

Installation

LENA Support

Version 1.3.1.6

Table of Contents

1. Overview	1
1.1. $_k\tilde{I}$	1
1.1.1. Server	1
1.1.2. Agent, Advertiser	1
1.1.3. Manager	1
1.2. Mechanism	2
2. Installation Prerequisite	4
2.1. $\tilde{A}q\tilde{O}k_j\ \tilde{D}$	4
2.1.1. Hardware Resource	4
2.1.2. $+,\ 9B$	4
2.1.3. $\hat{e}X$	5
2.1.4. $\tilde{O}\tilde{O}\acute{e}[$	5
2.1.5. JVM	5
2.1.6. Network	5
3. Installation	8
3.1. LENA / O	8
3.1.1. LENA Manager / O/} \cup	8
3.1.2. Node / O(Command Line)	11
WAS Node / O	11
Web Server Node / O	12
LENA ManagerU Node7 2 \sim ($\bullet\bullet$)	14
3.1.3. Node $\bullet\ p$ / O(LENA Manager Web UI)	15
3.1.4. WAS / O/} \cup	16
3.1.5. Web Server / O/} \cup	18
Web Server - WAS 2 \sim	20
3.1.6. Session Server / O ; 2 \sim	21
Standalone , a / OU WAS 2 \sim	21
Embedded , a / OU WAS 2 \sim	24
3.1.7. Server \sim 2 \sim \vee (.....	25
Topology \ast] 5 \vee (.....	25
Sample Page - \I] 5 \vee (.....	25
Sample Application - \I] 5 \vee (.....	26

Chapter 1. Overview

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

! " # \$ LENA 1.3.1 L 8 I) MNA) 4- K, 6 O P Q > <= I RS 5 6.

- ¥ LENA / O
 - T Linux) &
 - T Windows) & / O

1.1. ! " # \$

LENA\$ Web Server, WAS(Web Application Server), Session ServerU Web Server7 Status* V(- \$ Node Agent, Application Server1 / ODW StatusXY* BC- \$ AdvertiserU Z[E 1\ BCD\$] ^ Z[@_(ManagerA _` a 6.

1.1.1. Server

LENA1# BCD\$ #L7 bc\$ Web Server, Application Server, Session Server 3ded f 6. g #L7 =@\$ hi U Q 6.

- ¥ Web Server: j =E kl 1 mn Web Resource* BC56. Application Serverd BC- \$ o=#pq7 FrontrsI tu-v#, wx' NA Load Balancing ; Yy z{ W(SSL)* BC- \$ rsl tu56.
- ¥ Application Server: JavaA |` a o= #pq* } u/BC 56.
- ¥ Session Server: Application Server~ j =E 7 • €I • e56.

1.1.2. Agent, Advertiser

Node, Server1 / ODW BW ; , f „ ...) : I † ‡ - \$ Agent { 6.

- ¥ Node Agent
 - T Web Server ^ % , , f „ ... Š { „ * < ^ - Ą Manager1 \ BC56.
- ¥ Advertiser
 - T Application Server ^ % , , f „ ... Š { „ * < ^ - Ą Manager1 \ BC56.

1.1.3. Manager

Manager\$ Node AgentU Advertiser*] - Ą NodeU Server7 BW ; , f „ ...) : • I BC- \$Web Application{ 6. 2Ž' NA hi U Q >) : I BC56.

Table 1. LENA Manager • k) :

%&	' (
Dashboard	¥ Server, Server Cluster • ' ¥ Notification V(

%&	' (
Server	¥ System (' [' Server " ") • • /t X/– B
Server Cluster	¥ Server Cluster • • /t X/– B ¥ Server Cluster 1 • • s Server • • /– B ¥ Server Cluster 1 • • 5 Server / X p— ; ~) ™ ¥ Server Cluster / X š> ; œ• l ž 5 Snapshot ¥ Server Cluster 1 • • 5 Server Ÿ 7 Graceful Restart
Resource	¥ Reosource7 i ; • • /t X/– B Database / DataSource / MessageService(JMS) / Transaction(JTA) / Application / LoadBalancer(SLB) ¥ Resource* j = - \$ Server ¢• i ; • • /t X/– B
Diagnostics + (, f„ ...)	¥ Server1 25 { £ • ' , f„ ...) : ¥ Server1 # ¨ ¥5 Event i) :
Topology	¥ System? Server _` • ' i
Admin	¥ j =E ; 5 Z [, j =E/ 5/\$ G F `` ¥ j =E +, { © i ¥ n{ wq Z [, • ' i ; > A ^a

1.2. Mechanism

LENA\$ Manager*] 3# Web Server/WAS * , f„ ... ;] ^Z [- \$) : l BC56. { * ž 3
Noden\$ « ž A Agentd / OD\$Š { * Node AgentnK 56. Node Agent\$ Manager7 j =E
¬ - l 8® h Node1 / Oa Web Server/WAS * BW- ° Noded / Oa Host/VM, Web Server 7
, f„ ... XY* ManagerA 8±56.

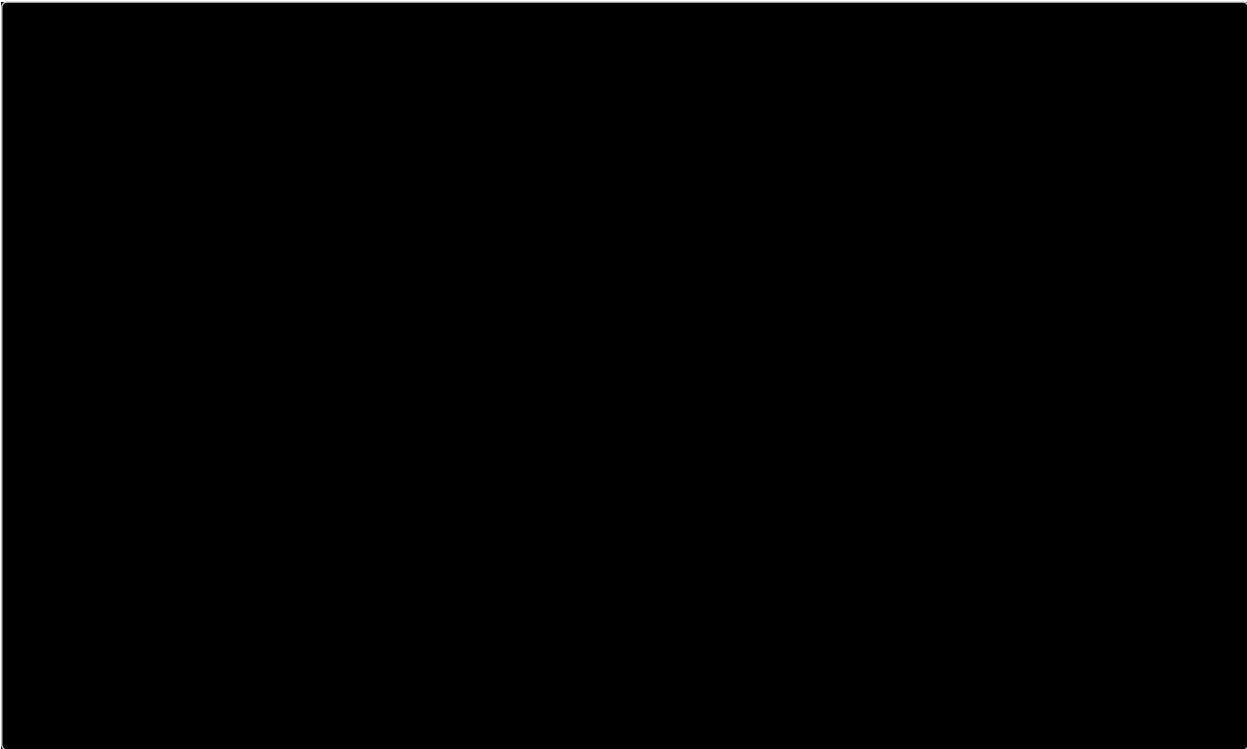


Figure 1. LENA Manager7 , f„ ... ;] ^Z[7 | ~ 2 3

LENA Manager, Web Server, WAS ´ 1@ Manager7 ~ | I ž 3 j =D\$ Manager Repository, Session ClusteringI ž 5 Sesssion Server, WAS7 , f„ ... XY t µI ž 5 Advertiserd | ~ - Œ Manager*] 5 , f„ ... ;] ^Z[d d: - @• 56.

%&	' (
Manager	# L 1 ¶ RD\$ / X· % Z[; Server , f„ ...) : BC
Manager Repository	Manager + , I ž 5 · % , 1 Repository, gb / XXY ; DB XY* RSS
Node Agent	Web # L , f„ ... Š { „ < ^ ; Manager1 \ ± ° , ManagerA» „ t ° 5 BW// X ¬ - } u
Application Server	Application Server Instance
Web Server	Web Server Instance
Session Server	Session Server Instance
Advertiser	, f„ ... Š { „ < ^ ; Manager1 \ ± ° (Application Server1] ^)

Chapter 2. Installation Prerequisite

2.1.) * + # ! , %

2.1.1. Hardware Resource

¥ CPU

8' NA _~ - KE - \$ Web Application{ W¼ X@7 ` : I k_- \$e1 ®½f 6.) ! ' (LENA #pq _~ 1 ¾k 5 CPU\$ 2 Core { ^ I | K 56.

¥ Memory

Memory1 23#\$ hi Ž* J 56. Web Server* B´5 , ¿ Module> JVM) &NA ~ | - ÅA Heap Memory* j =56. LENA1#\$) ! Heap Memory ÁI Å[/X3 ÃÄN°, /O Å1 3‡ ÅNA /ODÆ ¾k 1 mn tX{ d: - 6. yX' (+, I ž 3 - Æ7 Ç[' #L1 /OÈ , ¿ , É7 Heap Memory /X Å7 ^{ Ç[#L7 ÊÆ \$, [=ËY6 l e Í @• • 756.

LENA Manager ; g Server /O1 25 Î Ĩ k_j Ð> 6OP Q6.

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

g Server /O Å) ! Memory) MNA /O D°, Memory /X> Î Ĩ Memory { ^ NA /XÁI ÖÖ- Æ' =s t f 6.

2.1.2. 1 2 3 4

¥ Linux

Redhat (RHEL, CentOS) 6.5 { ^ / Ubuntu 12.04 { ^ I e• - ° d¹ | K- \$ +, 9B{ 6. %&' (x86 hÖÖÖ7 x` 1 Ø@• 2=Ë] ^#L _` Y6\$, =Ë 6t7 #L1 ÛÚ /O- \$ ŪI | ¹ 56.

¥ Windows

Windows 7 { ^ I e• 56. Linux/Unix ®[Windows x` 1 mn LENA ModuleI BackgroundA ÜÝ) ž 3 Windows Service ••) : I BC56. " Pe Í Nv LENA Module{ Ð^ ForegroundA } ua 6.



Linux/Unix1#\$) ! ' NA LENA ModuleI } uÅÔ) ž 5 q l Bâ* BC56. á Ñ OS ServiceA •• { ¾ks Å #L †‡Ed OS âÓ1 Ø\ ää /X3â 56.

¥ Unix

Solaris, HP-UX, AIX* e• 56. Unix7 ÓÝ Linux/WindowsU ®[° æ L8 ; Patchd) ! BCDe Í N°, ¾k Å 3‡ OS7 L8 ? ç? èé*] 3 B| ; ¶IRD° { \$] ^' NA Ñ 2• 7 Ĩ k Å~{ ¾k - 6.

2.1.3. 56

LENA* /O-) 8 LENA /O ;) ~ 1 { =5 êX{ ¾k - 6. ' ^5 { • d ë6v Yy ^ Root / Administrator êX> | KDe Í N° { *] 3 LENA* } uÄì t ëNf ?@7 êXI Ä[¥` - @• 56.

■

X86 hÖÖÖ1# | KD\$ í \$ hfeá, áÑ 5 Ç[#L1 #A 6î 6t7 > ï Åqð{ +, DK g Åqð ?A †‡ +, Ed _ÜD° Åqð ~ äñ] B* ž3 êXI Ù[- Æ j =56K dX- E. { ò ÓÝ +, E êX ?(> ï Åqð ?)A Node* _` //O - Æ +, 3â - ° LENA Manager ó5 Åqð ?A _` - \$ ÛI | K56.

2.1.4. 789:

LENA /O* ôu-) 1 . # { 8 «ê1# ¥` 5 êX{ { = d: 5 /O ööé[* Mp- Æâ 56. hi Ž\$ LENA1# By- \$ ööé[_` { ° j =E ?A X÷1 Ø\$ ööé[_` I { =- v a6. hi Ž\$ Linux/Unix) MNA / ¬DøNÆ Windows7 ÓÝ C: - ž1 ~ %- \ ööé[* _` 56.

Table 2. Directory Requirement

! -	Directory	; <
LENA WAS Node(Binary)	/engn001/lena	
LENA WEB Node(Binary)	/engn001/lenaw	
Web Server, WAS Log	/logs001	logÓA Ù[¾k Å / X
Web Application Source	/sorc001	

K½s j Ð> log · %I Ù[s Û(e Æ»{ 6. log\$?@ Ù[/X- e Í Nv LENA Node d /OD\$ ÓA - ž1) ! ¥` a6. log V(I ùú\ - v#@ Disk =Ë Z[* û- \ -) ž3# \$ log ööé[7 Ù[* | 1 56.

d: - 6v ?@ ´¹ disk üýI Node, log, source ööé[1 Mount- Æ OS System , r P p[- \$ ÛI | 1 56.

2.1.5. JVM

JDK7 ÓÝ LENA /O ôu-) 8 ?@ Binary ÿ%A ! > OS1# BC- \$ Package /O Z[E*] 3 /Od DW fWâ 56. LENA 1.3> OracleJDK/OpenJDK 8{ ^I e• - ° JDK 6,77 ÓÝ LENA 1.21# e• 56.

!

OracleJDK7 ÓÝ 8u202 L8 " eá ï #A { =s t f 6.

2.1.6. Network

hi 6{ W" \$> LENA7 g Module~ ài %7 &' I Æ() @Ž{ 6. LENA Management Z* ÓAU Web Service Z* ÓAd ^• + Ž• DWf 6.

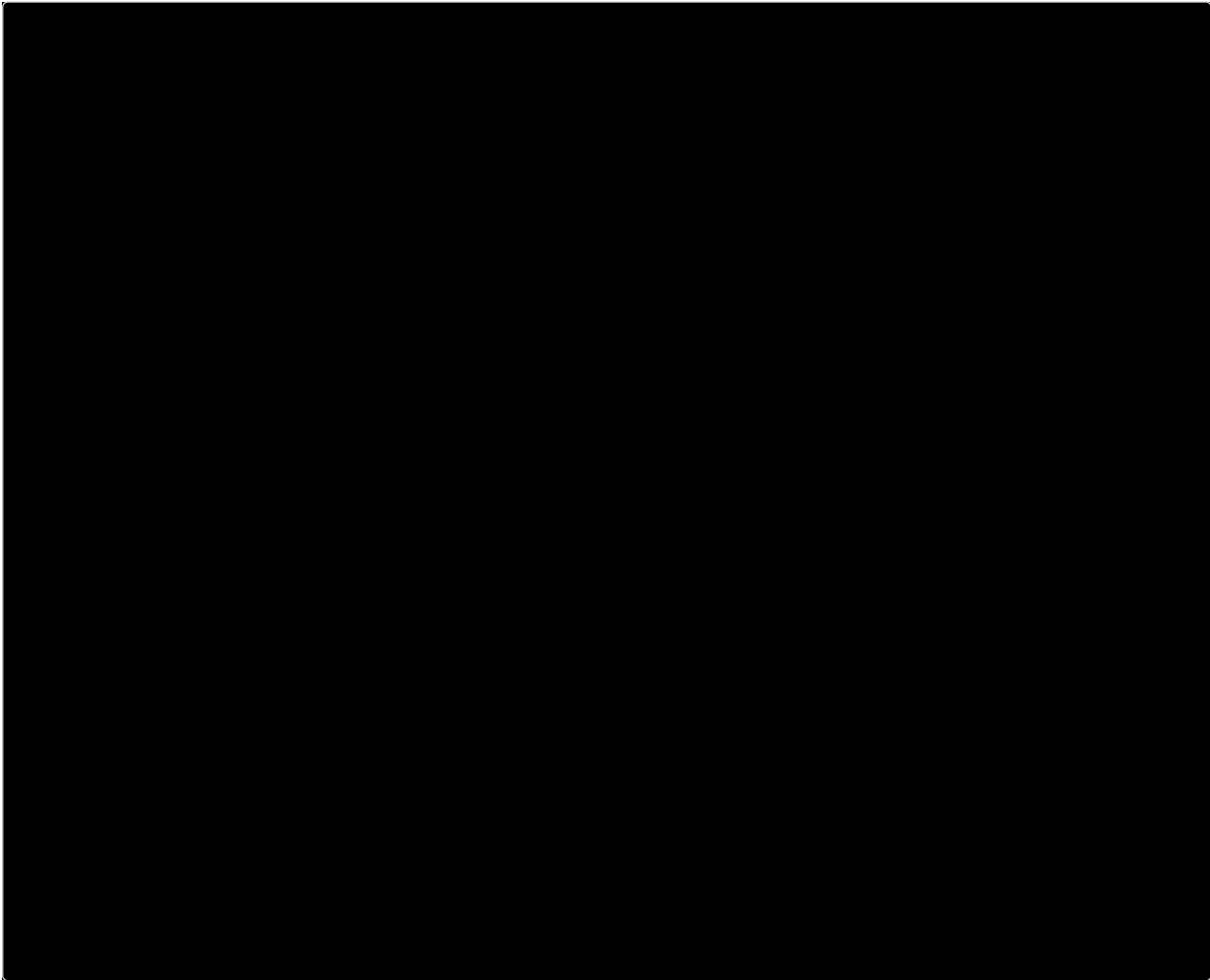


Figure 2. LENA Network Traffic

ž 6{ W" \$1 Ž• a LENA , É ~ ài % ÓAU j = Port\$ hi ŽU Q6. ¬Åa Port , - \$ j 8 X7a) ! Á{ ° g Module / O Å ?@A eXs t f 6. hi Ž* JK- Æ Port* wX5 . , j 81 z™ / I Open 3 Åhå 56.

!

LENA1 # j = - \$ Port\$ Yy kO ^ 1025{ ^ 7 Port* { =56. « , #pq BC Å 80 Port • 7 Well-known Port* { =3å 56v » • 1# BCD\$ 80Rà { = d{ a * JK56.

Table 3. LENA Firewall Open Rule

Src	Dest	Protocol	Port	; <
+ , E	LENA Manager	TCP	7700	Manager Web UI ä 1
LENA Manager	WEB Node Agent	TCP	16900	WEB Node BW
	WAS Node Agent	TCP	16800	WAS Node BW

Src	Dest	Protocol	Port	; <
WEB Node Agent	LENA Manager	UDP	16100	, f, ... XY ±°
WAS Node Agent				
WAS Advertiser				
Session Server				
• , /+, E	Web Server	HTTP	8000	WEB #pq ä 1
		HTTPS	8363	WEB #pq Yy (SSL) ä 1 (HTTP + 363 / t Xd:)
+, E	WAS	HTTP	8080	WAS #pq ä 1
Web Server		AJP	8009	Web Server-WAS 2ê (HTTP - 71 / t Xd:)
WAS	Session Server	TCP	5180	Session Clustering
Session Server				
WAS	DB	TCP	3306	WAS JDBC ä 1

||

LENA\$ Web Server / WAS / O Å HTTP Port* eX- Æ / O- @• - Kf 6. { HTTP Port*) MNA HTTPS Rà U Q> Server ~ | I ž 5 6î Port* E~ êÚ- Æ / O- \$Š " 3Åd ž Ž1# { 45 9A ŽÅa Rà{ 6. mn#, Web Server, WAS* 6t / O- \$ PX1# { Å j =a 6î Port U7 67I ² e-) ž 3# 1P 107 E[\$ Web ServerÆ WAS ? A ~ %- \, 1007 E[\$ ÒÓ- Æ / O- \$ ÛI | ¹ 56.

Table 4. IPd Q> ¹ p1 Web Server, WAS / O Å HTTP Port / X 3Å

_Û	Server ↵	HTTP Port	pK
WAS	ee_01	8080	-
	ee_02	8180	ee_01 7 HTTP Port Å + 100
Web	web_01	7180	-
	web_02	7280	web_01 7 HTTP Port Å + 100

ó5 Dynamic Port Range* 89 Port 8ž A j =- e 9 ÛI | K56. LENA) ~ 1 ¾k 5 Port* OS7 6î Serviced Source PortA : • - \$ % { ¨¥s d: ` { f 6.

Chapter 3. Installation

3.1. LENA ' =

LENA /O· %I 2^ #L7 Mpa ööé[1 > Aª 56. /O· %I] 3 LENA Manager* /O- KE - \$ Server1 LENA Manager* /O- K Web Server* /Os Server1 Web Server Node* , WAS* /Os Server1 WAS Node* /O56.

! LENA /O* ôu -) 1 . # JVM I J - Æ JDK* Â[/O- @• 56.

Node7 /O ; Web ServerU WAS7 /O\$ LENA Manager7 Web UI*] 3# /O56. LENA /O · %> B< _ÛP =@1 mn 6OP Q{ _Ûa 6.

Table 5. LENA /O· % _Û (OS: Linux/Windows 64bit / LENA: 1.3.1.6) M)

4 > ! - (Edition)	OS ! -	' = ?@	; <
Enterprise	Linux	lena-enterprise-linux_na_x86_64-1.3.1.6.tar.gz	LENA Manager, WAS /O=
	Windows	lena-enterprise-win_na_x86_64-1.3.1.6.zip	
Standard	Linux	lena-standard-linux_na_x86_64-1.3.1.6.tar.gz	
	Windows	lena-standard-win_na_x86_64-1.3.1.6.zip	
-	Linux	lena-web-linux_na_x86_64-1.3.1.6.tar.gz	Web Server /O=
	Windows	lena-web-win-na_x86_65-1.3.1.6.zip	

Enterprise EditionP Standard Edition7 = { \$ + , E FGH7 Server Module * JK 56.

LinuxU Windows 1 # 7 LENA /O\$ > &' 1 # \$ ~ %5 ² ³ NA ôua 6. ! " # 1 # \$ Linux*) MNA / ¬ 56.

3.1.1. LENA Manager ' = /AB

LENA /O ?Ôe\$ @A· % ÿ³ NA, /Os #L1 > Aª ; 1 @AI 3B- Æ j = 56. LENA Manager\$ WAS Node /O· %1 RSDW f N° /Os ÓA(3: /engn001/lena)1 /O· %I > Aª ; @AI B6.

LENA Manager\$ WAS Node /O· %1 RSDW f 6.

' = CDE ' = ?@ FDG HI

```
Ê[I ena]# cd /engn001/I ena
Ê[I ena]# ll
Ê-rw-rw-r-- 1 I ena I ena I ena-enterpri se-l inux_na_x86_64-1. 3. 1. 6. tar. gz
```

! @A 3B Å /O· %7 V¹ E » ÛI B´ 5 ÆCe { ' NA ööé[d ¥` D\$Š { ööé[¬I 1.3 NA ~D- \ ÒÓ- Æ j = 56.

' = ? @ J K L 4 / 7 8 9 : (MC

```
Ê[lena]# tar -xvzf l ena-enterpri se-l i nux_n a_x86_64-1.3.1.6. tar. gz
Ê[lena]# mv l ena-enterpri se-l i nux_n a_x86_64-1.3.1.6 1.3
Ê[lena]# ll
Êdrwxr-xr-x 12 l ena l ena 1.3
Ê-rw-rw-r-- 1 l ena l ena l ena-enterpri se-l i nux_n a_x86_64-1.3.1.6. tar. gz
```

install.sh(3: /engn001/l ena/1.3/bin/install.sh) · %l { = - Æ / O - °
6OP Q> ¬ - W* j = - Æ / O s t f 6.

LENA Manager ' =

```
[l ena]# cd /engn001/l ena/1.3/bi n
[l ena]# ./install. sh create l ena-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 : l ena, wasadm
+-----+
-----
Input SERVICE_PORT for execution. (q: qui t)
Defaul t value is ' 7700'
7700
```

LENA Manager / Od E # Dv install.sh l } u5 ööé[1 LENA Manager U Z * a Script · %{
¥` a 6.

Table 6. LENA Manager Z [= Script · %

Script ? @ (' (
start-manager.sh	LENA Manager * Å 56.
ps-manager.sh	LENA Managerd } uF (e V (56.
stop-manager.sh	LENA Manager * F e 56.

start-manager.sh l } u - Æ LENA Manager* Å | 56.

```
[lena]# ./start-manager.sh
```

```
-----
Ê          LENA Manager
-----
```

```
Using LENA_HOME      : /engn001/l ena/j adeu3/1.3
Using JRE_HOME       : /engn001/j ava/j dk1.8.0_202
Using SERVER_PID     : /engn001/l ena/j adeu3/1.3/modules/l ena-manager/l ena-
manager_sol manager. pid
Using SERVER_HOME    : /engn001/l ena/j adeu3/1.3/modules/l ena-manager
Using SERVER_ID      : l ena-manager
Using INSTANCE_NAME  : l ena-manager_sol manager
LENA started.
```

LENA Managerd X^ ' NA } uDv 3‡ # L 7 Service PortA Manager1 ä 1 s t f 6.
http://Server_IP:7700

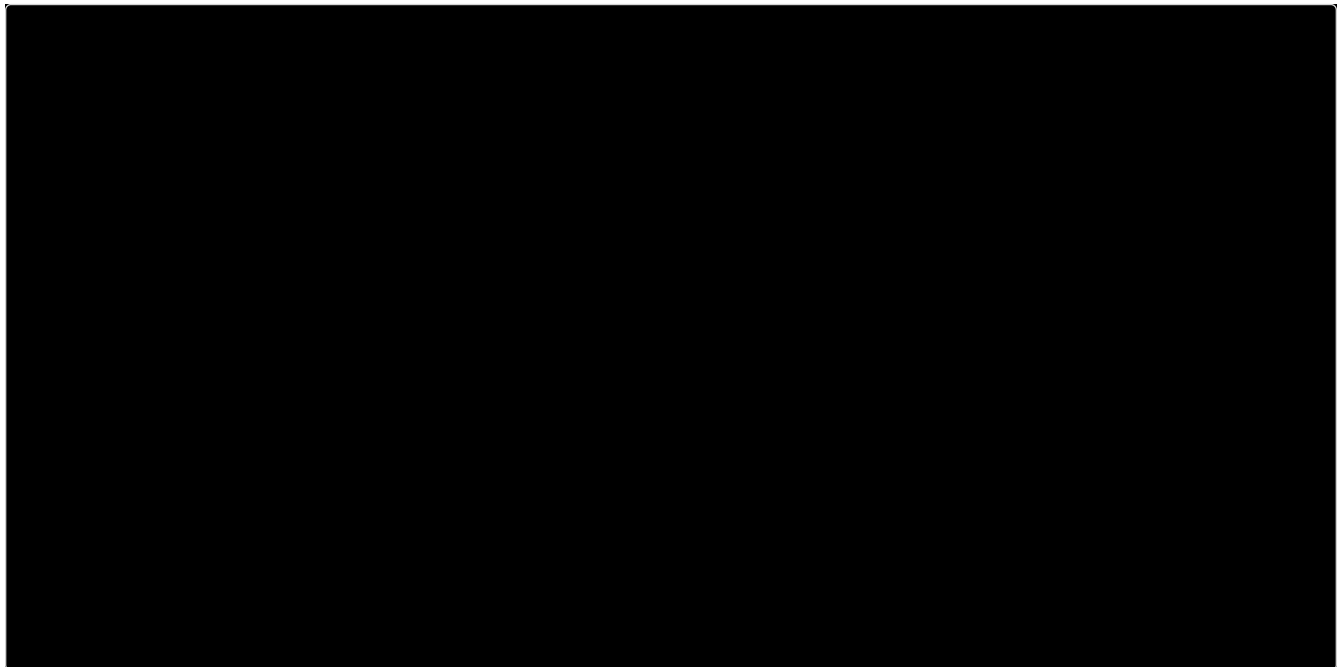


Figure 3. LENA ä 1 ™v

hi 7 G) ä 1 êX/pH, - A ä 1 - v G) ™vI V(s t f 6.

N/ OP 56/; QRS

admin / ladmin1234



Figure 4. LENA G)™v (DASHBOARD)

3.1.2. Node ' ' = (Command Line)

Node7 /O\$ LENA /O ?Ôe7 @AI I \$ ŪP Q6. WAS, Web Server* /Os #L1 g /O
?Ôe* Mp5 ÓA(3: /engn001/lena ó\$ /engn001/lenaw)1 > A^a ; @AI 3B56.
Node* /O- v hi U Q{ Node Agent* } u, F e, ^ %V(I -) ž 5 scriptd J K 56.

Table 7. Node Agent Z [Script

script CD	script (; <
Node /OÓA - ž 'bin' (3: /engn001/lena/1.3/bin)	start-agent.sh	Node Agent } u
	ps-agent.sh	Node Agent L A • q V(
	stop-agent.sh	Node Agent F e

WAS Node ' ' =

WAS Node7 /O Å K½s t f \$ j Ð> 6OP Q6.

- 1. LENA ManagerU WAS Node* Q> Server1 /O
 - 2. LENA ManagerU WAS Node* 6î Server1 /O(LENA Manager Mß /O)
- 1, 7 ÓÝ [LENA Manager /O/](#) } u 1# LENA Manager* /O-) ž 3 WAS Node /O ?Ôe7
@AI NøNÀA { Å WAS Noded /ODW f \$ ^ %o{ 6.
- 2, 7 ÓÝ WAS Node* /Os Server7 Mp5 ÓA(3: /engn001/lena)1 LENA WAS /O ?Ôe*
> A^a ; 6OP Q{ @AI NW /O56.
- /O ÓA ; /O · % > A^a V(

```
Ê[I ena]# cd /engn001/I ena
Ê[I ena]# ll
Ê-rw-rw-r-- 1 I ena I ena I ena-enterpri se-l inux_na_x86_64-1.3.1.6. tar.gz
```

!

```
@A 3B Å / O· %7 V¹ E » ÙI B´ 5 ÆCe { ' NA ööé[ d ¥` D$Š
{ ööé[ ¬I 1.3 NA ~D- \ ÒÓ- Æj =56.
```

```
/ O· % @A 3B / ööé[ ¬ ÒÓ
```

```
Ê[I ena]# tar -xvzf I ena-enterpri se-l inux_na_x86_64-1.3.1.6.tar.gz
Ê[I ena]# mv I ena-enterpri se-l inux_na_x86_64-1.3.1.6 1.3
Ê[I ena]# ll
Êdrwxr-xr-x 12 I ena I ena 1.3
Ê-rw-rw-r-- 1 I ena I ena I ena-enterpri se-l inux_na_x86_64-1.3.1.6.tar.gz
```

```
Node* / OO6v start-agent.shA Node Agent* } u56.
```

```
Node Agent } u
```

```
[I ena]# cd /engn001/I ena/1.3/bi n
[I ena]# ./start-agent.sh
Input JAVA_HOME path for LENA. ( q: quit )
JAVA_HOME PATH :
/engn001/j ava/j dk1.8.0_202 !
Input Agent port for LENA Agent. ( q: quit )
Agent port (Default : 16800):
16800 "
Input Agent user for LENA Agent. ( q: quit )
Agent user (Default : I ena):
I ena #

-----
Ê          LENA Agent
-----

Usi ng LENA_HOME      : /engn001/I ena/1.3
Usi ng JAVA_HOME      : /engn001/j ava/j dk1.8.0_202/j re
Usi ng CONF_FILE      : /engn001/I ena/1.3/conf/agent.conf
Usi ng LOG_HOME       : /engn001/I ena/1.3/l ogs/I ena-agent
Usi ng RUN_USER       : I ena
Usi ng PORT           : 16800
Usi ng UUID           : 98449860-0a9a-323b-9766-98c4292000df
LENA Agent is started.
```

```
Node Agent } u Å P©` $ Ð¢ > 6OP Q6.
```

```
¬ JAVA HOME (jdk) ÓA P©
¬ Node Agentd j =s Port P©
¬ Node Agent } u OS êX P©
```

```
Web Server Node ' =
```

```
Web Server* / Os Server1 LENA Web Server / O= ? Ôe * > Aª ; @AI NW / O56.
```

ÓA / · % V (

```
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_64-1.3.1.6. tar. gz
```

/ O · % @A 3B / ö ö é [¬ Ò Ó

```
Ê[l enaw]# tar -xvzf l ena-web-l inux_na_x86_64-1.3.1. tar. gz
Ê[l enaw]# mv l ena-web-l inux_na_x86_64-1.3.1 1.3
Ê[l enaw]# ll
Êdrwxr-xr-x 12 l ena l ena 1.3
Ê-rw-rw-r-- 1 l ena l ena l ena-web-l inux_na_x86_64-1.3.1.6. tar. gz
```

#

@A 3B Å / O · % 7 V¹ E » ÛI B´ 5 ÆCe { ' NA ö ö é [d ¥` D\$Š
{ ö ö é [¬I 1.3 NA ~D- \ Ò Ó- Æj =56.

Node* / O 5 ; start-agent.shA Node Agent* } u56.

Node Agent } u

```
[l ena]# cd /engn001/l enaw/1.3/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/1.3
Usi ng JAVA_HOME      : /engn001/j ava/j dk1.8.0_202/j re
Usi ng CONF_FILE     : /engn001/l ena/1.3/conf/agent. conf
Usi ng LOG_HOME       : /engn001/l ena/1.3/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 Å P©` \$ Ð¢ > 6OP Q6.

¬ JAVA HOME (jdk) ÓA P©

- Node Agentd j =s Port P©
- Node Agent } u OS ê X P©

LENA ManagerT NodeU VW(XY)

WAS NodeU Web Server Node* / O- K Agent*) ~ - v LENA Manager*] 3 Node* •• s t f 6.

LENA Manager7 ^ « 'SERVER' § G* wx - v Node List* V(s t f 6.

Node •• I ž 3 'Register' LQI R5- v hi U Q{ Node* •• -) ž 5 Empty Rowd SdD° g P© Đ¢I •• 56.

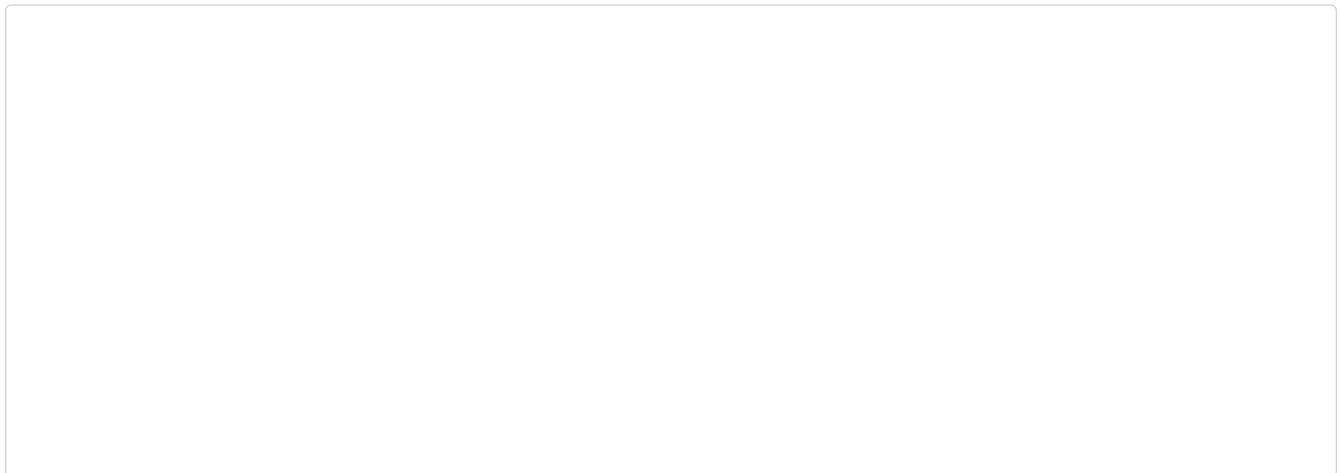


Figure 5. SERVER § G G) ™v

Node •• Å P©s Đ¢ > 6OP Q6.

1. Node Name: •• s Node7 →T
2. Node Type: Application / Web F 1 wx
3. Node IP: Noded / Oa Server7 IP Adress
4. Node Port: Node / OÅ P©5 Node Port

Manager Address Đ¢7 ÓÝ LENA Managerd / Oa Server7 IPd E~ P© DÀA ?@ P©s ¾k \$ ë 6.

P© Đ¢I , U P©5 . 'Save' LQNA Node •• I E# - ° X^ Ö[Å hi U Q> ™vI V(s t f 6.

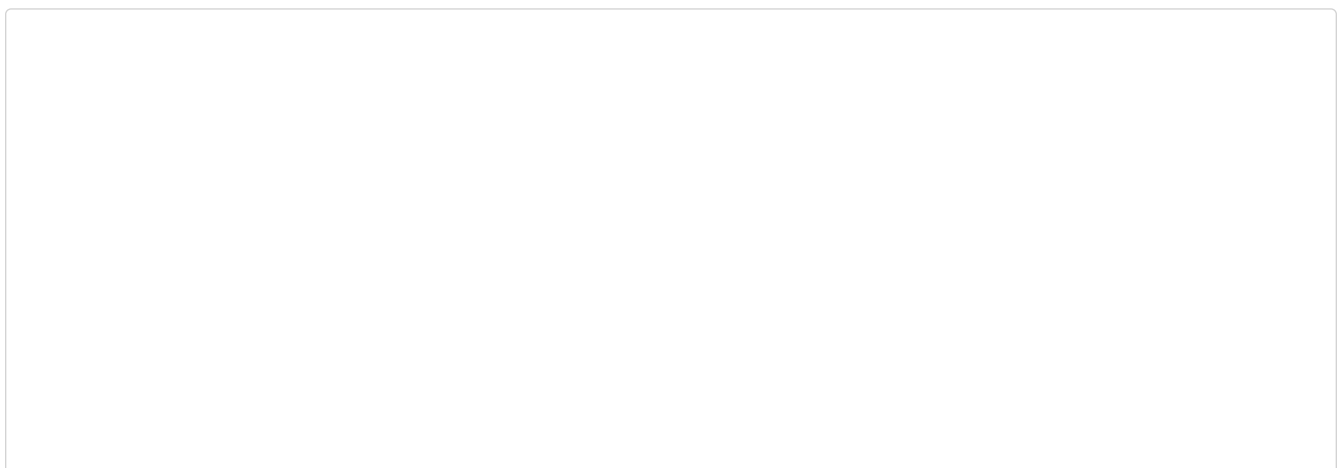


Figure 6. Node X^ •• 3Å ™v

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

Node7 / O\$ Node / O(Command Line) 1# ôu5 ² V ´ 1@ LENA Manager*] 3 • þNA / Os t@ f 6. { * ž 3#\$ LENA (Manager)* / O5 Server7 xX ööé[y1 LENA / O· %(WAS, Web Server)* > Aª 3 UWå 56. / O ? Ôe* > Aª 3 UWå - \$ ÓA7 3Å\$ 6OP Q6.

Table 8. Node • þ / O* ž 5 / O· % > Aª ÓA(3Å)

LENA ' = CD	LENA ' = \] ^ F DG CD
/engn001/lena/1.3 (LENA_HOME)	[LENA_HOME]/repository/install-files/default

3‡ ÓA1 . # j = 5 WAS, Web Server / O· %l > Aª 56.

• þ / O* ž 5 / O ? Ôe V(

```
[lena]# cd /engn001/lena/1.310/repository/install-files/default
[lena]# ll
-rw-rw-r--. 1 lena lena lena-enterprise-linux_na_x86_64-1.3.1.6.tar.gz
-rw-rw-r--. 1 lena lena lena-web-linux_na_x86_64-1.3.1.6.tar.gz
```

3‡ ÓA1 / O ? Ôe* > Aª O6v LENA Manager7 'SERVER' §G* wx - K - « 7 'Install' LQI R556.



Figure 7. WAS Node • þ / O 3Å

Node • þ / O Å P©3å - \$ Ð¢ > 6OP Q6.

- 1. Node Type: Application / Web F1 wx
- 2. Node Name: • þ Server1 / Os Node7 ¬T
- 3. Node Address: Node* / Os • þ Server7 IP Adress
- 4. Node Port: • þ Server1 # Noded j =s Port
- 5. User: • þ Server7 OS êX
- 6. Password: • þ Server7 OS êX7 pH, -
- 7. SSH Port: • þ Server7 SSH Port
- 8. LENA Home: • þ Server1 Node* / Os ÓA
- 9. Java Home: • þ Server1 / ODWf \$ JAVA Home ÓA

• p /O1# P©- \$ ÅI é2A, LENA Manager\$. # Å[Mp3W /O ?Ôe . %I • p
 ServerA 8±- K Node* /O- K, /O5 Node7 Agent* E~ NA } u- \$ ÛNA • p /O\$
 E#a6. { X5 ôu ^ ' > Popup YI] 3 V(s t f 6.

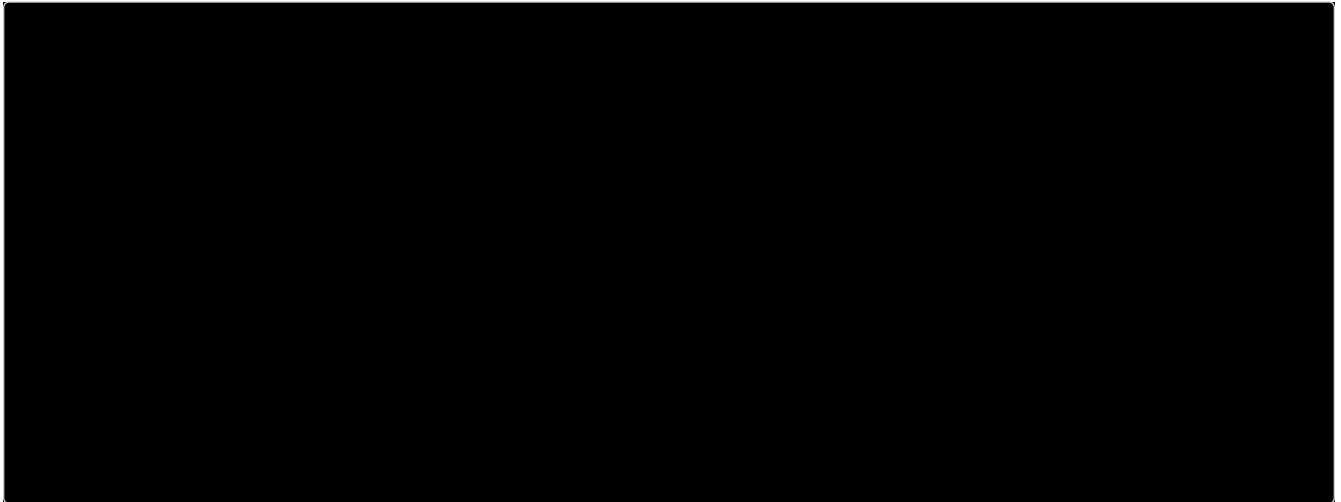


Figure 8. WAS Node • p /O ôu V(3 Å

/Od X^ ' NA E#Dv • p /O5 Node\$ LENA Manager1 E~ NA • • a 6.

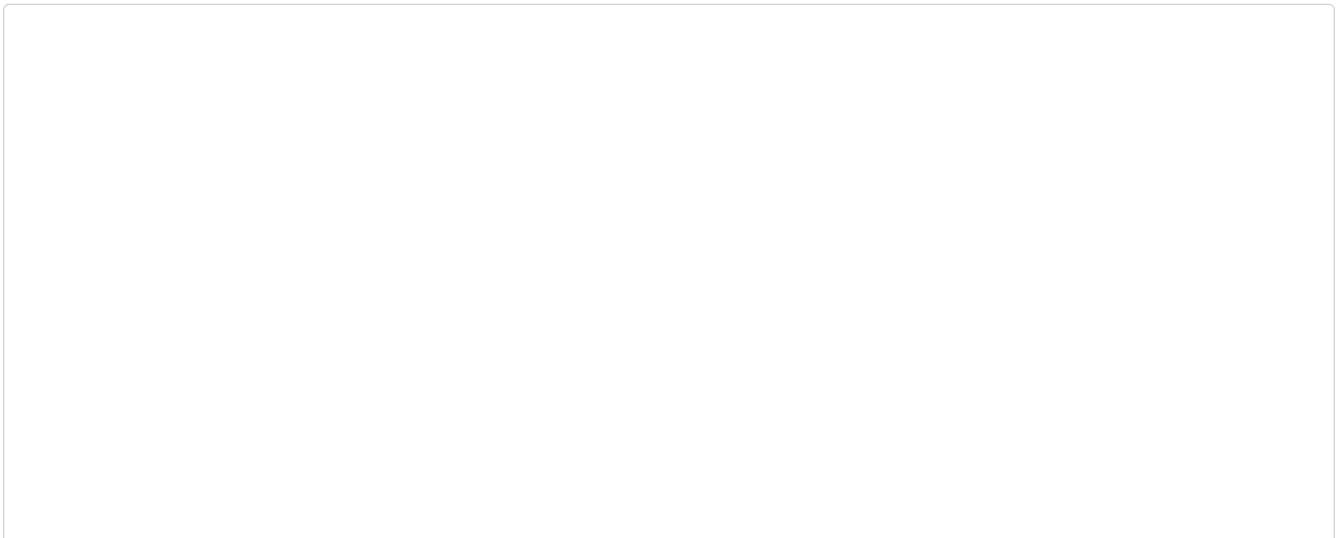


Figure 9. Node • p /O ; • • E#a ^ % 3 Å



Node7 • p /O* ž 3# \$ LENA Managerd /Oa ServerU • p /Os Server
 ~ 7 SSH Port ² ™ / { Open DWf Wå 56.

3.1.4. WAS ' =/AB

WAS Node* /O, • • " e E#O6v { B LENA Manager Web UI*] 3 WAS * /Os t f 6.
 LENA Manager ^ « 7 'SERVER' §G* wx 5 . Z[1# WAS * /Os WAS Node* wx - v
 WAS List* V(s t f 6. { ™v 1# 'Install' LQI R556.

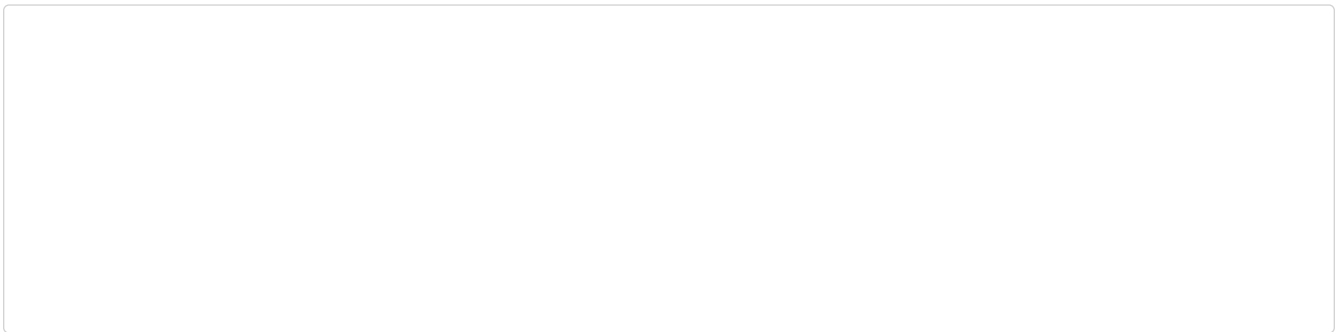


Figure 10. WAS List V (

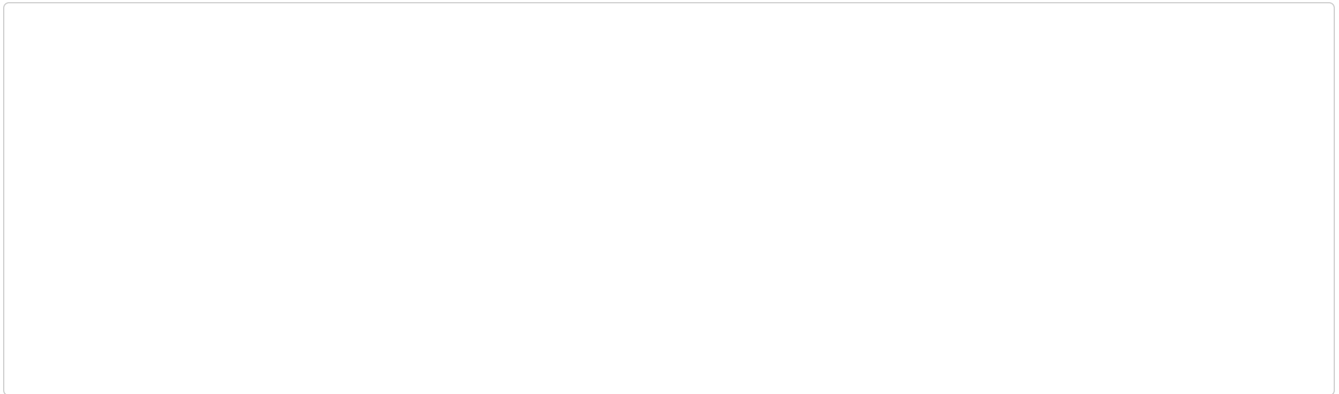


Figure 11. WAS / OXY P© Popup P P© Å 3Å

'Install' LQI R5- v WAS* /O-) ž 5 XY* P©- \$ Popup Y{ \©D° g P©Đ¢> 6OP Q6.

1. Server Type: WAS7 Type, Standard / Enterprise F x
2. Node: WAS d / OÈ Node(t X] d)
3. Server ID: LENA Manager d WAS* ³ ? -) ž 5 ¬T
4. Service Port: WASd / OÈ ^) M{ D\$ HTTP Port* 7 Å
5. Run User: WAS 7) ~ Å j =s OS êX(t X] d)
6. Install Root Path: WAS d / OÈ ÓA(t X] d)
7. Log Home: WAS Log7 ÓA
 - a. default: [Install Root Path]/logs
 - b. cutom: j =Ed _7A ÓA eX
8. JVM Route: Web ServerU 2~ Å Web Server d WAS* ³ ? -) ž 5 Á
 - a. auto: LENA1 # E ~ ¥`
 - b. manual: j =Ed _7A eX



WAS \$) ~ Å HTTP, HTTPS, AJP • 6` 5 Port* j =- \$Š LENA 1 # \$ WAS /O Å j =E û7* ž 3 HTTP Port áI P©¬ K { *) MNA 6î Port ÁI E~ êÚ- Œ /O56.

WAS /O XY* , U P© 5 . 'Save' LQI R5- v WASd /OD° WAS List 1 # /O5 WAS * V(s t f 6.



Figure 12. WAS X^ / O ; WAS List

FeDW f \$ WAS *) ~ - ½v WAS List Ý[7 'Start' LQI R556. ó5) ~ DWf \$ WAS *
Fe - ½v Q> ž O1 'Stop' LQNA í aÀA 3‡ LQI R556.

WAS) ~ Å1 \$ WAS) ~ Log(Application { ¶ RDW f óv Application) ~ Log @ Sb)d Popup
YNA \ ©a 6.

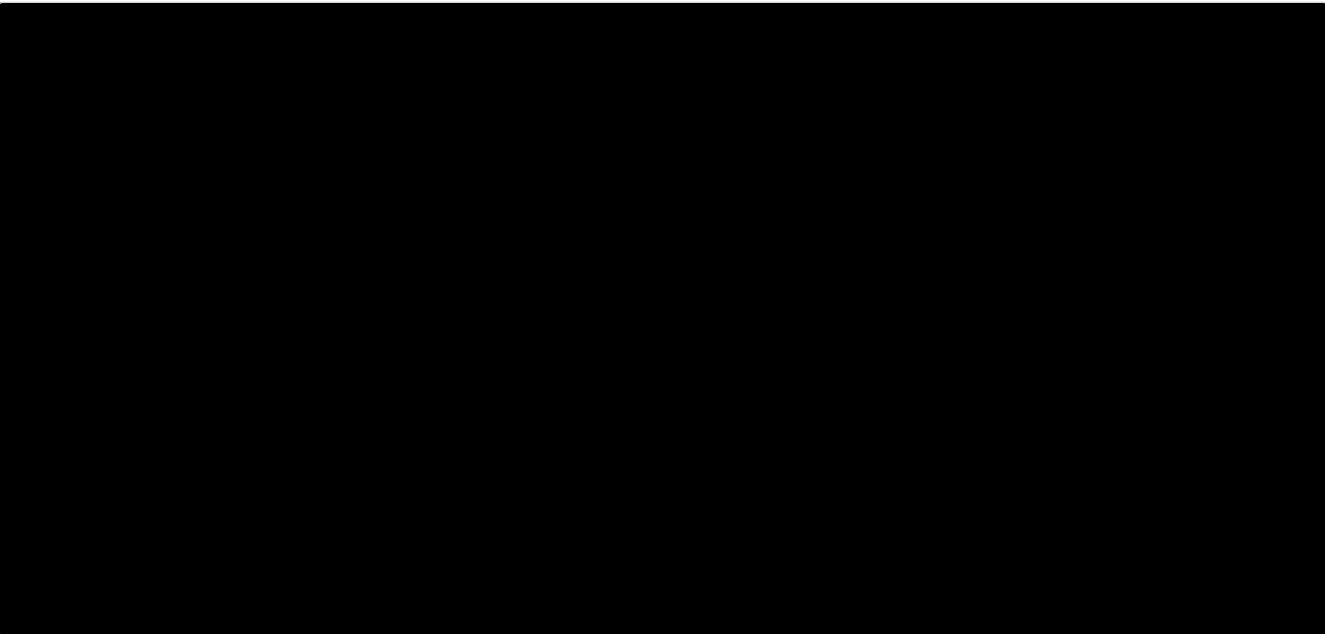


Figure 13. WAS7) ~ P Log

3.1.5. Web Server ' =/AB

WAS /OU ~ %5 ² ³ NA, LENA Manager Web UI*] 3 Web Server* /Os Web Server Node*
wx 5 . Web Server* /Os t f 6.

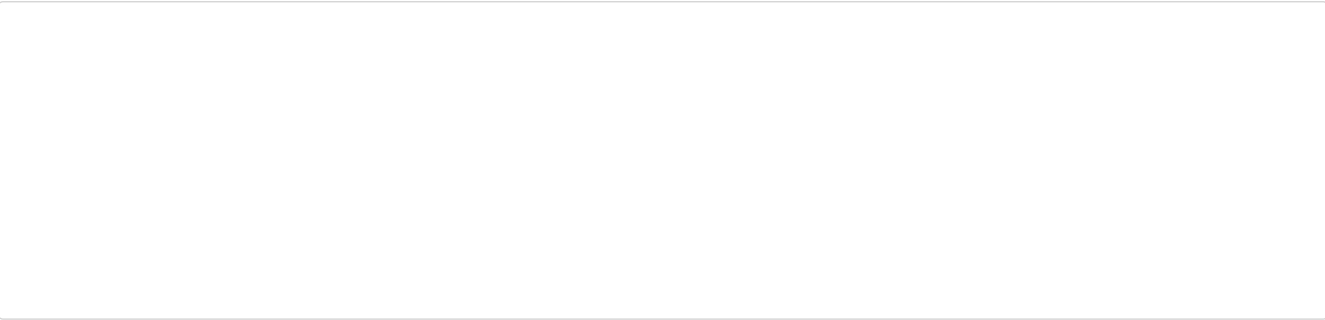


Figure 14. Web Server List V(

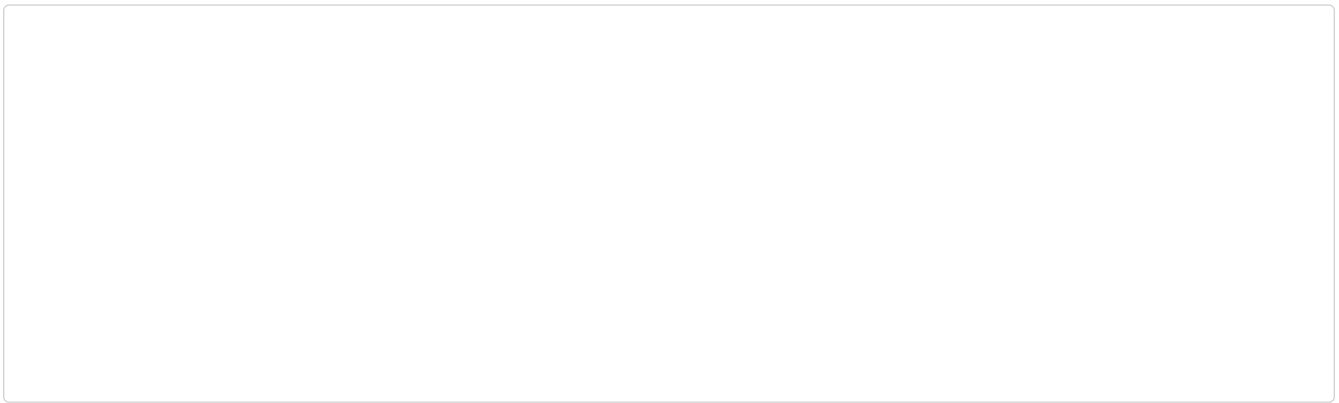


Figure 15. Web Server / OXY P© Popup P P© Á 3 Å

'Install' L QI R5- v Web Server* /O-) ž 5 XY* P©- \$ Popup Y{ \©D° g P©Đ¢> 6OP Q6.

1. Server Type: Web Server (K X)
2. Node: Web Server d / OÈ Node (t X] d)
3. Server ID: LENA Manager d Web Server * 3 ? -) ž 5 -T
4. Service Port: Web Server d j =s HTTP Port
5. Run User: Web Server) ~ Å j =s OS ê X(t X] d)
6. Web Server Engine Path: Web Server / O Å j =s Engine ÓA(t X] d)
7. Install Root Path: Web Server d / OÈ ÓA(t X] d)
8. Log Home: Web Server Log ÓA
 - a. default: [Install Root Path]/logs
 - b. custom: j =E d _ 7A ÓA e X



Web Server \$) ~ Å HTTP, HTTPS • 6` 5 Port* j =- \$Š LENA 1 # \$ Web Server / O Å j =E ù 7* ž 3 HTTP Port áI P©- K { *) MNA 6î Port ÁI E~ ê Ú- Ć / O56.

Web Server / O XY* , U P© 5 . 'Save' L QI R5- v Web Serverd / OD° Web Server List 1# V(s t f 6.

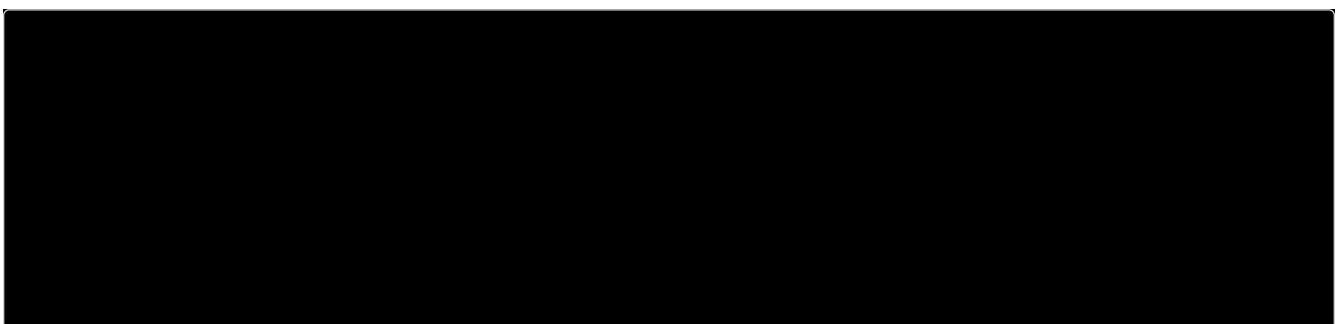


Figure 16. Web Server X^ / O ; Web Server List

F eDW f \$ Web Server *) ~ - ½v WAS List Ý[7 'Start' L QI R556. ó5) ~ DWf \$ Web Server * F e- ½v Q> ž O1 'Stop' L QNA í a ÅA 3 ‡ L QI R556.

Web Server) ~ Å 1 \$ Web Server) ~ Logd Popup YNA \ ©a 6.



Figure 17. Web Server 7) ~ P Log

Web Server - WAS VW

Web ServerU WAS ~ 2~ /X1 23 ch! 6. LENA Web Server U WAS 7 2~ > Web Server /X™v1# s t f 6. LENA Manager ^ « 7 'SERVER' §G1# /O5 Web Server * wx - Æ /X™vI dK /X™v < ^ « 7 'Connector' eI wx56.

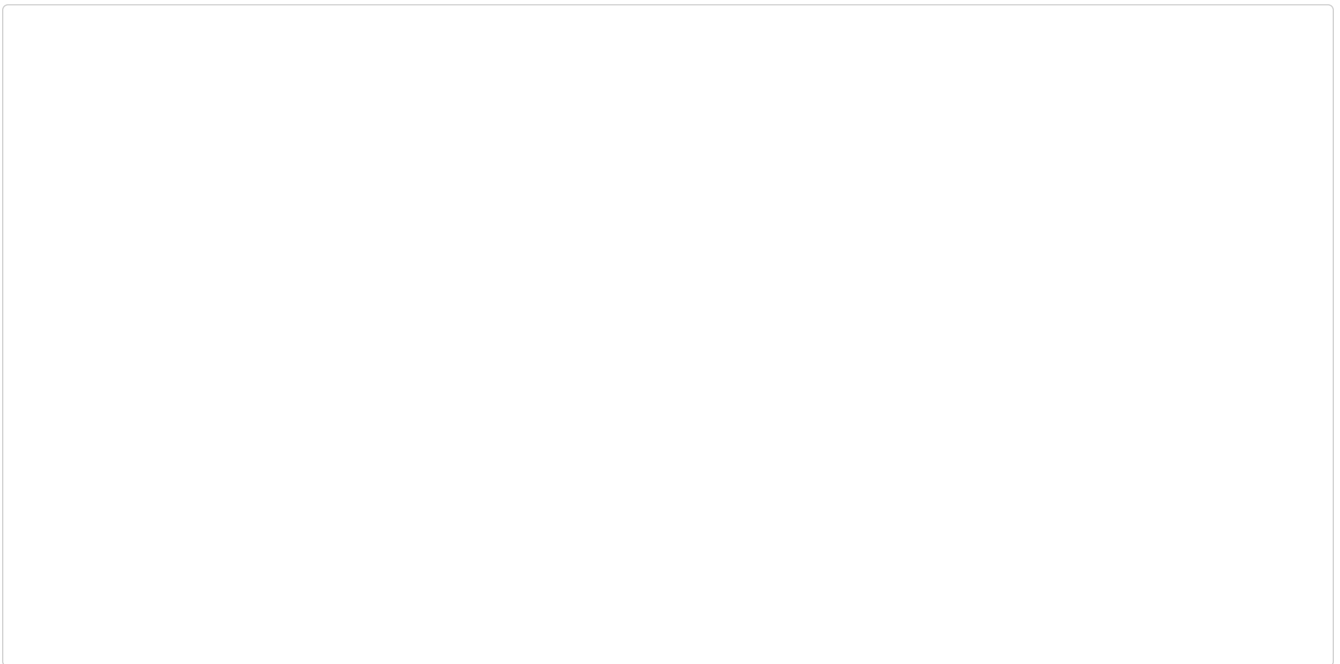


Figure 18. Web Server G) /X™v

Web Server 7 'Connector' e1#\$ Web Server U WAS ~ 2f1 25 /XI Z[56. 'Connector' e™v - « 7 WAS List g1 2~ s WAS* Sd- v)! ' (Web Server U WAS ~ 2~ { E#a6.

WAS * Sd-) ž 3#\$ WAS List g7 '+' LQI R5- v d[\$ h> 1# /ODW f\$ WAS* wx - K 'Save' LQI R556. h> 1#\$ LENA Manager 1 • • DWf\$ WAS Node ?A WAS ¢•I V(s t fN° { Â 'Connector' 1 • • 5 WAS\$ Y{ e Í \$6.

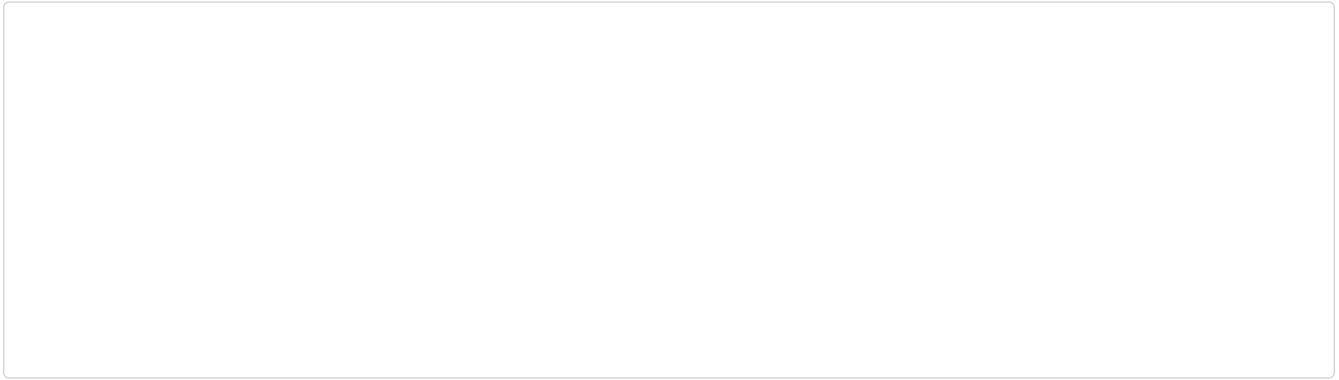


Figure 19. 2~ s WAS Sd

WAS List1 2~ /Xs WASd SdDv Ý[- « 7 'Save' LQI R5- ÆÎ b , 1 56.

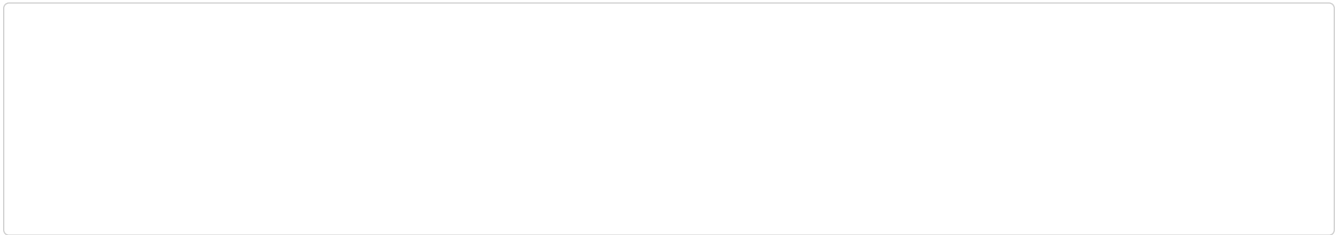


Figure 20. 2~ s WAS 1

3.1.6. Session Server ' = E VW

Session Server\$ Session Clustering I ' = Å1 /O- ° 6O U de ² VNA /Os t f 6.

1. Standalone , a : Session Server* ?@ Server A /O- \$ ² V
2. Embedded , a : Session Server* ?@ Server A /O- e Í K) J 1 /O5 WAS < 1 Emebedded
ÿ%A /O- \$ ² V

Standalone __G ' =T WAS VW

Session Server \$ WAS Node1 /Os t f 6. LENA Manager ^ « 7 'SERVER' §G* wx ; Session
Server * /Os WAS Node* wx 56. WAS List - « 1 \$ /Oa Session Server* V(s t f \$
Session Server List * V(s t f 6.

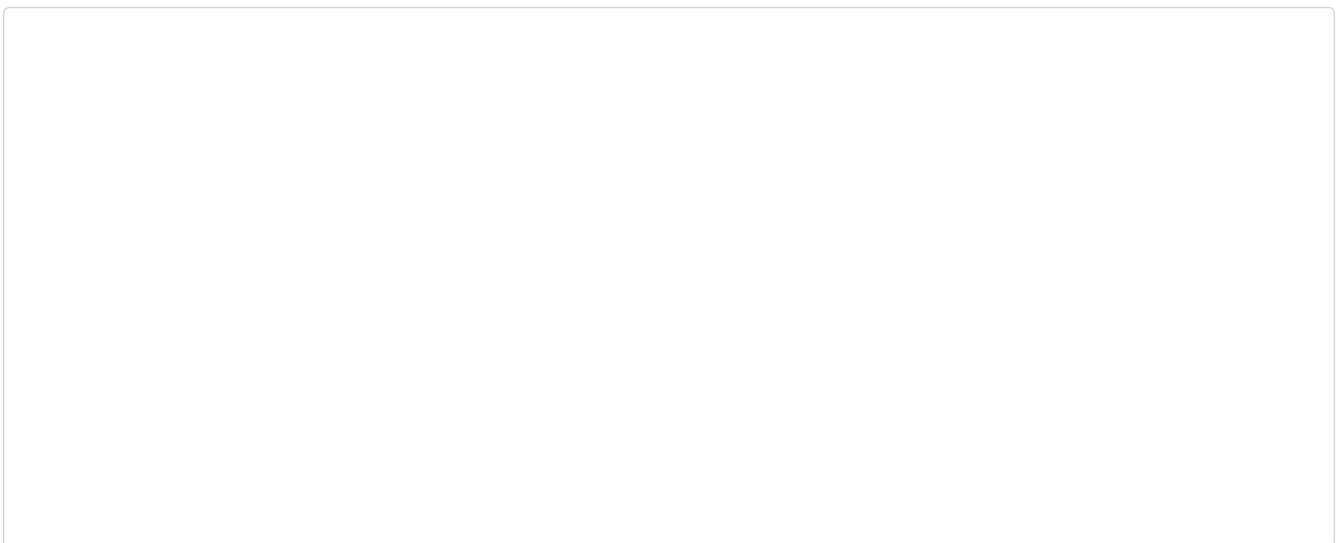


Figure 21. Session Server List V(

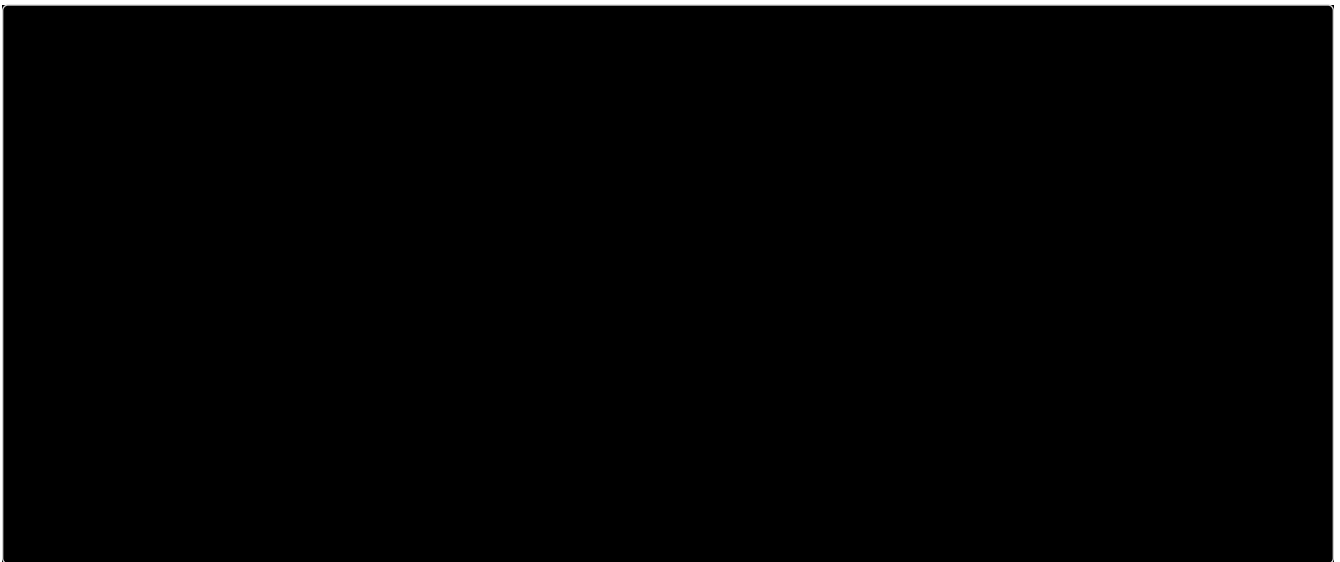


Figure 22. Session Server / OXY P© Popup P P© Å 3 Å

'Install' LQI R5- v Session Server* /O-) ž 5 XY* P©- \$ Popup Y{ \©D° g P©Đ¢> 6OP Q6.

1. Server Type: Standalone (K X)
2. Node: Session Server d / OÈ Node(t X] d)
3. Server ID: LENA Manager d Session Server * 3 ? -) ž 5 -T
4. Service Port: Session Server d j =s Port
5. Mirror Server IP: 6î - Æ7 Session Server d / Oa Node(• • 5 Node F 1 # wx)
6. Mirror Server Port: 6î - Æ7 Session Server d / Oa Node1 # Session Server d j = - \$ Port
7. Run User: Session Server) ~ Å j =s OS7 êX(t X] d)
8. Install Root Path: Session Server d / OÈ ÓA(t X] d)
9. Log Home: Session Server Log ÓA
 - a. default: [Install Root Path]/logs
 - b. custom: j =Ed _7A ÓA eX

Session Server /O XY* , U P© 5 . 'Save' LQI R5- v Session Server d /OD° Session Server List 1 # V(s t f 6.



Session Clustering _` Å Session Server\$ 2) * /O- Æ - Æ\$ Primary, 6î - Æ\$ Secondary { F™ _` I 56.

ž 3Å " i 1 # \$ 'Mirror Server IP' 1 6î - Æ7 WAS Node* eX- j N° 3‡ WAS Node 1 @ hi U Q{ Session Server * /O56.



Figure 23. 61 - Æ7 Session Server / O

Session Server * , U / O 5 . WAS U 2~ -) ž 3 WAS / X ™v 7 'Session' e l wx 56.
 'Session' e 1 # \$ WAS 7 Session Clustering ' = l ž 5 Session Server 2~ / XI Z [56. / X
 Đ¢ 7 'Session Clustering Enable' Đ¢I 'Yes' A ÒÓ- Ć • » / X{ Ž ÅD@• 56. Client Mode 7
 ÓÝ ?@A / O5 Session Server *) ~ - K { * WAS U 2~ - Ć Session Clustering l ' = - \$
 2 3 { 6.

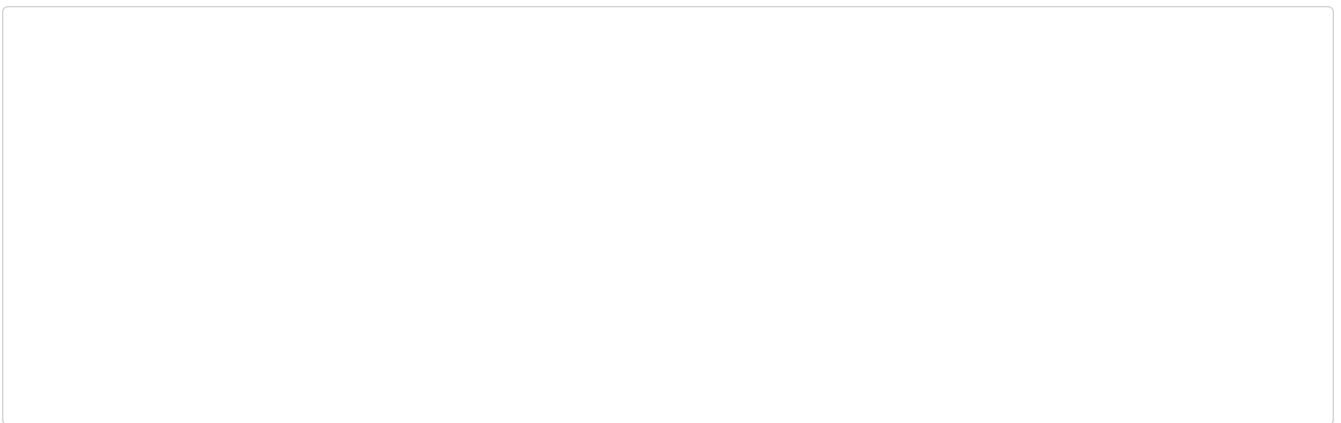


Figure 24. WAS 7 Client , Æ Session Server / X

Client , Æ Session Server *) MNA, / X Á > 6OP Q6.

1. Primary Server Host: Primary A e Xs Session Server d / Oa Node * wx - K Session Server * e X56.
2. Secondary Server Host: Secondary A e Xs Session Server d / Oa Node U Session Server * e X56. Session Server d 2) / ODW f K, Primary Server Host * wx - v ÆCe Session Server d E~ NA Secondary A e Xa 6.
3. External Stored Session: Session Clustering ' = P Sb WAS U Session Server(2)) 1 # Z [D\$ Session XY* Session Server(2)) 1 # á Z [s e Ć» * wx 56. • A Cloud, Container ā Ó1# _` Å 3‡ k€I j = 56.(Default false)
4. Share session in applications: WAS1 ĆX Application { ¶ RD\$ ÓÝ 3‡ Application ~ Session XY* C• s e Ć» * wx 56.(Default false)
5. Multi Login Control: F œ A" (BW) : 7 j = Ć» * wx 56.(Default false)

Client , Æ Session Server 7 ÓÝ / XI ' = s WAS l 6 ž U Q> / XI ' = 3 • Wā 56.



Session / X ÒÓ ; WAS* K) ~ 3ā 56.

Embedded __G ' =T WAS VW

Session Server 7) : I Embedded , ^a A j =s WAS * wx - Æ / X™vI 2 . , ^ « 7 'Session' eI wx 56.

'Session' e 1 # \$ WAS 7 Session Clustering ' =I ž 5 Session Server 2~ / XI Z [56. / X Đ¢ 7 'Session Clustering Enable' Đ¢I 'Yes' A ÒÓ- Æ • » / X{ Ž ÅD@• 56. Embedded Mode 7 ÓÝ WAS 1 Session Server) : { WAS 1 Embedded ý%A WAS d) ~ 56.

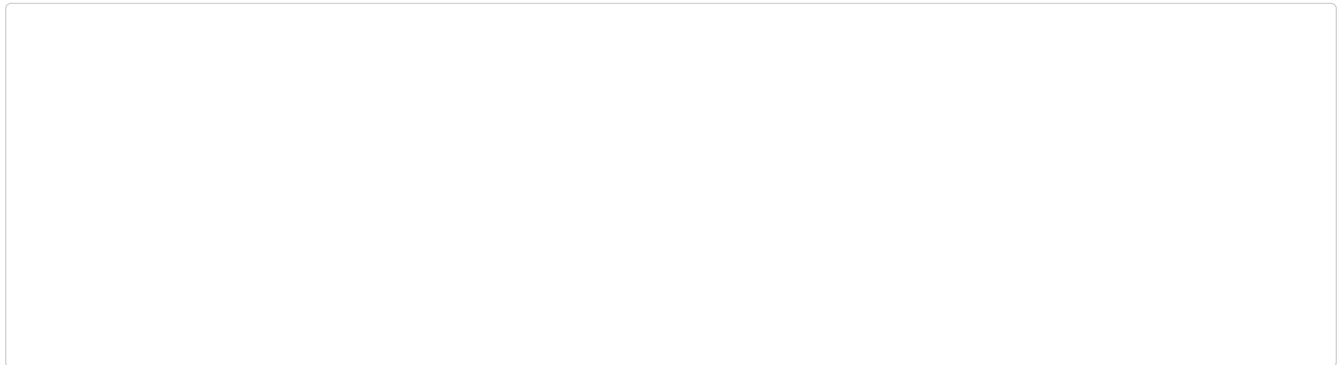


Figure 25. WAS 7 Embedded , ^a Session Server / X

Embedded , ^a Session Server *) MNA, / X Á > 6OP Q6.

1. Embedded Host: Embedded Mode wx Å • K WAS A KXa 6.
2. Embedded Port: Embedded Session Server d j =s Port* P©56.
3. Secondary Server Host: 6î - Æ7 Embedded Session Server * j =s WAS * eX56. WAS d / Oa Node * wx ; WAS * wx 56.
4. Secondary Server Port: 6î - Æ7 Embedded Session Server d j =s Port * P©56.
5. Multi Login Contorl: F œ A" (BW) : 7 j =Æ» * wx 56. (Default false)

/ X Á P©, wxI I m . 'Save' LQI nX 1 - v Embedded Session / X{ E # D° Embedded Session 7 / X> - Æ7 WAS 1# ôu- v 6î - Æ7 WAS 1@ / X{ ' =a 6.



Session / X ÒÓ ; WAS* K) ~ 3å 56.

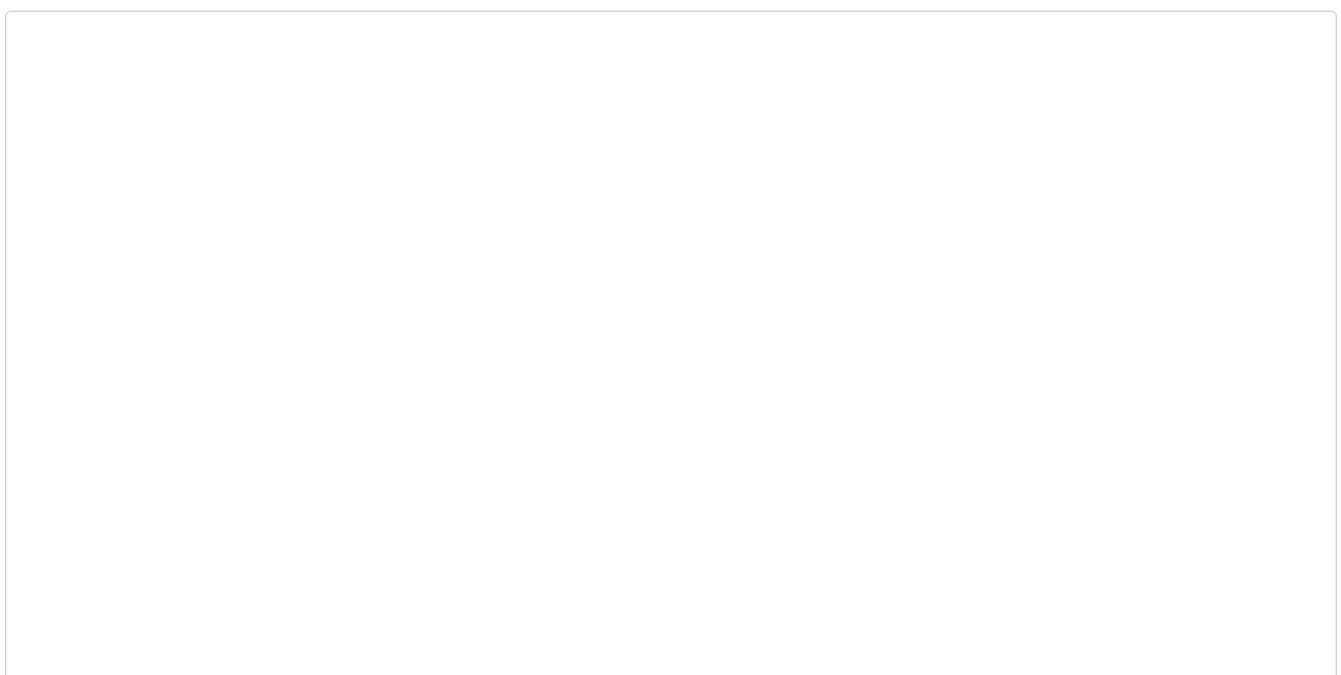


Figure 26. WAS 7 Embedded , ^a Session Server / X 7 E #

3.1.7. Server ` VW HI

. # Web Server - WAS 2~ P Session Server / O ; 2~ PXI] 3# ôu5 2~ /XI V(- \$
 2 VI / - 56.

LENA Manager 1 # \$ / O5 Server 7 _` I ~û- \ V(s t f @ • Topology View * BC- K
 f 6. { Topology) : I] 3 2~ { X^ ' NA V(- \$ 2 VP Web Server, WAS / O Å) !
 oKDW f \$ LENA Sample p{ e*] 3 2~ { X^ ' NA DWf \$ e* V(s t f 6.

Topology a bc HI

LENA Manager ^ « 7 'Topoolgy' § G* wx 56.

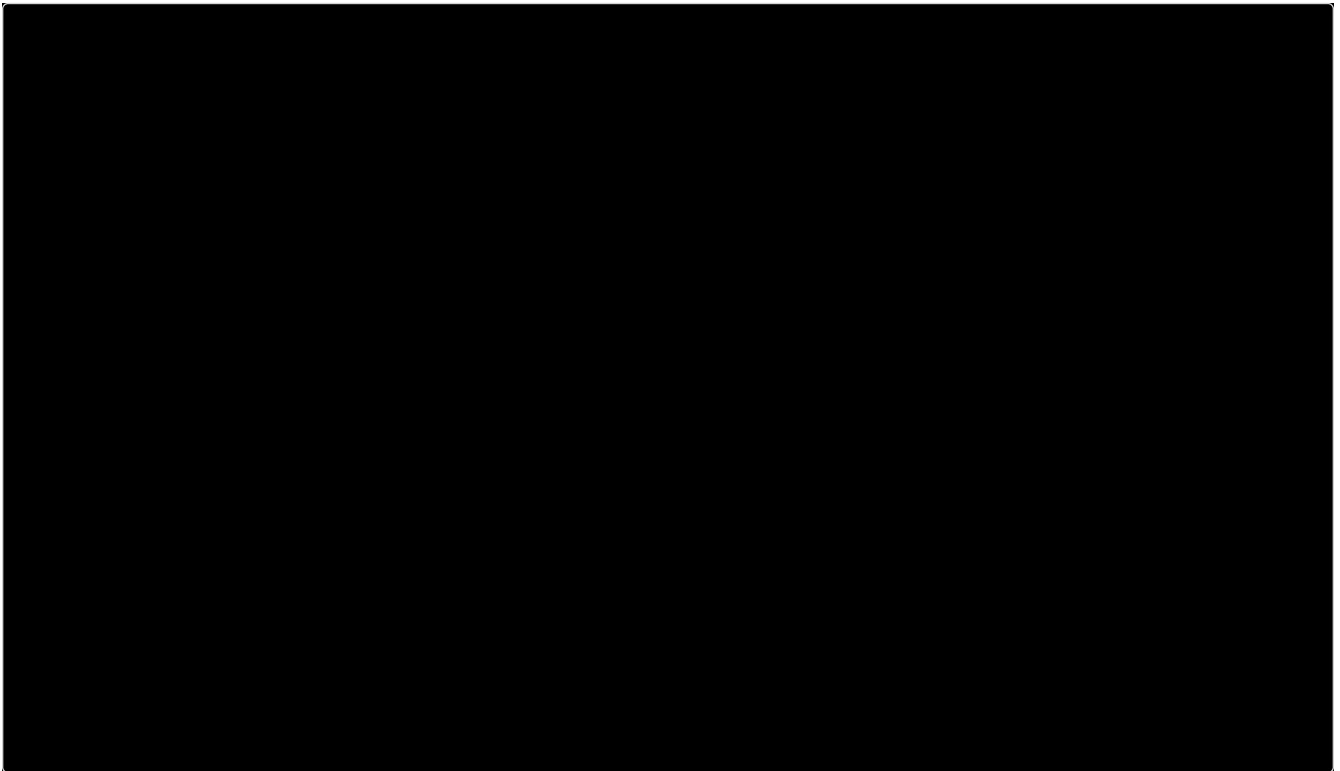


Figure 27. Topology View

Topology View 1 # \$) ! ' NA • K • • DW f \$ Node U Node ? / O5 Server 7 _` P
 2~ XY* V(s t f 6.

Ž " i 1 # \$ Web Server 2) , WAS 2) " [K Session Server 2) d / ODW f N° Web Server U
 WAS, WAS U Session Server ~ 2~ / X{ 2f wNA Ž • DK f N° { *] 3 Server ~ 2~ {
 X^ ' NA Dø\$e V(s t f 6.

Sample Page Sde bc HI

LENA 7 Web Server U WAS 1 \$) ! oKa Sample PageU Sample Application { f 6. { \$ G)
 / O ; X^ 2~ I V(- \$ = @A@j = È t f 6.

q , Web Server 7 IPU Port* V(5 . r snŸ , 1 hi U Q{ P©56.

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

" t hi U Q{ LENA 1 # BC- \$ index.html p{ ed - \ D\$ ŨI V(s t f N° Web Server
 d X^ - \ D\$ ŨI V(s t f 6.



Figure 28. Web Server - \ Test

Sample Application Sde bc HI

LENA WAS* /O- v LENA 1# BC- \$)! Application { oKDW f 6. { Application7 index.jsp, session.jsp * - \ - v gg WAS - \ uqà, Session Clustering): uqà* t us t f 6.

Web Server U WAS d /O G) ^ %A /XDW f 6\$ dX - 1 r snY, 1 hi U Q{ P©56.

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

Web Server U WAS d X^ 2f{ DWf 6v Web Server 7 IPU Port A - \ 5 ž kI > WASA 8®DW index.jsp p{ e* kI - \ DK 6OP Q{ LENA Sample Application 1 # BC- \$ index.jsp p{ ed - \ a 6.

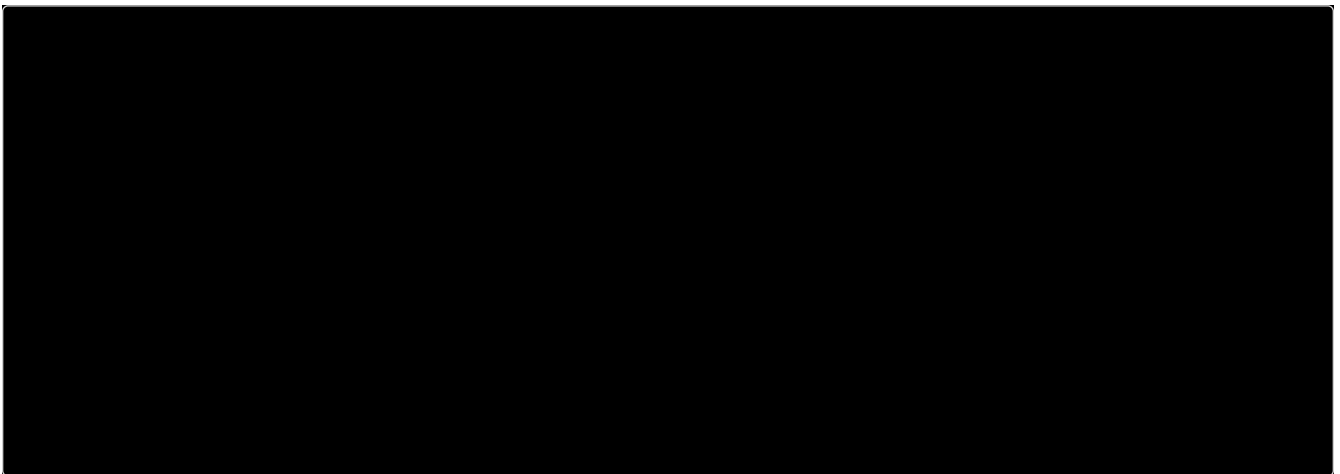


Figure 29. index.jsp - \ Test

index.jsp p{ e* - \ - v • K kI I Wv WAS d Ö[- \$e* Server ID, Service Port, JvmRout ĀI] 3 V(s t f 6.

{ , 1 \$ ~ %5 Web Server IP, Port A hi U Q{ session.jsp * - \ 56.

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

session.jsp * - \ - v • K kI 1 25 Session XYd SdA V(a 6. - \ I &œS1 mn Session Count 7 t d wd- ° U, x - \ » „ αya Session IDd Ž Āa 6. Session Clustering { X^ ' = Dø\$e* V(-) ž 3#\$ Session IDd αya ^ %1# • K kI I Ö[F(WAS * Fe- K r snY, * zAK{ - Æ kI I 6Å Y| I ^,) ~ F(6î WAS d kI I Ö[- e á Session ID d " 2A • eD° Session Count d wd- \$ ŪNA V(s t f 6.

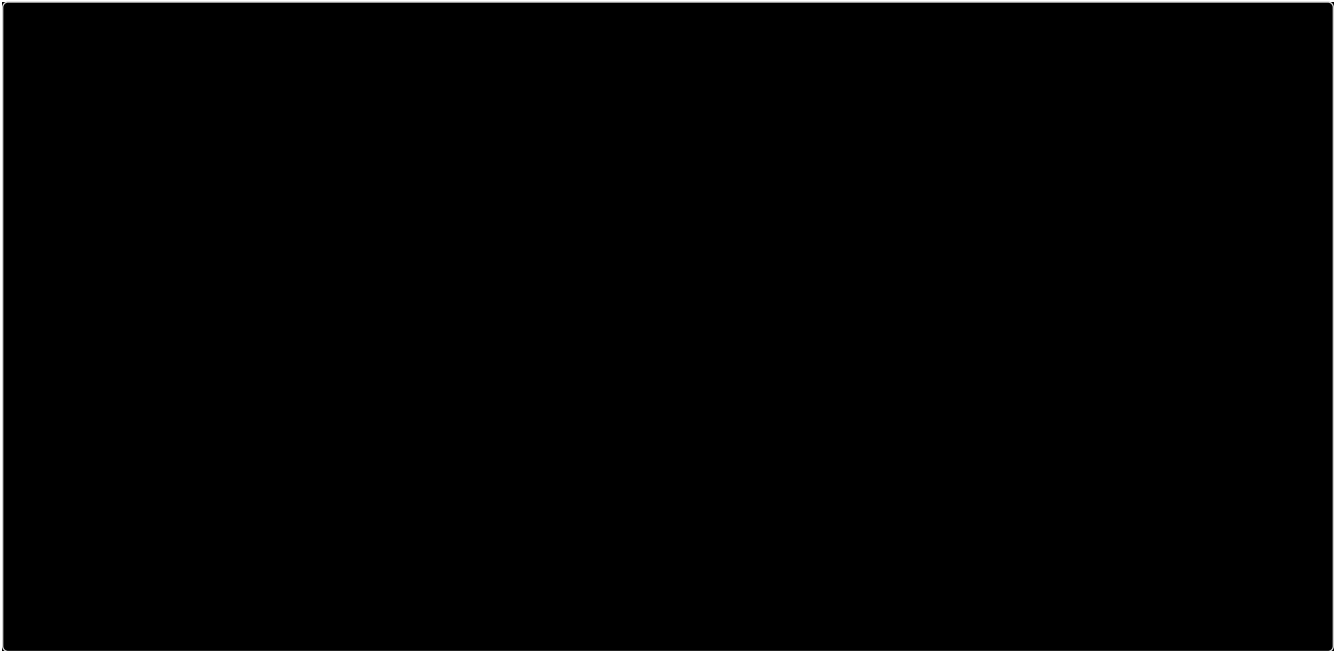


Figure 30. session.jsp - \ Test