : /engn001/l ena/2.0/conf/agent.conf
Usi ng LOG_HOME        : /engn001/l ena/2.0/l ogs/l ena-agent
Usi ng RUN_USER        : l ena
Usi ng PORT            : 16800
Usi ng UUID            : 98449860-0a9a-323b-9766-98c4292000df
LENA Agent is started.
```

Node Agent u k ¶ D" > \$ ÂŽ: 2ÄÄ _2.

- ¬ JAVA HOME (jdk) È = D"
- ¬ Node AgentY ` 9i Port D"
- ¬ Node Agent u k OS ÛL D"

LENA ManagerS NodeT UV(WX)

WAS NodeH Web Server Node% +, (G Agent%) ž (l LENA Manager% Q/ Node% , Ši j
[2.

LENA Manager3 } — 'SERVER' ' C% mn(l Node List% l J i j [2.
 Node , ŠE – / 'Register' VEE F) (l] ^H _s Node% , Š() – 1 Empty RowY GY@œ
 \ D" ÅŽE , Š1 2.

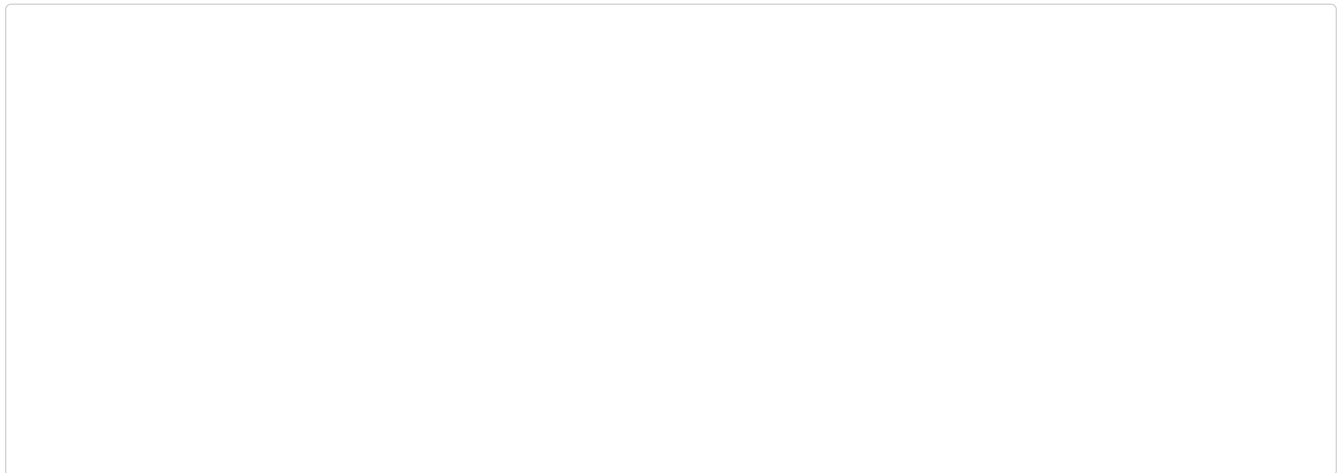


Figure 3. SERVER ' C :) " l

Node , Š ¶ D" i ÅŽ: 2ÄÄ _2.

1. Node Name: , Ši Node3 ~ H
2. Node Type: Application / Web 9- mn
3. Node IP: NodeY +, U Server3 IP Adress
4. Node Port: Node +, ¶ D" 1 Node Port

Manager Address ÅŽ 3 Èä LENA ManagerY +, U Server3 IPY Až D" @± = ; < D" i
 @a \$ Ú2.

D" ÅŽE v l D" 1 ! 'Save' VEp = Node , ŠE 8ô(œ L} Ì O ¶] ^H _: " l E l J i
 j [2.

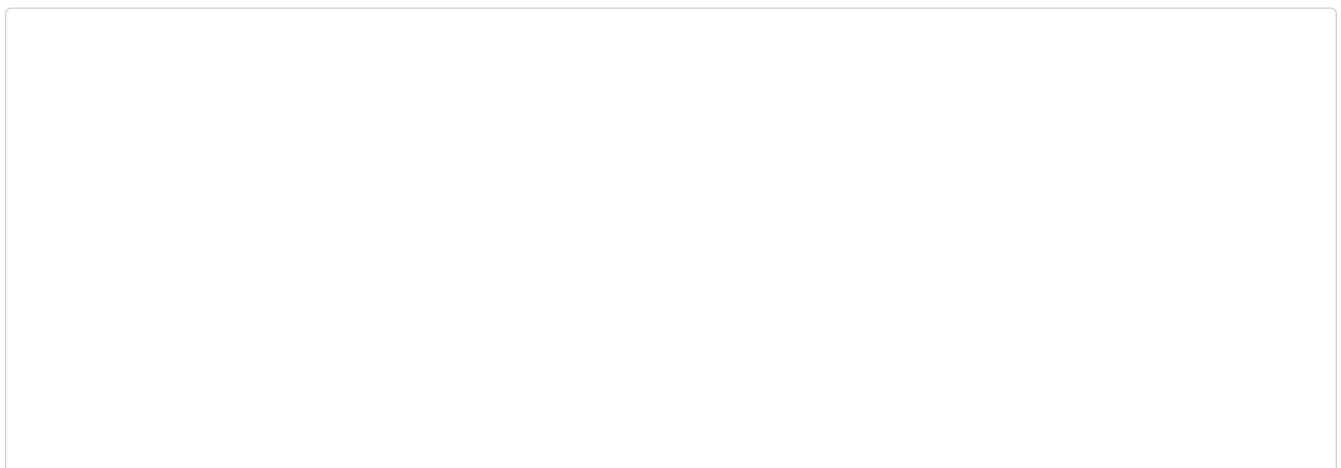


Figure 4. Node L } , Š ' ¶ " l

3.1.3. Node Y Z ' = (LENA Manager Web UI)

Node3 +, \$ Node +, (Command Line) - # æk 1 ŸJ j - < LENA Manager% Q/ É ðp =
 +, i j < [2. s% – / # \$ LENA (Manager)% +, 1 Server3 Í L ç è é O q- LENA
 +, ¥ l (WAS, Web Server)% " = • / l K Ø 1 2. +, 2 Ê Z% " = • / l K Ø (\$ È = 3 ' ¶ l \$
 2ÄÄ _2.

Table 8. Node É ð +, % – 1 +, ¥ l " = • È = (' ¶ l)

LENA ' = BC	LENA ' = [\] ECF BC
/engn001/lena/2.0 (LENA_HOME)	[LENA_HOME]/repository/install-files/default

/ { È = - * # ` 91 WAS, Web Server +, ¥ | E " = • 1 2.

É Ò +, % - 1 +, 2 Ê Z I J

```
[lena]# cd /engn001/lena/2.010/repository/install-files/default
[lenna]# ll
-rw-rw-r--. 1 lena lena lena-standard-linux_na_x86_64-2.0.0.0.tar.gz
-rw-rw-r--. 1 lena lena lena-web-linux_na_x86_64-2.0.0.0.tar.gz
```

/ { È = - +, 2 Ê Z % " = • C 2 I LENA Manager 3 'SERVER' ' C % mn (G (— 3 'Install' VEE F) 1 2.

Figure 5. WAS Node É Ò +, ' ¶

Node É Ò +, ¶ D " / Ø (\$ Å Ž : 2 Ä Ä _ 2.

1. Node Type: Application / Web 9 - mn
2. Node Name: É Ò Server - +, i Node 3 ~ H
3. Node Address: Node % +, i É Ò Server 3 IP Adress
4. Node Port: É Ò Server - # Node Y ` 9 i Port
5. User: É Ò Server 3 OS Û L
6. Password: É Ò Server 3 OS Û L 3 f ; p ÿ
7. SSH Port: É Ò Server 3 SSH Port
8. LENA Home: É Ò Server - Node % +, i È = (D " 1 È = 3 « v È = - . 1 K) • 1 ® a ©.)
9. Java Home: É Ò Server - +, @ K [\$ JAVA Home È =

É Ò +, - # D " (\$ ² E é . =, LENA Manager \$ * # ³ O Æ f / L +, 2 Ê Z ¥ | E É Ò Server = 4 • (G Node % +, (G, +, 1 Node 3 Agent % Å Ž p = uk (\$ Ñ p = É Ò +, \$ 8 ô U 2. s M 1 æ k } † : Pop up NE Q / I J i j [2.



Figure 6. WAS Node configuration window

Node Name: Node1, Node Type: LENA Manager, Node Address: 192.168.1.100



Figure 7. Node configuration window



Node3 configuration: Node Name: Node3, Node Type: LENA Manager, Node Address: 192.168.1.100, Enable SSL: checked, Enable HTTP: checked

3.1.4. WAS configuration

WAS Node configuration: Node Name: Node1, Node Type: LENA Manager, Node Address: 192.168.1.100, Enable SSL: checked, Enable HTTP: checked

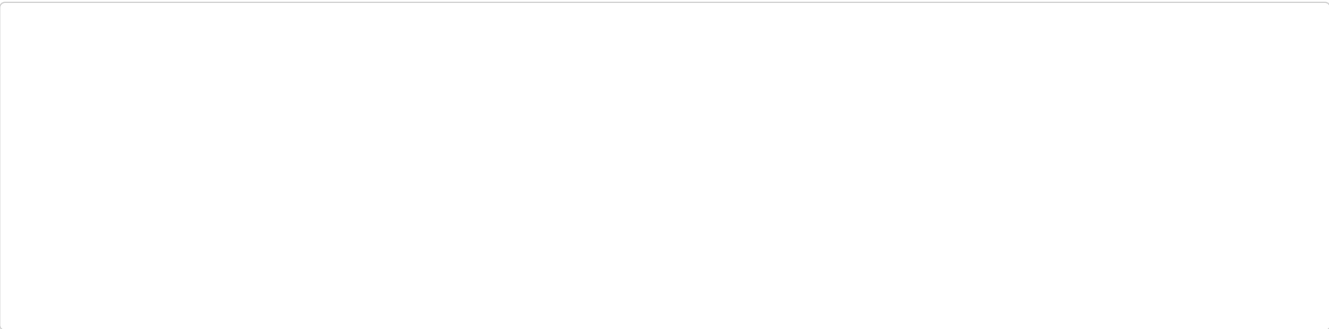


Figure 8. WAS List window

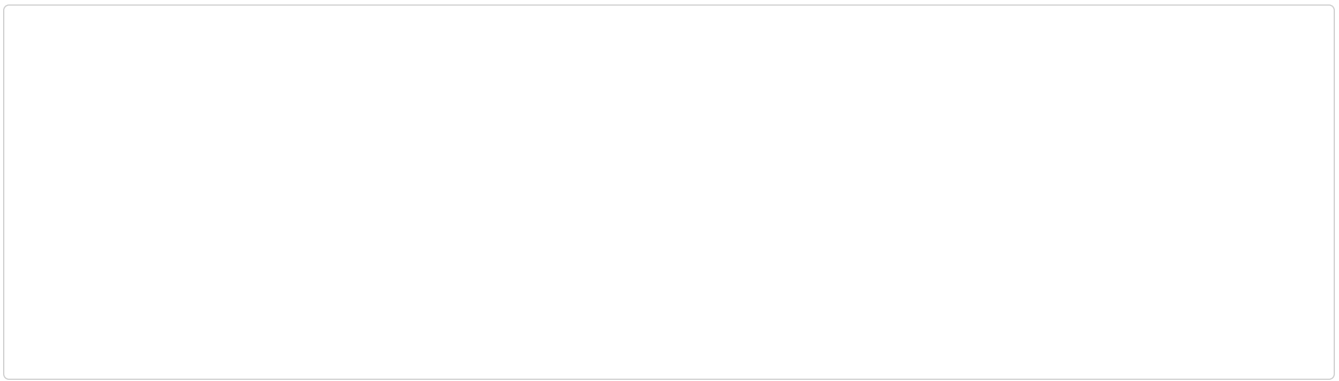


Figure 9. WAS +, LM D" Popup Ä D" ² ' ¶

'Install' VEE F) (I WAS% +, () - 1 LM% D" (\$ Popup Ns Q" @œ \ D" ÂŽ: 2ÄÄ _2.

1. Server Type: Standard
2. Node: WAS Y +, ¹ Node(j L RY)
3. Server ID: LENA Manager Y WAS% ; () - 1 ~ H
4. Service Port: WAS Y +, ¹ S) Æs @\$ HTTP Port% 3³
5. Run User: WAS 3) Ž ¶ ` 9i OS ÛL(j L RY)
6. Install Root Path: WAS Y +, ¹ Ê = (j L RY)
7. Log Home: WAS Log3 Ê =
 - a. default: [Install Root Path]/logs
 - b. cutom: ` 9AY T 3 = Ê = Z L
8. JVM Route: Web ServerH &Ž ¶ Web Server Y WAS% ; () - 1 ²
 - a. auto: LENA- # AŽ ÛT
 - b. manual: ` 9AY T 3 = Z L



WAS \$) Ž ¶ HTTP, HTTPS, AJP , 2U1 Port% ` 9(\$• LENA - # \$ WAS +, ¶ ` 9A í 3% - / HTTP Port ÔE D" > G s%) Æp= 2P Port ² E AŽ ÛÐ(• +, 1 2.

WAS +, LM% vI D" 1 ! 'Save' VEE F) (I WAS Y +, @œ WAS List - # +, 1 WAS % I J i j [2.

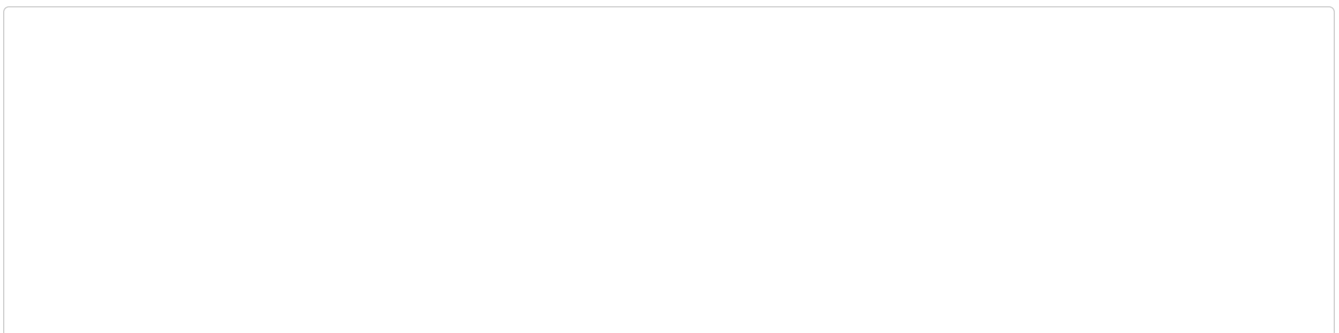


Figure 10. WAS L} +, O WAS List

9Z@K [\$ WAS %) Ž (- I WAS List ä P3 'Start' VEE F) 1 2. å 1) Ž @K[\$ WAS % 9Z(- I _: -, - 'Stop' VE p= ÝV± = / { VEE F) 1 2.

WAS) Ž ¶ - \$ WAS) Ž Log(Application s £ ¢@K [2I Application) Ž Log < ©W)Y Popup Np= Q" U2.



Figure 11. WAS3) ž Ä Log

3.1.5. Web Server ' =/@A

WAS +, H ž | 1 Ÿ p =, LENA Manager Web UI% Q/ Web Server% +, i Web Server Node% mn 1 ! Web Server% +, i j [2.



Figure 12. Web Server List I J



Figure 13. Web Server +, LM D" Popup Ä D" ² ' ¶

'Install' VEE F) (I Web Server% +, () – 1 LM% D" (\$ Popup Ns Q" @œ \ D" ÄŽ: 2ÄÄ _2.

- 1. Server Type: Web Server (GL)
- 2. Node: Web Server Y +, ¹ Node (j L RY)
- 3. Server ID: LENA Manager Y Web Server % ; () – 1 ~ H

4. Service Port: Web Server Y ` 9i HTTP Port
5. Run User: Web Server) ž ¶ ` 9i OS ÛL(j L RY)
6. Web Server Engine Path: Web Server +, ¶ ` 9i Engine Ě = (j L RY)
7. Install Root Path: Web Server Y +, 1 Ě = (j L RY)
8. Log Home: Web Server Log Ě =
 - a. default: [Install Root Path]/logs
 - b. custom: ` 9AY T 3 = Ě = Z L

!

Web Server \$) ž ¶ HTTP, HTTPS , 2U1 Port% ` 9(\$• LENA - # \$ Web Server +, ¶ ` 9A í 3% - / HTTP Port ÔE D" > G s%) Æp = 2P Port ² E Až ÛĐ(• +, 1 2.

Web Server +, LM% vI D" 1 ! 'Save' VEE F) (I Web ServerY +, @œ Web Server List - # I J i j [2.

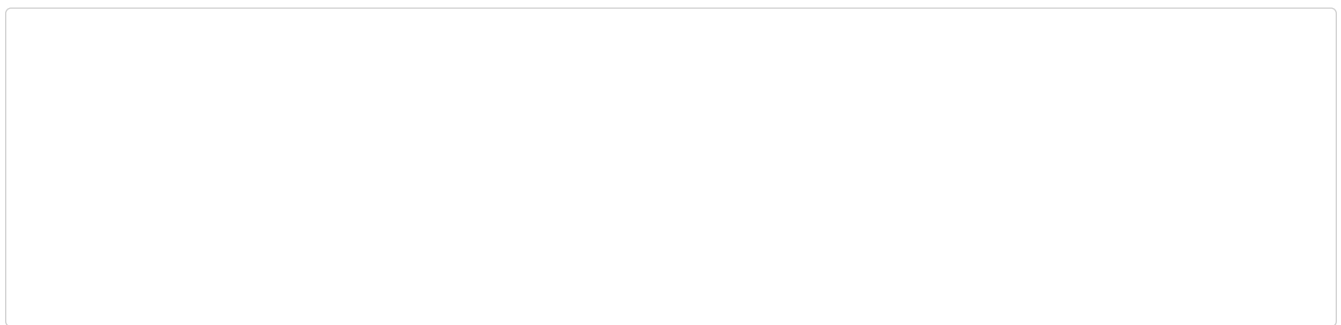


Figure 14. Web Server L } +, O Web Server List

9Z@K [\$ Web Server %) ž (- I WAS List ä P3 'Start' VEE F) 1 2. å 1) ž @K[\$ Web Server % 9Z (- I __: - , - 'Stop' VE p = ÝV± = / { VEE F) 1 2.

Web Server) ž ¶ - \$ Web Server) ž LogY Popup Np = Q" U2.

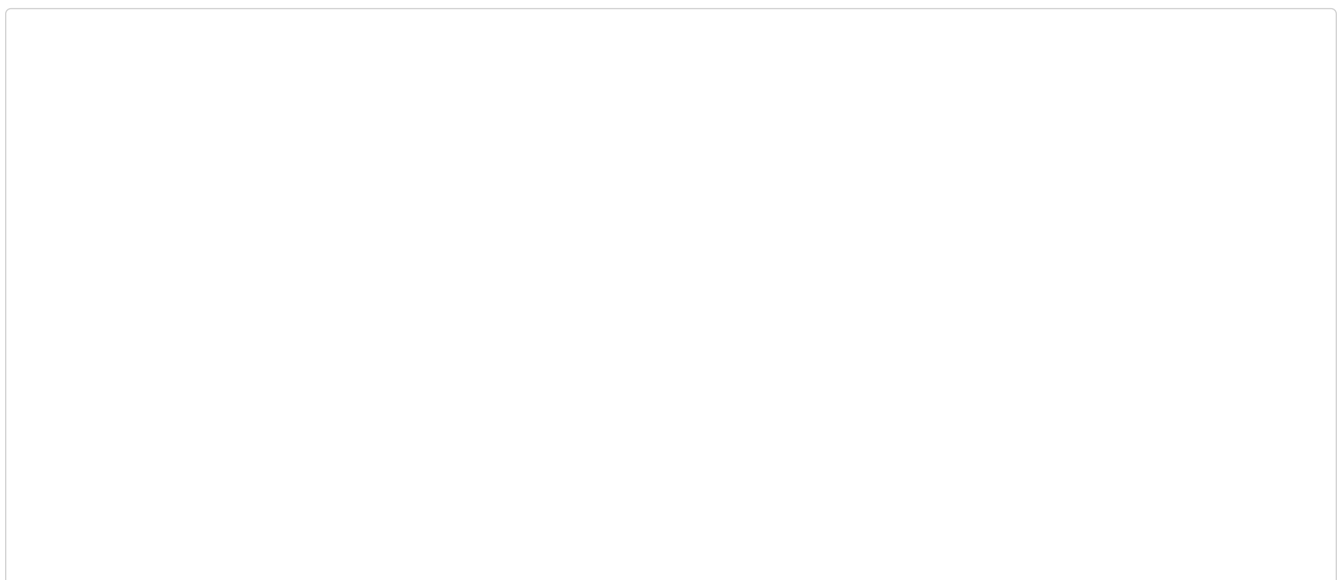


Figure 15. Web Server 3) ž Ä Log

Web Server - WAS UV

Web ServerH WAS á &ž +L - . / X] ! 2. LENA Web Server H WAS 3 &ž : Web Server +L " I - # i j [2. LENA Manager } —3 'SERVER' ' C- # +, 1 Web Server % mn(• +L

" I E YG +L " I 8 } —3 'Connector' Z E mn 1 2.

Web Server 3 'Connector' Z - # \$ Web Server H WAS á &[- . 1 +L E NO 1 2.

'Connector' Z " I (—3 WAS List \ - &ž i WAS% GY(I) ! oJ Web Server H WAS á &ž s 8ôU2.

WAS % GY() - / # \$ WAS List \ 3 '+' VEE F) (I YO\$] " - # +, @K [\$ WAS% mn(G 'Save' VEE F) 1 2.

] " - # \$ LENA Manager - , Š@K[\$ WAS Node ; = WAS ŽŠE I J i j [pæ s³ 'Connector' - , Š1 WAS\$ Ms Z ¾\$2.

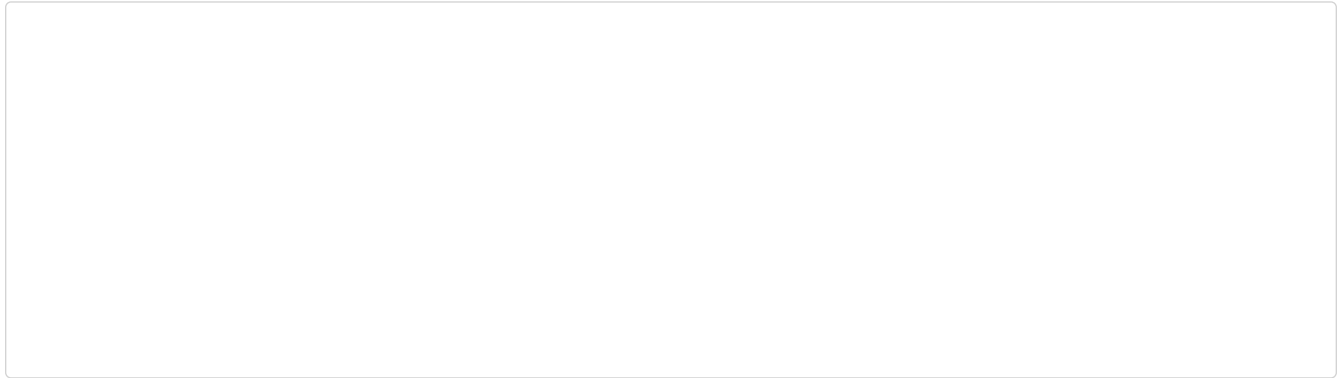


Figure 16. &ž i WAS GY

WAS List- &ž +L i WASY GY@I äP (—3 'Save' VEE F) (• ÄW Š " 1 2.

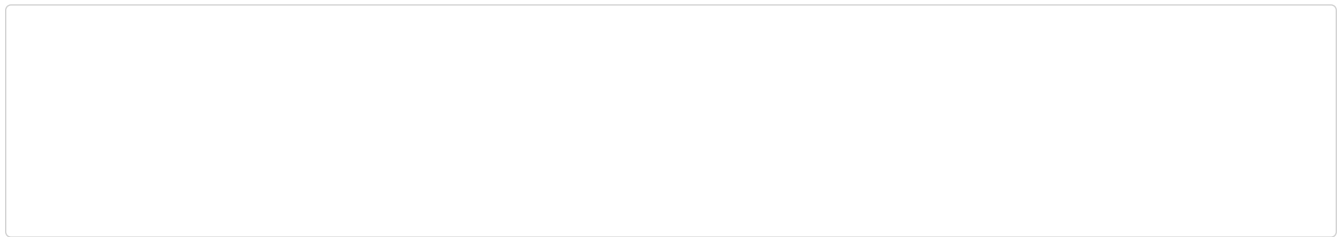


Figure 17. &ž i WAS ŽŠ Š "

3.1.6. Server ^ UV GH

* # [Web Server - WAS &ž](#) ÄLE Q/ # æk 1 &ž +LE I J (\$ ŸJE +~ 1 2.

LENA Manager - # \$ +, 1 Server 3 STE áí (P I J i j [<Š Topology View % >? (G [2. s Topology) 6E Q/ &ž s L} op= I J (\$ ŸJ Ä Web Server, WAS +, ¶) !

^ >@K [\$ LENA Sample _s Z% Q/ &ž s L} op= @K[\$ Z% I J i j [2.

Topology _ ` a GH

LENA Manager } —3 'Topoolgy' ' C% mn 1 2.

Topology View - # \$) ! op= ...> , Š@K [\$ Node H Node ; +, 1 Server 3 STÄ &ž LM% I J i j [2.

Web Server H WAS á &ž +L s &[mp= f...@G [pæ s% Q/ Server á &ž s L} op= @B\$Z I J i j [2.

Sample Page Rbc ` a GH

LENA 3 Web Server H WAS - \$) ! ^ >U Sample PageH Sample Application s [2. s \$:) +, O L} &ž E I J (\$ 9<=< ` 9' j [2.

` Š Web Server 3 IPH Port% I J 1 ! a bdä Š-] ^H _s D" 1 2.

http://[Web Server IP]:[Web Server Port]/index.html

^ c] ^H _s LENA - # >? (\$ index.html _sZY ŸQ@\$ ÑE I J i j [pœ Web Server
Y L} ŸQ@\$ ÑE I J i j [2.

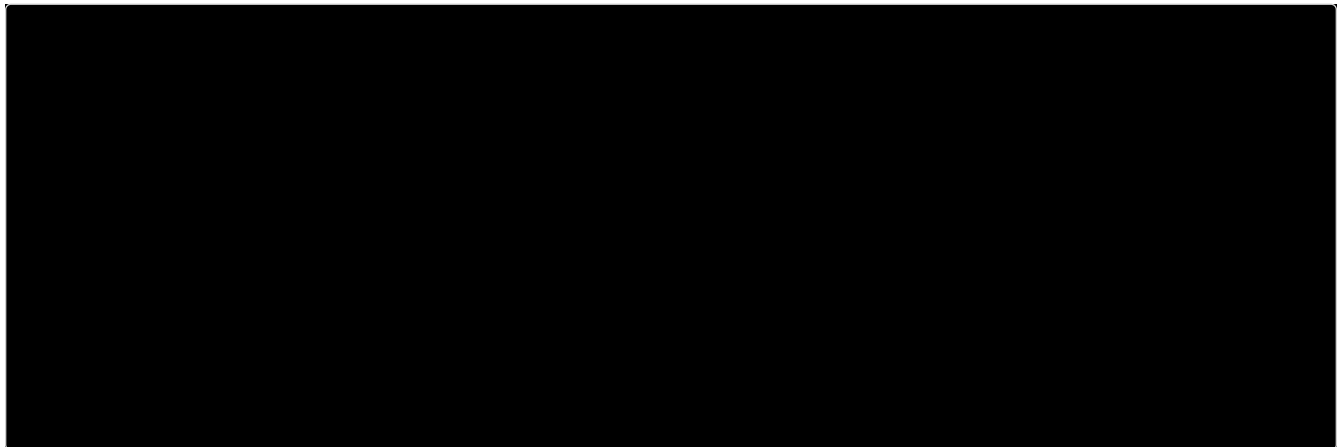


Figure 18. Web Server ŸQ Test

Sample Application Rbc ` a GH

LENA WAS% +, (I LENA - # >? (\$) ! Application s ^>@K [2. s Application3
index.jsp % ŸQ(I WAS ŸQ dgÓ%j ki j [2.

Web Server H WAS Y +, :) } ~ = +L@K [2\$ YL (- a bdäŠ-] ^H _s D" 1 2.

http://[Web Server IP]:[Web Server Port]/index.jsp

Web Server H WAS Y L} &[s @K[2I Web Server 3 IPH Port = ŸQ1 - a b: WAS=
4Š@K index.jsp _sZ% a b(P @G 2ÄÄ _s LENA Sample Application - # >? (\$ index.jsp
_sZY ŸQU2.

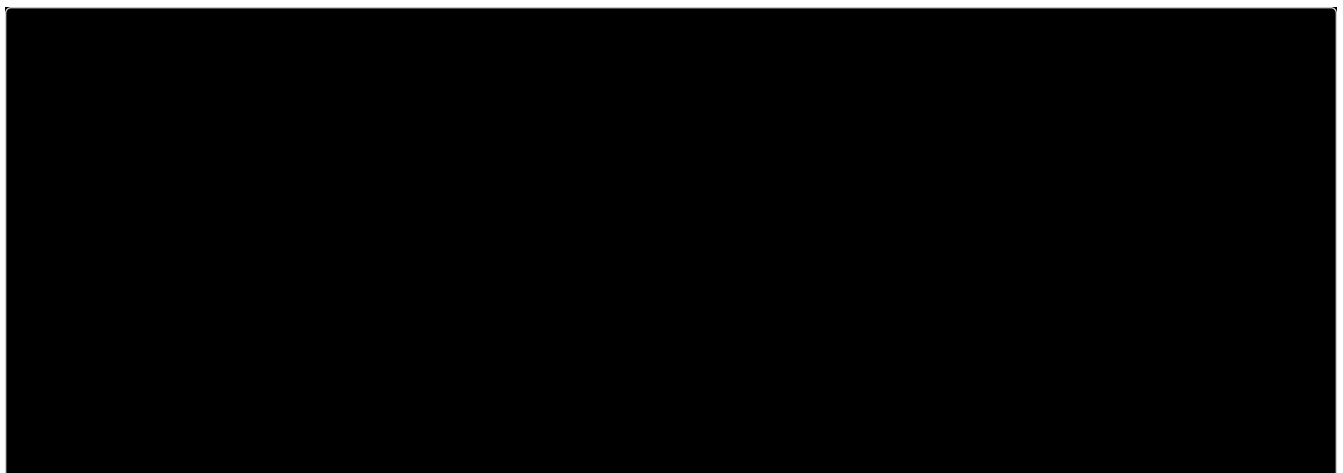


Figure 19. index.jsp ŸQ Test

index.jsp _sZ% ŸQ(I ...> a bE Ke WAS Y Ì O(\$Z% Server ID, Service Port, JvmRout
² E Q/ I J i j [2.